SAPTHAGIRI COLLEGE OF ENGINEERING
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Research Article

Biochemistry

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ISOLATION, CHARACTERIZATION AND OPTIMIZATION OF PROCESS VARIABLES FOR PARTIALLY PURIFIED IMMOBILIZED A-AMYLASE ISOLATED FROM INDIAN CHICKEN FEATHER

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ABSTRACT

Immobilization of α-Amylase produced by a *Pseudomonas* sp isolated from Indian Chicken feather was studied. Partially purified enzyme with 486.77 IU and specific activity of 811.28 units mg (protein)$^{-1}$ was used for immobilization study. An easily available and inexpensive 3% Sodium alginate matrix with easy immobilization gel entrapment procedure was used for trapping the enzyme showed 555.5 IU activity. The optimization was carried out to study the catalytic properties which showed the optimum pH, temperature and substrate concentration at pH 7, 45^{0}C and 16mg, respectively. The reusability of the immobilized enzyme preparation showed its use in continuous starch hydrolysis for up to 10 cycles. This immobilized enzyme can be used as a replacement of commercial enzyme since it has shown same greater operational flexibility and enzymatic activity of the pure enzyme.

KEY WORDS: Chicken feather, Calcium alginate, Immobilization, *Pseudomonas* sp.

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RESEARCH ARTICLE

Production of Biofuel from Micro Algae (*Chlorella pyrenoidosa*) Using Vertical Reactor System and Effect of Nitrogen on Growth and Lipid Content

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Abstract

This study deals to enhance the biomass concentration and lipid content in microalgae with one of the existing method. Microalgae, *Chlorella pyrenoidosa* was grown autotrophically in vertical bioreactor for greater efficiency. Under high light intensity, this reactor experiences less photo inhibition and under low intensity, a vertical orientation captures more reflected light. It requires less land area for installation. The *Chlorella* inoculated to vertical bioreactor showed increase in growth, also the effect of different concentrations of nitrogen source (0-0.4 g/L KNO_3) on growth and lipid content were studied. Eventually, as the nitrate concentration in the medium decreased, biomass production also decreased, however the lipid content increased. Moreover, at the same concentration of nitrate source, lipid tends to accumulate more in stationary phase in comparison to exponential phase. Highest lipid accumulation of 15% in the culture with 0.05 g/LKNO_3 was recorded. This is one-fourth of basal nitrogen source concentration. The present study emphasized that nitrogen starvation was an effective approach to enhance lipid for biofuel production.

Keywords: *Chlorella pyrenoidosa*, vertical bioreactor, nitrogen source, biofuel, biomass.

Introduction

Algae have been used as a renewable feedstock for biofuel production for many years. The efforts have not been fruitful on larger scale, thus far, since it belongs to a large group of simple photosynthetic organisms. The variety of industrial applications of algae makes it a favorite choice, such as, rapid growth, higher solar conversion efficiency than most terrestrial plants. It is harvested either batch-wise or continuously almost throughout the year. About, 50 years of research have demonstrated the ability of several micro algal species to produce several chemical intermediates and hydrocarbons which can be converted into biofuels. The three major macromolecular components chiefly obtained from micro algal biomass are lipids, carbohydrates, and proteins that can be converted into various biofuels such as alcohols, diesel, methane and hydrogen. Biodiesel is derived from organic oils, plants or animals by the process of Transesterification to obtain monoalkylesters (Demirbas, 2007). The biodiesel trans-esterification reaction is very simple:

Triglyceride + 3 Methanol ←Catalyst→ Glycerine + 3 Methyl Esters (Biodiesel)

Alkali such as potassium hydroxide acts as a catalyst in the equilibrium reaction where an organic oil or triglyceride can be processed into biodiesel (Chisti, 2007). The triglyceride is a fat, a complex molecule used by plants and animals for storing food energy. There is a high level of reductions of soot, sulphur, unburned hydrocarbon and polycyclic aromatic hydrocarbon emissions produced from diesel in comparison to biodiesel that do not give out harmful emissions (Brown *et al.*, 1993; Xu *et al.*, 2006). Minor modifications can be done in biodiesels and used as unblended or blended with fossil petroleum diesels to run engines (Ma and Hanna, 1999). Biodiesel have twice the viscosity of petroleum diesel resulting in improvement of engine life (Hankamer *et al.*, 2007). It is biodegradable and low toxic (Crookes, 2006; Schneider, 2010), like petroleum diesel biodiesel also undergo complete combustion than gasoline; hence produce a cleaner burn (Hagg, 2007). Algae show higher growth rate than food crops, thereby producing hundreds of times more oil per unit area than conventional crops such as rapeseed, palms, soybeans, or jatropha (Atabani *et al.*, 2012). Harvesting cycle of algae is 1-10 d, cultivation permits several harvests in a very short time-frame, a strategy differing from that associated with annual crops (Chisti, 2007). In addition, algae can also be grown on land unsuitable for terrestrial crops, including arid and land with excessively saline soil minimizing competition with agriculture, thus requiring lesser capital investment on land. Vertical reactor is the most efficient type of reactors for algal cultivation. Gas exchange, liquid flow and exposure of cells to light are greatly improved in a vertical air lift reactor. Using an air lift reactor helps in circulating the cultures without moving parts or mechanical pumping, hence reducing the potentials of contamination and cell damage occurring due to shear. The high and low intensities of light play major role, while high intensity of light causes vertical less photo inhibition in reactor and vertical orientation capture more reflected light under low light intensity.

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A Technical Review On Hyperthermia

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ABSTRACT:
Hyperthermia has promising strategy to enhance apoptosis .The fundamental idea and the effects of heat on cancer cells are well known. However, the results obtained in therapy by hyperthermia (HT) alone have been only partially satisfactory. Treatment at temperatures between 40 and 44 °C is cytotoxic for cells in an environment with a low oxygen partial pressure and low pH, conditions that are found specifically within tumour tissues, due to insufficient blood perfusion. Under such conditions radiotherapy is less effective, and systemically applied cytotoxic agents will reach such areas in lower concentration than in well-per fused areas. Therefore, clinically it is preferred to use hyperthermia in combination with radiation therapy and chemotherapy. Hyperthermia can be applied by several methods: local hyperthermia by external or internal energy sources; regional hyperthermia by perfusion of organs or limbs or by irrigation of body cavities; and whole body hyperthermia. Which can be implemented by many heating methods, such as microwave, radiofrequency, laser and ultrasound. Number of studies have reported the combination of thermo-radiotherapy. Fortunately, phase II, III clinical trials have demonstrated that hyperthermia combination therapy is beneficial for local tumour control and survival in patients with high-risk tumours of different types. Consequently, much attention has been focussed on identifying agents among the conventional chemotherapeutics substances that can sensitise tumour cells to hyperthermia-induced damage with minimal effects on normal cells. In the review, we overviewed important mechanism of hyperthermia-induced apoptosis and the substance which can act as heat sensitizers' in cancer therapy.

KEYWORDS: Hyperthermia, radiotherapy, chemotherapy, microwave, ultrasound.

I.INTRODUCTION:

Heat are used in many cultures for almost any disease including cancer, first case of a patient with a breast tumor treated with hyperthermia was described more than 3,500 years ago. In 1866 a case was described where sarcoma disappeared after prolonged infection with a high fever causing bacteria. 1898 marked regression of carcinomas of the uterine cervix after local hyperthermia. Hyperthermia refers to an elevated body temperature(T_b) and is commonly categorized as mild (T_b=37.7-39.4 °C) to severe (T_b usually greater than 40 °C)[1]. Some degree of hyperthermia

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Research Article

Biotechnology

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INVITRO INVESTIGATION OF ANTIBACTERIAL, ANTIOXIDANT ACTIVITY AND PHYTOCHEMICAL SCREENING OF STEAM DISTILLED FRUIT EXTRACT OF *TERMINALIA CHEBULA*

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ABSTRACT

Nature has provided mankind with several plants which contain natural substances which cure diseases & promote health. Considering its medicinal property, extraction of oil from plant fruit materials of *Terminalia chebula* was used, as it proved to preserve the original qualities of the plant and also causes no degradation of the materials used. Steam Distillation process was used for the extraction of oil at lab scale using the available resources. The present study investigated, the phytochemical screening of *T chebula* extract, it revealed the presence of terpenoids, alkaloids,volatile acids and tannins .The antibacterial potential of fruit extract evaluated against clinical isolates showed the exhibition of antibacterial effect against all isolates. The antioxidant activity tested, showed a maximum inhibition in the range of 75-90% of 1mg/ml of extract and their IC_{50} value was found to be 620 µg/ml. The high content of total phenolic compound (440 µg GAE / mg of extract) revealed the antioxidant activity of the extract.

KEYWORDS: Steam distillation, phytochemical screening, anti microbial activity, anti –oxidant activity, *Terminalia chebula*

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This article can be downloaded from www.ijpbs.net
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RESEARCH ARTICLE

BIOLOGICAL TRANSESTERIFICATION OF POULTRY WASTE TO BIODIESEL USING BACTERIA ISOLATED FROM CHICKEN FEATHER

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Biodiesel, Chicken Feather, Lipase, Transesterificatio

ABSTRACT

With increase in consumption of poultry products, the waste products have been increasing in the poultry market. Disposing this waste has been a challenging task for the industry. As feathers contain 2-12% of fat, it can be used for producing biodiesel. Hence, using feathers as a source of biodiesel is also a solution to waste disposal. Lipase mediated Transesterification process for the production of biodiesel has been developed to overcome the chemical catalysts having several negative impacts on environment and downstream processing of by-products. This study aimed at, isolating bacteria from chicken feathers, extracting extracellular lipase and determining the efficiency in transesterifying the chicken fat from feathers into biodiesel. The data resulted from gas chromatography (GC) revealed the methyl esters of palmitic (C16:0), steric (C18:0), oleic (C18:1) and linoleic (C18:2) acids.

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INTRODUCTION

Globally, the consumption of chicken meat has been continuously increasing. America, Asia and Europe have an approximate share of 38%, 37% and 18% respectively (Smutka *et al.*, 2012). Forecast stated, India's per capita consumption of poultry meat would be 2.2 kg per annum in 2014. This accounted for 16% rise since 2010, which also suggests a steady rise in consumption of poultry meat in India as per USDA International Egg and Poultry in India. Increase in consumption of chicken, increased feather waste production portraying a challenge to poultry industries to dispose waste produced. This waste can be used as source of raw material for producing biodiesel. The live bird weight comprises of feathers about 7-10%. These feathers contain 75-90% crude protein and 2-12% of fat (Kondamudi *et al.*, 2009).

Biodiesel can be produced from the extracted fat of chicken feathers by a process known as Transesterification. Most industries manufacturing biodiesel today, make use of chemical catalysts as they provide higher conversion rate of esters under low temperature, pressure conditions and also have short reaction time. However, the major drawback is the inability to obtain pure products and by-products using chemical catalysts thereby increasing economic investments into downstream processing (Lene Fjerbaek *et al.*, 2008; Kondamudi *et al.*, 2009; Kumar *et al.*, 2013). Biodiesel production using enzyme catalysts can be followed as it has several benefits including no soap formation, esterification of both free fatty acids and triglycerides in one step without need for washing, provision for higher quality glycerol, ability to handle large variation in quality of raw material and ability to work under milder conditions (Ghaly *et al.*, 2010).

MATERIALS AND METHODS

Chemicals

Media and chemicals for isolation and lipase assay like tributyrin, teen 20, ammonium sulphate, gum acacia, NaOH were of high grades and procured from Sigma and Hi-Media Laboratories, India.

Sample Collection

For the present study, chicken feather samples were collected from slaughter houses in Yeshwanthpur and Bone mill, Hesarghatta main road, Bangalore,India, in plastic bags for the isolation of lipase producing organisms and for the extraction of fat.

Isolation and screening of Lipase producing bacteria

For isolation of the lipase producing microorganisms, chicken feathers shredded into pieces and were soaked in sterilized water. It was then serially diluted and plated on Tween-20 media and observed for Zone of precipitation (Kumar *et al.*, 2012).Colony showing zone of precipitation on tween 20 media was selected and subjected on to sterile tributyrin agar media containing 10gms/l Tributyrin, 10gms/l Tryptone, 5gms/l NaCl, 5gms/l yeast extract and 17gms/l agar and incubated at 37^0Cand checked for zone of hydrolysis after 24 hr and 48 hr. Pure culture of these isolate was obtained by repeated streaking and maintained on nutrient agar slants (Kumar *et al.*, 2012; Prasad and Manjunath, 2012).

Identification of micro-organism

The isolate used for the study were selected on the basis of clear zone of hydrolysis on tributyr in agar media (TBA) and identified on the basis of biochemical characteristics according to Bergey's manual of determinative bacteriology.

Extraction and of partial purification of Lipase

Lipase was extracted from the production medium using coconut oil as the substrate, Olive oil 5%, peptone 5gm/l, yeast extract 5gm/l, glucose 5gm/l, NaCl 3gm/l and

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Research Paper

Molecular docking studies of anti-cancerous candidates in *Hippophae rhamnoides* and *Hippophae salicifolia*

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Abstract

Actinorhizal plants contain numerous antioxidants that may play a crucial role in preventing the formation of tumors. H-Ras p21, a member of the Ras-GTPase family, is a promising target to treat various kinds of cancers. An *in silico* docking study was carried out to identify the inhibitory potential of compounds of these plants against H-Ras by using Discovery Studio 3.5 and by using Autodock 4.2. Docking studies revealed that four compounds, isorhamnetin-7-rhamnoside, quercetin-3-glucoside-7-rhamnoside (present in *H. rhamnoides*), zeaxanthin, and translutein (present in *H. salicifolia*) significantly bind with binding energies -17.1534, -14.7936, -10.2105 and -17.2217 Kcal/mol, respectively, even though they slightly deviate from Lipinski's rule. Absorption, distribution, metabolism, excretion and toxicity (ADME/tox) analyses of these compounds and their stereoisomers showed that they were less toxic and non-mutagenic. Amongst them, isorhamntein-7-rhamnoside showed hepatotoxicity. Hence, these compounds can be further investigated *in vivo* to optimize their formulation and concentration and to develop potential chemical entities for the prevention and treatment of cancers.

Keywords: *Hippophae*, H-Ras, cancer, docking, Discovery Studio 3.5, *H. rhamnoides*, *H. salicifolia*

INTRODUCTION

Cancer is a complex disease that is characterized by aberrant cell division. It is caused by genetic variations and many environmental factors. It can invade vital organs and is a major harbinger of imminent patient death throughout the world[1]. Approximately 30% of the tumors are due to oncogenic mutations in any of the canonical *Ras* genes[2]. Ras belongs to the family of small GTPases, which are a group of enzymes that can bind to and hydrolyze guanosine triphosphate (GTP). Essentially, they work as molecular "on/off" switches. The guanosine diphosphate (GDP) bound conformation is the "off" state, and the GTP bound conformation is the "on" state that plays an important role in intracellular signaling which regulates processes such as cell proliferation, differentiation, cell apoptosis, and migration[3]. Hyperactivation of the Ras signaling pathway drives many cancers. The oncogenic mutations in many components of the Ras/MAPK

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Reconfigurable filtering using FFT/IFFT for PLI and High frequency artifacts removal in Real Time ECG Signal

Prajna K B, Padmavathi C

Abstract— Heart related problems are increasing, as the life style of people is improving. ECG signal is an explicit representation of activity of the heart. Different heart related diseases and unusualness in the heart are detected by ECG signal. ECG signals are altered by various noise and artifacts, which degrades the quality of the signal, that affect the proper diagnosis and monitoring. Hence obligatory measures have to be taken remove the noises. Here reconfigurable FFT/IFFT filter is used, that can work as a comb filter or as a band-pass filter that can supress PLI and high frequency artifacts respectively. The main focus is to de-noise the ECG signal; and analysing the performance of the reconfigurable FFT/IFFT filter in ECG de-noising applications. Correspondingly, MATLAB and Verilog simulation results are established.

Index Terms— Reconfigurable FFT filter, PLI, High frequency artifacts, ECG signal, bradycardia, tachycardia, Holter moniter;

1 Introduction

HEALTH care is leading to new trends as the life style of the people is improving. Much of equipment have come ,that can be handled at home, with basic knowledge of the equipment, as result the patient need not stay for long in the hospital and cost of staying in hospital can also be reduced. Long term ECG monitoring can also be done at done with the help of portable ECG device Holter monitor.

These days people are suffering from a lot of diseases, especially heart related problems, irrespective of age group. ECG means Electro-cardio-graphic signals. ECG monitoring is most widely used for detection of many congestive heart failure diseases/ problems. Electrical activity of the heart produces a characteristic wave shape, which is called ECG. ECG signal is composed of 5 peaks P, Q, R, S, and T. P wave being the first part corresponds to depolarization of the atria during atrial systole. QRS complex is the second part, where Q corresponds to slight drop in voltage, R corresponds to a large hike in voltage, and S corresponds to large drop in voltage. This process of QRS generation takes place during Ventricular depolarization. The last part is of ECG signal is T wave which corresponds to repolarization, i.e., the relaxation phase [8]. Fig. 1 and Fig.2 show normal ECG signal and Electrical activity of heart.

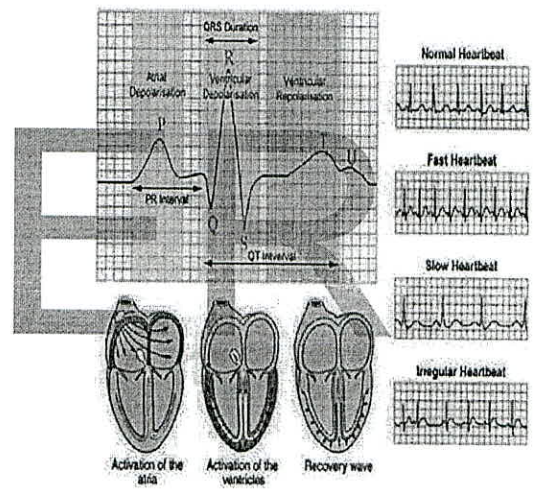

Fig.1 Normal ECG signal (*Source Google*)

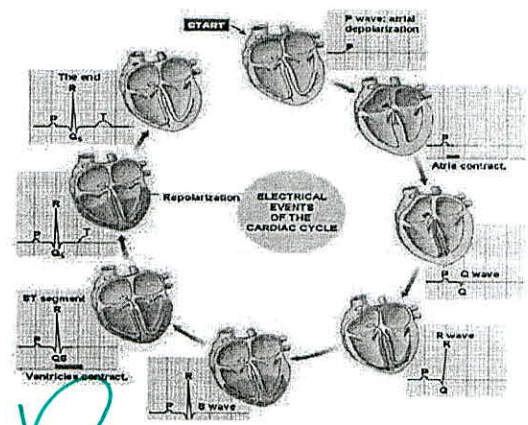

Fig.2 Electrical activity of the heart (*Source Google*)

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DESIGN AND IMPLEMENTATION OF SEEDING AND FERTILIZING AGRICULTURE ROBOT

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Abstract

In modern globalization, many technologists are trying to update a new development based on automation which works very rigidly, high effectively and within short time period. The progressive invention in agriculture system is becoming an important task especially because of rising demand on quality of agriculture products and declining labor availability in rural farming areas. The designed system is seeding and fertilizing agriculture robot using microcontroller. The aim of the designed system is to seeding, fertilizing and soil ph, temperature, moisture, humidity checking. The robot is controlled by remote. The designed system involves navigation of robot to the destination successfully and does the above functions. The direction of the robot is controlled via remote. The robot and the remote system are connected through internet system. 6 DC motors are used for navigation of the robot. The speed of the DC motors is controlled using controller. The solenoid is used to control seeding and fertilizing.

1. Introduction

India's record of progress in agriculture over the past four decades has been quite impressive. The agriculture sector has been successful in keeping pace with rising demand for food. The contribution of increased land area under agricultural production has declined over time and increases in production in the past two decades have been almost entirely due to increased productivity. - Contribution of agricultural growth to overall progress has been widespread. Increased productivity has helped to feed the poor, enhanced farm income and provided opportunities for both direct and indirect employment. The success of India's agriculture is attributed to a series of steps that led to availability of farm technologies which brought about dramatic increases in productivity in 70s and 80s often described as the **Green Revolution** era 1]. The major sources of agricultural growth during this period were the spread of modern crop varieties, intensification of input use and investments leading to expansion in the irrigated area. In areas where 'Green Revolution' technologies had major impact, growth has now slowed. New technologies are needed to push out yield frontiers, utilize inputs more efficiently and diversify to more sustainable and higher value cropping patterns". At the same time there is urgency to better exploit potential of rain fed and other less endowed areas if we are to meet targets of agricultural growth and poverty alleviation. Given the wide range of agro ecological setting and producers, Indian agriculture is faced with a great diversity of needs, opportunities and prospects.

Future growth needs to be more rapid, more widely distributed and better targeted. These challenges have profound implications for the way farmers' problems are conceived, researched and transferred to the farmers. "On the one hand agricultural research will increasingly be required to address location specific problems facing the communities on the other the systems will have to position themselves in an increasingly competitive environment to generate and adopt cutting edge technologies to bear upon the solutions facing a vast majority of resource poor farmers".

The robotic systems play an immense role in all sections of societies, organization and industrial units. The objective of the project is to develop a microcontroller based system that helps in on-farm operations like seeding and fertilizing at pre-designated distance and depths with all applicable.

Traditional Sowing Methods

Traditional methods include broadcasting manually, opening furrows by a country plough and dropping seeds by hand, and dropping seeds in the furrow through a bamboo/meta funnel attached to a country plough (Pora). For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand is practiced. Multi row traditional seeding devices with manual metering of seeds are quite popular with experienced farmers.

2. Proposed system

The measurement of the moisture of soil, temperature of soil and ph value of soil, performing of the seeding and fertilizing in agriculture field is designed in the agriculture Robot. Instead of using line follower, obstacle detecting sensor in the proposed system camera is used for live streaming. Agriculture robot can be control by the internet using raspberry pi. Live steaming can see by computer by typing ip address of raspberry pi and password then it can be control the robot by pressing controlling key in the system. Rhex rover robot is replaced by the wheeled robot.

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THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Efficient Brightness Preserving Enhancement Algorithm for Images in Consumer Electronic Devices

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Abstract:
Image enhancement improves the image quality so that the resultant image is better than the original image for a specific application or set of objectives. Image enhancement is the task of applying certain alterations to an input image so as to obtain a more visually pleasing image. A simple and effective enhancement method, the Histogram Equalization (HE) technique has its major disadvantage of hampering the mean brightness of the image. So, it is not likely to use HE in consumer electronic products. The main objective of this paper is to propose an efficient enhancement algorithm for images in consumer electronic devices which will produce a vivid colored enhanced image with better PSNR. In this regard, a novel technique which is a modification of Minimum Mean Brightness Error Dynamic Histogram Equalization (MMBEDHE) has been proposed.

Keywords: *HE, PSNR, MMBEDHE*

1. Introduction

The goal of image enhancement is to process an image so that the outcome is suitable than the original image for a spe application. This improves the visual interpretability for human viewers and also increases the actuity of information contained w the image. Digital color image enhancement, preserving brightness is an emerging research issue in the field of digital i processing for consumer electronics. Histogram Equalization (HE) is the most reliable, acceptable and commonly applied algorith perform image enhancement. HE also flattens and stretches the dynamic range of image histogram resulting in overall image cor enhancement. In HE, frequently occurring gray levels in the image dominate other gray levels with lower frequency of occurr This results in loss of brightness of the original image. HE is not used in consumer electronics like television, digital camera and v surveillance as it considerably changes the brightness of an input image and it results in undesirable artifacts in the output image apply the image enhancement techniques in consumer electronics, it is recommended that the image enhancement techniques sh be able to maintain the original brightness of the input image in the output image.

In the early researches, there were several attempts on image contrast enhancement to overcome these difficulties.

Bi Histogram Equalization (BBHE) proposed by Kim et al [1] in which image histogram is divided into two parts based on the n value. Dualistic Sub – Image histogram Equalization (DSIHE) [3] method decomposes the images aiming at the maximization o Shannon's entropy of the output image. Recursive Mean Square Histogram Equalization (RMSHE) and Minimum Mean Square Bi – Histogram Equalization (MMBBHE) are the extensions of BBHE.

In all these methods, the brightness preservation was not robust as they were capable of preserving the brightness only to a cer extent. An innovative solution for image enhancement called Minimum Mean Brightness Error Dynamic Histogram Equaliza (MMBEDHE) has been developed by M.F. Hossain et al. This method is based on minimization of the mean brightness error whi used in consumer electronics. MMBEDHE considers two properties: Preservation of brightness and improvement of PS MMBEDHE applies Dynamic HE to partition the input histogram into sub – histograms in order not to contain any dominating pa them. The advantages of MMBEDHE are overall contrast enhancement and very low computational load. So, it is validated t superior to other brightness enhancement techniques mentioned above. Most of the existing image enhancement methods suffer f lack of brightness preservation, produce more brightness errors and need more memory for the enhancement of color image consumer electronics [6].

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Polypropylene Capacitors with High Crystalline Segmented Offer Increased Energy Density

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ABSTRACT: The component of choice for many more DC Filter, energy storage and similar applications for the 21st century is High crystalline segmented metallized polypropylene capacitors are. With the introduction of higher crystalline and higher temperature dielectric, the size of segmented metallized polypropylene capacitors were reduced at least 33 percent while increasing the life expectancy and reducing the costs over previous designs. Higher temperature operation of at least 110°C is also accomplished with this material type. Capacitors are now manufactured using the combined segmented and high crystalline metallized polypropylene technology that allow denser power system packaging and lower manufacturing costs than other capacitor choices.

KEYWORDS: Polypropylene Capacitors, Energy Density.

1 INTRODUCTION

Film capacitors are known to have performance traits superior to other capacitor types. These traits include lower heat dissipation and longer life. For applications requiring large capacitance values in DC applications, aluminum electrolytic capacitors were often chosen over film types because film capacitor volumetric efficiency was not sufficient. Film capacitors are now produced using high crystalline segmented polypropylene that offer energy densities acceptably close to those achieved with aluminum electrolytics.

Most of the size improvements prior to the late 1990's focused on metallization techniques with the greatest improvements in large DC film capacitor banks from segmented polypropylene. This revolution reduced volumes by over 50%. The 21st century brought high crystalline polypropylene with another volumetric improvement of 33% due to increased voltage capabilities. The additive effects of these improvements are large film capacitors in many voltage levels less then one third the size of product produced in the early 1990's.

Polypropylene has become the dominant dielectric for metallized film capacitors. This is due to the large amount of film required to justify any volume manufacturing of a dielectric film and the advantagous dielectric properties of biaxially oriented polypropylene (BOPP) film typically used in capacitors. BOPP has a higher dielectric strength than a major alternative film, PET. This is believed to be because the crystalline phase is aligned in the plane of the film. This puts the electric field in the direction of low conductivity. [1].

The advances in metallization techniques that have been previously adopted included the use of heavy edge metallization. This is where the body is made lighter in metallization to increase voltage capability while the edge remains heavier to maintain current handling capability. Segmented film was subsequently adopted with the major improvements in segmented patterns and deposition processes in the 1990's. Segmented film involves dividing the film capacitor into many

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Situational Analysis of Distributed System and its Effectiveness in Area of Power System

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ABSTRACT
With the rising need of the power supply in the various part of the world along with growing usage of power driven devices, the area of power sector is on constant look out of an effective solution. In this arena, distributed power system has evolved as a great boon to the cater up the needs of the power supply and thereby avoid the occurrences of the power outage. Compared to the conventional power generation system, distributed generation system reduces the cost as well as complexities that occur in power generation and transmission network. This paper performs the situational analysis of the existing system of the distributed power system and reviews some of the frequently adopted techniques along with the brief discussion of existing system to extract the research gap in this area. The outcome of the study will assist the researcher to have better visualization of the contribution of the past studies.

Keywords
Distributed Power System, Distributed Generation, Power Transmission

1. INTRODUCTION
In the area of power generation and supply, distributed network plays a vital role to captivate the dynamic power requirements of the customers. Basically, the power generation system is categorized into centralized and decentralized system. The centralized generations are basically adopted in the industrialized nations where the massive amount of power is generated from natural gas, nuclear, coal, and various plants. However, when it comes to transmission over an extended area, it requires more energy to make up for transmission as well as distribution losses. Although centralized generation has some of its advantage but it cannot cater up the growing demands of the electricity over geographic area. Unfortunately, the literatures have never recognized distributed generation for any formal definition until now [1]. Technically, distributed generation refers to generation of power at the point of consumption. The advantage of using distributed generation is that when the system generates power on the precise location of consumption (decentralized) and not centrally, than it can significantly eliminates the cost, inter-dependences, complexities, as well as inefficiencies associated with the distribution and the transmission system [2]. The importance of the distributed generation of power supply can be elaborated taking the increasing demands of population in our country India. From the last 5 years, India still requires higher demands of electricity with the rise of urbanization and production houses. Even at present, there are various remote parts of India, where either there is no electricity or persistent load shedding exceeding more than intolerable hours sometimes. Because of such scarcity, the cost of electricity went high in our country. Provided quality power supply in such areas is not possible from centralized power system but it requires highly decentralized power supply system. This is because distributed generation has some of the significant advantages [3] as follows:

1.1 Easy Customization
Distributed Generation (DG) is much easier to modify, re-design as well as substitute a smaller module allocated to the unique portion of the power system. Tailoring the supply delivery module in usual load voltages are quite easy as paralleling the desired number of standard power modules required for a specific need.

1.2 Efficient Maintenance
Using DG system, it is quite efficient to perform localization as well as isolation of faults as compared to the efficient parallel system, hot swapping with minimum downtime.

1.3 Standardization
The primary goal of the DG system is to provoke the availability of the standardized modules as well as designs for catering up the power demands of various applications. Hence, better standardization in DG system leads to effective development time as reduced engineering cost.

1.4 Packaging
DG system uses effective and modernized hardware system for high power processing that drastically reduces the greater dimension of the conventional hardware used in power supply system.

1.5 Greater Reliability
DG system offers greater extent of reliability owing to its advanced design of the distribution system. Even with increased used of components in power supply system, DG system offers minimized stress in both thermal as well as electrical component leading to be better reliability.

1.6 Efficiency
DG system offers better reduction in internal resistance as the load voltages reduces and that's why it becomes much more efficient to generate high current with optimal voltage as per the requirement of the customers. It also supports the power demands of the distributed units with massive voltages too.

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Finite Element Analsis of a Diesel Engine Connecting Rod

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Abstract

The connecting rod forms an integral part of an internal combustion engine. It acts as a linkage between piston and crank shaft. The main function of connecting rod is to transmit the translational motion of piston to rotational motion of crank shaft. The function of the connecting rod also involves transmitting the thrust of the piston to the connecting rod. Connecting rod used in automotive engines is a critical component which comes under the influence of different types of loads in operation. Fatigue loading is one of the prime causes contributing to its failure. Failure and damage are also more in connecting rod, so stress analysis in connecting rod is very important. In this study, detailed load analysis was performed on connecting rod, followed by finite element method in Ansys . In this regard, in order to calculate stress in different part of connecting rod, the total forces exerted connecting rod were calculated and then it was modeled, meshed and loaded in Ansys software. The maximum stresses in different parts of connecting rod were determined by analysis.

Keywords: Connecting rod, FEA, Fatigue analysis, Stress concentration factor, Ansys.

Introduction

The internal combustion engine is an engine in which the combustion of a fuel (normally a fossil fuel) occurs with an oxidizer (usually air) in a combustion that is an integral part of the working fluid flow circuit. In an internal combustion engine (ICE) the expansion of the high-temperature and high-pressure gases produced by combustion apply direct force to some component of the engine. The force is applied typically to pistons, turbine blades, or a nozzle. This force moves the component over a distance, transforming chemical energy into useful mechanical energy. Some of the important components of the internal combustion engine are Cylinder, piston, piston rings, connecting rod, crankshaft etc.

Conversion of the piston's reciprocating motion into the rotational motion of the crankshaft is the major function of the connecting rod. Since the connecting rod has two ends, one of its ends is connected to the piston by the piston pin, and the other end moves in a circular shape or revolves with the crankshaft and is separated in a way that it allows it to get clamped around the crankshaft as shown in figure 1. There are different type of loads acting on connecting rod during operation, i.e. axial compressive load, bending loads and inertia loads due to reciprocating masses.

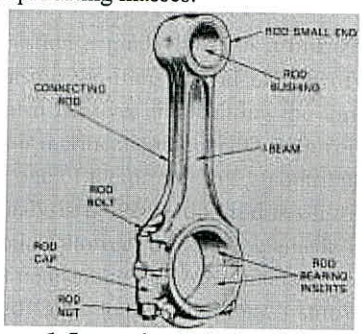

Figure 1 Connecting Rod of an I.C. Engine

Problem definition and methodology

The diesel engine connecting rod is a high volume production critical component. It connects reciprocating piston to rotating crankshaft, transmitting the thrust of piston to the crankshaft. Every engine requires at least one connecting rod depending upon the number of cylinders in the engine. For the analysis of I.C. engine connecting rod the most critical area is considered and accordingly

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A EXPERIMENTAL APPROACH ON GASIFICATION OF CHICKEN LITTER WITH RICE HUSK

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Abstract: In India, the poultry industry is growing at a faster rate. The increase in the demand for chicken meat and eggs has led to the faster growth of the poultry industry. Poultry farms are largely located in rural areas which face scarcity of power. The energy requirements of poultry farms or the poultry industry can be met by utilizing the energy content of the chicken litter through energy conversion technologies. The fluidized bed gasification technique is right choice to utilize chicken litter as energy source. In this paper, a discussion on gasification of chicken litter for different proportions of rice husk is made and was found that the blend of 30% RH and 70% CL was found to yield best quality producer gas.

Key words: Chicken litter, Rice Husk, Gasifier, Fluidized bed Gasification.

I. INTRODUCTION

In India, the poultry industry is growing at a faster rate. The increase in the demand for chicken meat and eggs has led to the faster growth of the poultry industry [1]. India occupies the third position in the world in chicken meat production and the ninth position in egg production [2]. These industries produce a large amount of waste. It has been estimated that 10,000 birds can produce around 137 tons of dried litter per year [3].

Rice husk is an assured bi-product of agricultural production, mainly available in developing countries, as paddy is their primary food product. The husk produced after extraction from paddy is presently utilized for heating and the rest is used in poultry farms for spreading over the beds [4]. The large quantity of husk obtained from rice industries is utilized as building material, for making panel boards and doors, whereas its thermal and physical properties reveal that it can be utilized as an energy source [5]. The annual output of world energy from rice husk is 1.2×10^9 GJ. Nearly 90,000 rice mills are operating in India, which can produce 10 -20 tons of husk per hour. India alone can produce 22 million tons of rice husks per year. Nearly 100 million tons of rice husk are produced worldwide, 90 percent of it being accounted from developing countries [6, 7]. In the poultry farms, the waste is usually available in the form of a mixture of chicken litter, rice husk, saw dust, etc. This waste has to be disposed of in proper manner. Composting is one way of disposal of chicken litter. If the composted litter is scattered across the fields and as a result, mixes with water, nitrate contamination of water results. The consumption of such water by human beings leads to cancer, lung diseases, etc [8]. Hence chicken litter cannot be utilized as a fertilizer. Poultry farms are largely located in rural areas which face scarcity of power. The energy requirements of poultry farms or the poultry industry can be met by utilizing the energy content of the chicken litter through energy conversion technologies. The energetic value of chicken litter ie., 10,256 kJ/kg indicates that the chicken litter can be utilized as an energy source. [9]. Anaerobic digestion is one method of converting chicken litter into energy. The high Ph value of chicken litter decreases the rate of producer gas production from the digester. Hence it is not advisable to utilize chicken litter as an energy source in the anaerobic digestion process [10]. The high moisture content, the high ash content and the low ash fusion temperature renders the fluidized bed gasification technique the right choice to utilize chicken litter as energy source [11]. In this regard an experimental study on gasification of chicken litter with rice is made in a fluidized bed gasifier.

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The Effect of Heat Treatment on the Dry Sliding Wear Behaviour of Grain Refined and Modified Al-7Si-0.45Mg Reinforced with B_4C

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ABSTRACT: In this research paper, Grain refined and modified Al-7Si-0.45Mg cast through liquid metallurgy and reinforced with B_4C was heat treated (T_6). The heat treatment consists of solutionising alloy/composites at 540°C for 9 hours, quenching in water at 70°C and ageing for 5 hours at 180°C. The wear studies were carried out on both heat treated and untreated alloy/composites as per ASTM standards. A quantum enhancement in wear resistance was observed in heat treated alloy/composites compared to alloys/composites without heat treatment. The improvement in wear resistance may be attributed to the change in microstructure due to Grain refinement and modification, uniform distribution of hard particles of Boron Carbide in the matrix and spherodisation of Silicon particles due to Heat treatment.

KEYWORDS: Heat Treatment, Boron Carbide, Dry sliding Wear.

I. INTRODUCTION

Aluminium-Silicon alloys and their composites are known for their excellent combination of characteristics namely, low density, excellent castability, formability, good mechanical properties, cryogenic properties and good machinability. Aluminium and its alloys have wide range of applications particularly in automobile, aerospace and marine sectors on account of their light weight, good surface finish, resistance to wear and corrosion high strength-to-weight ratio. As components with complex geometriescan be produced cost effectively, they find enhanced utility particularly in Aerospace sectors. Reduction in weight due to low density leads to increased load capacity, increased mileage, reduced pollution of environment and higher profits to the manufacturers. The low melting temperature, ease of handling, easy formability, has led to increased demand for aluminium alloy/composites components.

II. MATERIALS

Grain refined and modified Al-7Si-0.45Mg were cast in pre- heated permanent mold in the form of cylindrical rods of diameter 25 mm and length 300 mm. They were further heat treated (T6).Test specimens for hardness and wear were obtained by machining the rods and tested as per ASTM standards.

III. METHODOLOGY

a. Microstructure

Microstructure specimens were prepared as per standard metallurgical procedures, etched in etchant prepared using 90 ml water, 4 ml HF, 4 ml H_2SO_4 and 2g C_r0_3 and photographed using Optical Microscope.

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A Review of Mechanical Characterisation of Friction Stir Welded Magnesium Alloys

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ABSTRACT: Welding is a process of joining similar metals by the application of heat and pressure. Welding process is used commonly to get the advanced properties of the metals like Mild steel, Aluminum, Copper, Magnesium etc. Among these metals Magnesium has the lowest density (1.78 g/cm^3) and it has good mechanical properties like high strength to weight ratio, good damping capacity, and good corrosion resistant compared to Mild steel. But Magnesium is highly flammable which requires gas shielding to prevent the oxidation, which forms Magnesium oxide, an undesirable compound. Friction Stir Welding, a Solid State Welding process uses the heat developed by the rotating tool, due to the friction the heat developed is used to join the metals, where the weld zone temperature zone is comparatively lower than conventional welding .The retention of the mechanical characteristics is achieved in FSW process. But problems in FSW like Pin, Tunnel and Flash defects are produced in weld zone. These problems and Weld quality, microstructure, mechanical characteristics of the weld zone can be controlled by varying the FSW parameters such as Tool rotational speed, Tool traverse speed, Tool Axial force, Tool shoulder to tool pin diameter ratio, tool profile etc. In this project we are going to study the effects of these parameters in Friction Stir Welding of Magnesium alloys.

KEYWORDS: Friction Stir Welding, Tool traverse speed, Tool Axial Force, Tool shoulder to tool pin diameter ratio.

I. INTRODUCTION

Magnesium is sixth abundant material in nature. It is the potential candidates to replace the aluminum alloys in many structural applications owing to some of their own unique properties. Normally, magnesium has the poor corrosion resistance. To increase the corrosion resistance zinc and aluminum is added in the magnesium. It is considered as a advanced materials in terms of energy and environmental pollution.

Constituents of AZ31B alloys

Al	-	2.5 - 3.5%
Zn	-	0.7 - 1.3%
Mn	-	0.2 – 1.0%
Mg	-	balance%

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Mg alloys are having low melting temperature around 650^{0}c.in the conventional Welding process the mg material is melted and solidified. In the time of melting the proper gas shielding is required because the Magnesium oxide is having explosive in nature. So the magnesium alloys have to be welded without reaching the melting temperature. Problems in Conventional Welding were: Hot Cracking .Wide range of Heat Affected Zone, Retention of parent Metal

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Spectroscopic Method for the Determination of Drugs Containing Phenol Group by Using 2, 4- Dinitro Phenylhydrazine

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ABSTRACT

A spectroscopic method has been proposed for the determination of two phenolic drugs; Phenylephrine hydrochloride and Pyridoxine hydrochloride. The method is based on the oxidation of 2, 4- Dinitro phenylhydrazine and coupling of the oxidized product with drugs to give intensely colored chromogen. Under the proposed optical condition, Beer's law was obeyed in the concentration range of 2.5 - 30 μg $mL^{-1}$and 5 – 20 μg mL^{-1} for Phenylephrine Hydrochloride and Pyridoxine Hydrochloride respectively. The limit of detection (LOD) and limit of quantification (LOQ) were 0.3, 1.95 μg mL^{-1} and 0.95, 0.64 μg mL^{-1} in the same order. No interference was observed from common pharmaceutical adjuvants. The suggested method was further applied for the determination of drugs in commercial pharmaceutical dosage forms, which was compared statistically with reference methods by means of t- test and F- test and were found not to differ significantly at 95% confidence level. The procedure is characterized by its simplicity with accuracy and precision.

Keywords: 2, 4- Dinitro phenylhydrazine, Phenylephrine hydrochloride, Pyridoxine hydrochloride and Spectrophotometry.

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Dynamic Channel Allocation Technique for Distributed Multi-radio Multi-channel Multi-path Routing Protocol in Wireless Mesh Networks

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Abstract:Wireless Mesh Networks (WMNs) have gained main attraction in providing flexible network services and support to the end users. There are many efforts seen to design robust routing protocol for WMNs and solutions are proposed to standardized channel allocation techniques. There are various approaches dedicated to maximize the network though put and minimize network interface. Existing multi radio multi channel routing protocols utilize only single channel situation and static channel allocation degrades the performance of the WMNs. The challenge is to allocate channel without link interference and to improve end-to-end throughput efficiency in multipath routing for WMNs. In this paper, we propose a dynamic channel allocation technique is proposed for multi path routing protocol for WMNs. Dynamic channel allocation is used to avoid the inter-flow and intra-flow channel competition and interference. The protocol establishes and maintains multiple channel dimensional disjoint points changing frequently and each data flow is separated into multiple paths. NS2 simulations are carried out for the evaluation of the performance of the proposed channel allocation technique and compared with popular routing protocols of Mesh Networks Ad hoc On Demand Distance Vector Routing Protocol (AODV) and Hybrid Wireless Mesh Protocol (HWMP). The simulation results show that proposed dynamic channel allocation technique achieve better adaptability with less overhead and interference. The multipath routing show increase end-to-end throughput significantly.

Keywords- **Wireless Mesh Networks, Dynamic Channel Allocation, Multipath Routing, AODV and HWMP.**

I. Introduction

Wireless Mesh Networks (WMNs) [1] has become very popular and important in wireless technology and industry fields. WMNs are believed to be a promising technology to offer high bandwidth for wireless access to the Internet. The fixed wireless mesh routers and gateways are highly connected each other in a ad hoc manner in WMN. The normal wireless devices are connected for communication services where mesh routers are equipped with functionalities of IEEE standard series [2]. Mesh router performs the role of data aggregator and also role of relay data gateways. WMN gateways are devices with high bandwidth that can provide internet connections to routers. Data flows can be formed in multi-hop manner from wireless devices through each mesh routers to the gateways, or to other mesh routers and devices in other areas. There are many efforts seen to maximize the network throughput in a multi channel multi radio wireless mesh networks. The approaches of the currently available solutions are based on the static or dynamic channel allocation schemes. Multi-radio wireless mesh networks (MR-WMNs) are being increasingly deployed to provide affordable Internet access on large residential areas. MR-WMNs allow the supported mesh clients (MCs) to access the Internet gateway by multi-hop packet forwarding over the mesh routers (MRs), which can be equipped with multiple radio interfaces [3]. There is a need of hybrid multichannel multi-radio wireless mesh networking architecture where each mesh node has both static and dynamic interfaces.

Multi-channel technique can significantly avoid transmission competition and collision in the same channel. There is no interference among orthogonal channels because they use non overlapping frequency bands. Routing protocols assigning diverse channels to each hop of data flow can reduce intra-flow channel interference and competition therefore can improve end-to-end throughput times. Wireless devices are able to equip more radios which are working in a specified channel. The data is switched and transmitted in specified when radio with antenna is used. This makes transmission full duplex and also provides more efficient routing. Multi-path routing strategies are also designed to split and transmit data through two or more different paths to destination simultaneously. However, multi-path routing cannot achieve times of throughput as we expect since inter-/intra-flow channel competition and interference. Therefore it is required to develop multi-channel and multi-path routing protocol in WMNs.

There are two approaches for channel allocation, static and dynamic approach [4]. Each interface of every mesh router is assigned a channel permanently in case of static channel allocation. An interface is allowed to switch from one channel to another frequently in dynamic channel allocation. Static channel allocation interface does not allow switch the channel and have lower overhead. They completely depend on the stable and predictable traffic patterns in the network. In case of static approach, the required exact traffic profile is known in advance and statistical traffic pattern are assumed. In dynamic approach there is always frequently switching of channel takes place and thus have a higher overhead than static approach. This is approach is more suitable when there is frequent change in network traffic and also traffic is unpredictable. In real time environment, the traffic profile is very complex and

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A Review on Antimicrobial and Antioxidant Properties of Anisomeles malabarica

Mohammad Athiq, Abhishek B, Saranya D, Prashanth Kumar HP, Rohit K C

Abstract

Anisomeles malabarica also known as Malabar catmint is an undershrub which belongs to Lamiaceae family. Found in tropical regions, this plant has an ancient origin of being both anti-microbial and anti-oxidant in nature. The plant extract of this plant can efficiently treat certain diseases like swelling, rheumatism and mild fever. The plant is initially subjected to phytochemical analysis to check the presence of metabolites. Anti-microbial property is made evident by employing agar well diffusion techniques and radical neutralization method is employed to check the anti-oxidant property. Based in the results of these analytical methods the plant can be used in air and water filters for efficient treatment of microbes. The anti-oxidant property can also be used to minimize the effect of smoking on the human body.

Keywords: *Anisomeles malabarica, anti-microbial, anti-oxidant, air filters*

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A REVIEW ON NANO BIOSENSORS AND ITS APPLICATIONS

Abhishek B, Abhiq M, Saranya D

ABSTRACT

Nanotechnology plays an important role in the development of new class of biosensors known as nanobiosensors. The performance and sensitivity of biosensors are improved by using nanomaterials through new signal transduction technologies. The design of biosensors has greatly witnessed significant alterations in the recent days. Firstly; biosensor is a device which converts biological responses as diverse range of applications in many fields like food quality automation, environmental monitoring, clinical applications, diagnostic applications etc. Nanobiosensors commonly comprise of biological recognition molecule immobilized onto the surface of a signal transducer. The development of process and tools used to fabricate and image nanoscale objects has led the interaction of sensors with extremely small molecules which need to be analysed. Nanotechnology has best exciting ingredients for the improvement of sensing phenomenon. The use of wide varieties of nanomaterials ranging from nanoparticles, nanowires, nanorods, and nanotubes has drastically boosted the specificity of the detection system, and its reproducibility in much better way. This paper reviews the various nanostructure based biosensors and their applications.

Keywords: Nanotechnology, nanobiosensors, biological recognition

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Review Paper

A review on scaffolds used in tissue engineering and various fabrication techniques

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Abstract

Developments in the field of tissue engineering has replaced the earlier practice of allograft transplantation by modern approaches like tissue engineering using scaffolds. This has eliminated the occurence of GVHD, which generally occurs in patients who have received tissue grafts. Scaffolds can be fabricated from various materials like hydrogels, natural polymers, hydroxapatite, etc, depending on the tissue to be engineered. They can be engineered using various techniques such as rapid prototyping, electrospinning, etc. Scaffolds of appropriate porosity, fabricated from biocompatible materials can increase the efficiency of cell proliferation. Scaffolds have been used in the fabrication of bone ,cartilage, muscle, neural and skin tissues. They can be seeded with various types of cells such as fibrobalsts, osteoblasts, etc depending on the tissue of interest.

Keywords: graft, polymer, proliferation, scaffolds.

Introduction

The human body consists of a number of tissues which are masses of cells which perform specific functions. They can be of various types such as muscular, epithelial, nervous, connective, etc. They act as building blocks of various organs. These tissues stop functioning normally when they are damaged due to injury, ageing or disease. The damaged tissue has to be replaced to ensure proper functioning of the respective organ. For example, the skin which is responsible for innate immunity of the body by protecting it from harmful microorganisms, chemical substances, etc. can be damaged by disease, burns and other accidents. The damaged skin has to be replaced by healthy skin cells to ensure effective defence against pathogens.

The conventional methods involve tissue transplant which is classified into various types [1] autografts, which involve replacement of the damaged tissue of an individual by healthy tissue from the same individual, allografts, which involve replacement of the damaged tissue by healthy tissue from a non identical individual of belonging to the same species, xenografts, which involve replacement of the damaged tissue by healthy tissue from an organism belonging to a different species and isografts, which involve replacement of the damaged tissue by healthy tissue from an organism which is genetically identical and from the same species.

The number of limitations associated with these methods exceeds the number of benefits. Firstly, the probability of acceptance of these grafts especially allografts and xenografts is very low. The acceptance of a graft is governed by MHC (Major Histocompatibility Complex) [2] which is a protein located on the cell membrane. This complex is called HLA (human leukocyte antigen) in human beings. A graft is accepted if the MHC/ HLA of the donor matches with

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Power Generation from Kitchen and Industrial Waste Water using Microbial Fuel Cells (MFCs) with Graphite Cathode and Anode

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Abstract

Degradation of fossil fuels and increased accumulation of waste water has become the major issue in the world over decades. Microbial fuel cells are one such advancement that makes use of renewable waste sources like dhobi ghats, pond water, domestic kitchen waste water and industrial waste water; and directly convert it into electricity. Microbial fuel cells are electrochemical cells that directly convert chemical energy into electrical energy using microorganisms as a biocatalyst. The two chambered or the H configuration MFC's were used to carry out the voltage studies. Agar medium was used as a salt bridge for the transfer of free electrons from the anode to cathode. Graphite rods were chosen as anode and cathode due to its amorphous nature. SEM analysis was done to check the morphological structure of graphite rods before and after introducing into the MFC's and observed for scaling. The voltages created across the electrodes were tabulated, initially without any substrate observed over a period and later with substrate, the readings thus obtained were compared for increase in voltage created by the waste water considered. The current and power generated by MFC's were evaluated using ohms equations. The power generated was then stored into rechargeable batteries.

Keywords: Microbial fuel cell (MFC's), physical, waste water, electrodes, substrates, graphite, voltage, current

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INTRODUCTION

Significantly every year the global energy demands have increased on fossil fuels; which is unsustainable due to finite supplies from environment. Fossil fuels cause pollution and global warming. A very good alternative for fossil fuel is fuel cells. A basic fuel cell is an electrochemical cell that converts chemical energy from a fuel to electrical energy. In a fuel cell, an oxidation reaction occurs at the anode generating electrons that transfer to the cathode through the external circuit and a reduction reaction occurs at the cathode. These fuels are a good source of renewable form of energy from the waste generated by industries, domestic and agriculture. Numerous efforts have been made to develop different power sources alternatives that are capable of performing in physiological conditions for prolonged lifetime without recharging. In 1791 the earliest discovery between biology and electrical energy was demonstrated by Galvani showing the frog leg twitching from an electric current [1]. Grove in 1839 discovered the first fuel cell, which involved electrolysis of water. Using the microorganism (E.coli) Potter at University of Durham demonstrated the first half-cell [2]. Cohen from University of Cambridge led to one of the major types of biofuel cells, i.e., microbial fuel cells which were connected in series and generated over volts [3]. Development of biofuel cells received a boost in the late 1950s and early 1960s by the USA space program, which led to application of microbial fuel cells as an advanced technology for waste disposals treatment in space flights. Microbial fuel cells were widely applied since 1970s by the concept of using them as biocatalyst [4, 5]. And they also found that by using electron mediators the power output could greatly be improved [6–8]. The instability and toxicity of

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SBT JOURNALS

REVIEW ARTICLE

BIOACCUMULATION OF HEAVY METALS BY FUNGI

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Abstract: Increased industrial activity and demand for heavy metals like copper, lead, mercury, manganese, zinc cadmium and many more has increased the global quantity of heavy metal contaminated wastewater. Current technologies employed to remove metals present in low concentration from waste water through the process like precipitation and ion exchange are often expensive and inefficient. The need for an inexpensive and efficient system has generated interest in the study of biosorption and bioaccumulation processes in fungi as possible systems for metal removal.It is one of the future challenges of environmental biotechnology for metal winning process which are based on closed cycle carried out with ecologically sustainable techniques.

INTRODUCTION

Interaction of toxic electronics waste with fungi has been an important environmental context which is accelerating the natural environment pollution which is of prominent interest because of presence of dominant fungi in metal polluted habitats. The translocation of toxic metals and radionuclides into fruit bodies of edible higher fungi and its significance in the amelioration of metal toxicity, and also the use of fungal biomass for the detoxification of metals or radionuclide containing industrial effluents which can be considered as "Biotechnological Potential".(1,3) Fungi are mainly associated with the production of antibiotics, enzymes and organic acids till today. The ability of the fungi to solubilize great amount of metals from solid materials is the new prospects for the application of fungi. Fungi contribute in detoxification of heavy metals contaminated wastes like sewage sludge and coal wastes. Pyrometallurgical methods are carried out for further application.(4) bioaccumulation also know as passive metal uptake, is metabolism independent uptake of metals by living and non-living biomass. Fungal cell wall contains several functional groups, including carboxyl, amine, hydroxyl, phosphate and sulfhydryl groups. These functional groups act as ligands and confer the ability to chelate metal ions.

ROLE OF DIFFERENT ISOLATES OF FUNGI ON HEAVY METALS

The tolerance to and bioaccumulation of selected heavy metals by filamentous fungi, as a result of natural adaption and improved resistance of fungal cells. Inhibition of biomass production is confirmed in Thirty-nine ectomycorrhizal fungi isolates of paxillus involutus, pisolithus tinctorius, suillus bovinus, s. luteus and s. variegates when tested on heavy metals like cadmium, copper, nickel and zinc amended media at in-vitro tolerance condition(2)White-rot fungi require trace amount of essential heavy metals such as Cd, Mn or Zn for their growth, but these heavy metals are toxic when present in excess. Toxic heavy metals can inhibit the growth of Basidiomycetes and can cause morphological and physiological changes and effect the reproduction. Fungal species and strains differ in their sensitivity and the protection mechanism towards the heavy metals.during the degradation of metals by white rot fungi or isolated enzymes,heavy metals interfere with both the activity of extracellular enzymes involved in the process and fungal colonization.(5)When compared heavy metal polluted site and non-contaminated soils, there was the significant interspecific variation, such asin twenty one isolates were observed in metal tolerance. S.luteus, S. variegates and P. tintorius were more tolerant of Cu, Cd, and Zn when compared with P. involutus, whereas the reverse was true for Ni. A high intraspecific hrterogenity in metal tolerance was also found.EC50values for isolates originating from polluted sites and non contaminated sites werenot statistically different. (6)

Aspergillustereus, Cladosporium cladosporioides, Fusarium oxysporum, Gliocladiumroseum, Penicillium spp., *Talaromyceshelicus* and *Trichoderma koningii* were isolated from heavily polluted industrial area of La Plata, Argentina. The fungi were obtained from the sediments with 0.25-0.50 mg cd/l and they were isolated in cadmium- basal medium. And they were cultivated to evaluate their cd detoxification abilities. About 5-53% of the yield of stirred cultures biomass was developed in static assays for different fungal species, although the cadmium absorption was similar in both the cases. These fungal species could be used in remediation biotechnology to improve the cd detoxification of chronically contaminated habitats. (7) Ericod mycorrhizal fungi can allivate heavy metal toxicity to their host plant. The characterisation of two isolates of *Oidiodendron maius* from mycorrhizal roots of *Vaccinium*

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Dye Sensitized Solar Cells: The Emerging Technology

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Abstract - Dye sensitized solar cell (DSSC) have unique properties of organic and inorganic compound, it is technically and economically different alternative of photovoltaic devices. In DSSCs the two functions are separated i.e. light absorption and charge carrier transport. Light is absorbed by the photo sensitizers and the photons emitted are injected in to the TiO2 film. Dye molecule become oxidized, and it regenerated again by receiving the electrons from the redox ion mediator present in electrolyte.DSSCs are cost effective, nontoxic and work in low light conditions. Harvest more sunlight compared to commercial photovoltaic technologies (crystalline and amorphous silicon, CdTe, or copper indium gallium selenide. This review presents the current state of the field, new concepts of the DSSCs inclusive of hetero junction variants to analyze the futureperspectives for development and current technology.

Keywords - DSSC, Solar cells, TiO_2 film, Dye sensitizer

1. Introduction

A dye-sensitized solar cell (DSSC) is a cost-effective group of thin film solar cells which is based on a semiconductor formed between a photo-sensitized anode and an electrolyte [1]. It has a number of attractive features such as it is simple to construct employing conventional roll-printing techniques. It is semi-flexible and semi-transparent offering a wide number of usability options. In practice it has proven difficult to eliminate platinum and ruthenium in its manufacturing but its usage in all-weather still remains under question. The quantitative conversion of incident photon into electric current is achieved over a large spectral range extending from the ultraviolet to the near Infra-red region. Although its conversion efficiency is less, the ratio to its price to performance is proven to be good enough to allow it to compete with fossil fuel electrical generation [2]. DSSCs provide a technically and economically convincing substitute concept to present day p–n junction photovoltaic devices. The function of light absorption and charge carrier transport is separated here. Light is absorbed by a sensitizer which is anchored to the surface of a wide band semiconductor. The separation of charge takes place through the photo-induced electron injection from the dye into the conduction band of the solid at the interface. Carriers are transported in the conduction band of the semiconductor to the charge collector. The sensitizers having a broad absorption band permits to harvest a large fraction of sunlight [3]. DSSCs split the two functions provided by silicon in a conventional cell design. Normally the silicon acts as both the source of photoelectrons, as well as a provision to separate the charges resulting in the electric field. Here the photoelectrons are provided from a separate photosensitive dye and the bulk of the semiconductor is used only for charge transport. The separation occurs at the surface between the dye, electrolyte, and semiconductor [4]. Dye sensitizer absorbs the incident sunlight and exploits the light energy to induce vectorial electron transfer reaction. It is not sensitive to the defects in semiconductors, easy to form and supports direct energy transfer from photons to chemical energy. The earlier photo electrochemical studies of dye sensitization of semiconductors focused on flat electrodes, but these systems were facing an intrinsic problem. Only the first monolayer of adsorbed dye results in effective electron injection into the semiconductor, but such light-harvesting from a single dye monolayer is extremely small. By application of nanoporous TiO_2, the effective surface area can be enhanced 1000-fold. An intriguing feature in the nanocrystalline TiO_2 film is that the charge transport of the photo-generated electrons passing through all the particles and grain boundaries is highly efficient. Solar cell based on a dye sensitized porous nanocrystalline TiO_2 photo anode with attractive performance was first reported by Gratzel et al. Interest in nanoporous semiconductor matrices permeated by an electrolyte solution containing dye and redox couples has been stimulated by their reports. The power conversion efficiency of the DSSC has been currently improved to 11.5%. Since the first DSSC was reported with efficiency of 7.1% comparable with the amorphous Silicon cells. Large-size DSSC has been prepared on silver grid embedded fluorine-doped tin oxide (FTO) glass substrate by screen printing methods. In DSSC, the initial photo excitation occurs in the light absorbing dye. Nanoporous semiconductors such as TiO_2 not only act as support for dye sensitizer but also function as electron acceptor and electronic

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THE CHARACTERISTICS, TOXICITY AND EFFECTS OF CADMIUM

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ABSTRACT

Cadmium is a heavy metal that occurs as a natural constituent in earth's crust along with Copper, Lead, Nickel and Zinc. Cadmium is vastly used in batteries, coating, plating, alloys etc. in various industries. Humans are commonly exposed to cadmium by inhalation and ingestion. Cadmium enters in air and bind to small particles where it can combine with water or soil causing contamination of fish, plants and animals in nanoform. Spills at hazardous waste sites and improper waste disposal can cause cadmium leakages in nearby habitats. Foodstuffs like liver, mushrooms, shellfish, mussel, cocoa powder and dried seaweed are cadmium rich increasing the concentration in human bodies. Cigarettes contains tobacco smoke that transports cadmium into lungs and then to the rest of the body through blood. The bioaccumulation of cadmium in human body and in food chain leads to acute and chronic intoxications due to biomagnification. Health effects includes diarrhea, stomach pains, Bone fracture, Reproductive failure and possibly even infertility, damage to the central nervous system and immune system, psychological disorders, etc. Cadmium can also cause the transformation of normal epithelial cells into carcinogenic cells by inhibiting the biosynthesis of protein. Cadmium waste streams from the industries end up in soil which can pollute both soil and surface water. The organic matter in the soil absorbs cadmium increasing the risk of survival of various plants and also increases the uptake of this toxic metal in food. This review is about the study of toxicity mechanism of cadmium in human beings and plants and the biological phenomena involved.

Keywords: Cadmium ion, cadmium induced toxicity, cadmium related diseases

INTRODUCTION

Cadmium (Cd) is a silvery-white, soft, ductile chemical metal with atomic number 48 and belonging to the group 12 element in d block and period 5. It was discovered by German chemist F.Strohmeyer in 1817 as a constituent of smithsonite ($ZnCO_3$) from zinc ore. Electronic configuration of the cadmium is [Kr] 4d10 5s2. Cadmium concentration in the earth crust is 0.15ppm and the most common cadmium mineral is greenockite (CdS).[1] Cadmium is recovered as a by-product from sulfide deposits, mainly those containing lead, zinc, and copper. Cadmium level in human increases with the age, it reach to an average of about 30mg in the age range 40-50 and after that decreases slightly. [2] Cadmium is hazardous to both environment and human beings. Cadmium present in atmosphere, water, or food when exposed to human in low concentration cause serious health problems and probably the death.[1] Sources of cadmium human exposures are fossil fuels, iron and steel production, cement nonferrous metals production, waste incineration, smoking, fertilizers, etc. Activities like volcanic eruption, mining and use of phosphate fertilizers provides cadmium exposures indirectly as toxin from earth crust. Plants take up cadmium from the soil and form the major source of cadmium intake in non-smoking, non-occupationally exposed populations. There is a significant use of this heavy toxic metal in batteries, pigments, coating, plating, PVC stabilizers and alloys in industries. [3]Renal disease and emphysema are observed in the workers working in battery plant due to the inhalation of the cadmium oxide dust over a long period of time. Due to excessive intake of cadmium in water and rice and low intake of calcium and vitamin D, there is effect in pregnancy and lactation. Cadmium in small amount absorbeKd in the kidney cause proteinuria when kidney concentration reaches a certain value. Interaction between Cd, Cu and Zn results in cadmium toxicology [4]. Cadmium is also adsorbed

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The Importance, Extraction and Usage of Some Floral Wastes

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Abstract - In most of the developing countries like India, the floral waste generation occurs largely during functions, worships, ceremonies, festival etc. Degradation of floral waste is very slow process but it causes cell and worm development at the sites. Floral waste degradation also increases the demand for agro-based products. Solid wastes comprise of various organic and inorganic materials, covering or peels of various vegetables, fruits and cooked materials. It facilitates the proliferation of various group of microbial flora, which may be pathogens. The fertilizers are used to improve the fertility of the land using biological wastes. The present review deals with the various extraction methods of floral wastes. It results outcomes in the form of different useful products and its importance in various fields.

Keywords - Floral waste, Degradation, Proliferation, Bio-fertilizers, Vermicomposting

1. Introduction

Huge amounts of flowers are offered in temples in India creating a large amount of flower waste. The temple wastes are released in the water bodies or dumped at the available places of land which creates severe environmental pollution and health hazards. Many studies have also emphasized on the importance of N, P and K in enhancing the natural ability of plants to resist stress from drought and cold, pests and diseases (Debosz *et al.*, 2002; Cao *et al.*, 2007). Essential plant nutrients such as N, P, K, Ca, Mg and S are called macronutrients, while Fe, Zn, Cu, Mo, Mn, B and Cl are called micronutrients. It is necessary to assess the capacity of a soil to supply the lacking amounts of needed plant nutrients. This is also important to produce a good bio-fertilizer formulation and to supply nutrients that can improve soil health and fertility of plant. Most of the floral wastes are nowadays used with cattle and human wastes in order to act as organic manures with the help of vermicomposting. This process helps to minimize the decomposition rate (Shouche *et al.*, 2011; Aligiannis *et al.*, 2001). Floral wastes can obtained as fruits, leaves, stem, bark, flower petals and root fibres etc. These floral components of the plants can be widely used in commercial and domestic backgrounds considered as organic in nature.

2. Role and Importance

Anti-microbial activity: The essential oils like carvacrol, terpinen-4-ol, linaloolo, sabinene,α-terpinene, and γ- terpinene are obtained from the aerial parts of *Origanumscabrum* and *Origaummicrophyl*, oils obtained from these organism exhibits a good profile of antimicrobial activity (Aligiannis *et al.*, 2001). *Rosmarinusofficinalis*also plays an important role in antimicrobial activity mainly contains 2, 2-diphenyl-2-picrylhydracyl hydrate (DPPH). Rosemary extracts showed a high radical scavenging activity. Methanol extract containing 30% of carnosic acid, 16% ofcarnosol and 5% of rosmarinic acid was the most effective antimicrobial against Gram positive bacteria (Jadhav *et al.*, 2013; Moreno *et al.*, 2006). *Rosmarinusofficinalis*is used for the extraction of oil which are tested against the three bacteria like *Pseudomonousaeruginosa, Staphylococcus aureus, Escherichia coli* for antimicrobial activity (Bedin *et al.*, 2009).

Anti-inflammatory activity: The species *Achillea ageratum* is a plant of the mediterranean region, has been widely used in medicine mainly for anti-inflammatory activity in digestive disease. Besides the analgesic, antipyretic and inflammatory activities of choloroform contains terpenic compound mainly β-sitosterol and stigmasterol are more effective as topical anti-inflammatory agents in acute than in the chronic process and their action is markedly influenced by the inhibition of neutrophil migration into inflamed tissue (Gomez *et al.*, 1999).

Common uses: Air fresheners are common commercial products used to create pleasant odour. Some air fresheners are proprietary blend of Vanillin (Vanilla), *Citrus Sinensis* Peel (Sweet Orange), *Artemesia Pallens* (Davana Flower), Citrus Grandis

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Review Article

Health effects caused by metal contaminated ground water

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Abstract

The main threats to human health are associated with the exposure to heavy metals like lead, cadmium, zinc, manganese, copper, nickel, chromium, mercury and arsenic. Even though adverse health effect due to heavy metals is known, still exposure continues the same in most of the developing countries. Cadmium found in low concentration in rocks, coal, and petroleum, enters the groundwater and surface water through industrial discharge, metal painting by which it replaces the zinc biochemically in the body and causes high blood pressure, liver and kidney damage and anemia. Cadmium emission is increasing dramatically as it is not recycled and often dumped along with the household waste. The general population is exposed to mercury through food; fish is the major source of methyl mercury exposure and dental amalgam. Lead enters environment from industry, mining and as a water additive; Affects red blood cell chemistry, delays normal physical and mental development in babies and young children, increase in blood pressure in some adults. In ground water used as drinking water, arsenic concentrations ranged from 0.1–1340 μg L^{-1}. Exposure to the arsenic is mainly through food and drinking water which has the high risk of cancer of lung, skin, bladder and kidney, skin lesions such as hyperkeratosis and pigmentation changes.

Keywords: heavy metals, health effects, metal toxicity

1. Introduction

Heavy metals constitute a very heterogeneous group of elements widely varied in their chemical properties and biological functions. Heavy metals are kept under environmental pollutant category due to their toxic effects on plants, animals and human being. Anthropogenic activities such as mining, smelting operation and agriculture have locally increased the levels of heavy metals such as Cd, Co, Cr, Pb, As and Ni in soil up to dangerous levels. Heavy metals have largest availability in soil and aquatic ecosystems and to a relatively smaller proportion in atmosphere as particulate or vapors. Several heavy metals are considered toxic metals due to adverse human health effects, when taken in excess.

Heavy metal toxicity in plants vary with plant species, specific metal, concentration, chemical form, and soil composition and pH, as many heavy metals are considered to be essential for plant growth few metals like Cu and Zn serve as the co-factor and activators for the enzyme reactions. Some of heavy metal such as Cd, Hg and As etc. are strongly poisonous to metal sensitive enzymes, resulting in growth inhibition and death of organisms. Heavy metals which are categorized as class B metals that come under non-essential trace elements, which are highly toxic elements such as Hg, Ag, Pb, Ni. These heavy metals are persistent, bio accumulative and do not readily breakdown in the environment or not easily metabolized. Such metals accumulate in ecological food chain through uptake at primary producer level and then through consumption at consumer levels. Heavy metals such as Cd, Ni, As and Cr pose a number of hazards to humans.

Heavy metals are also potent carcinogens. Mercury intake leads to mina Mata disease and Arsenic causes poisoning due to drinking water contamination. The essential heavy metals (Cu, In, Fe, Mn and Mo) play biochemical and physiological functions in plants and animals. Two major functions of essential heavy metals are: (a) Participation in redox reaction, and (b) Direct participation, being an integral part of several enzymes. Vapor form of heavy metals such as As, Cd, Cu, Pb, and Sn

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Original Research Article

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PRODUCTION OF BIOETHANOL FROM AN AGRO WASTE, PROCESSED *ARECA CATECHU* WATER

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ABSTRACT

Bioethanol is a promising potential renewable energy to petroleum-derived transportation fuel. Ethanol can be produced from a variety of biological sources. Lignocellulosic biomass has been suggested as the most promising alternative for the traditional starch feedstock. Areca nut processed agro waste water is an attractive biomass for bioethanol production due to carbohydrate contents. The biochemical tests of Areca nut agro processed water showed the presence of more of cellulose in the raw material. Saccharification was better When the enzymes, cellulase and amylase were used for hydrolysis, than acid hydrolysis (23.5 mg/ml Glu). The bioethanol production revealed that SSF (Simultaneous Saccharification and fermentation) (11.6 g/L ethanol) process is better as compared to SHF (Separate Hydrolysis and Fermentation) process (9.25 g/L ethanol) in bioethanol production. First time we are showing that the Areca nut processed agro waste water is an attractive biomass for bioethanol production due to its higher carbohydrate contents.

KEY WORDS: *Areca catechu*, Bioethanol, Hydrolysis, Fermentation, Enzymes, Saccharification.

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Fatigue Analysis of A Panel Consisting Of Window Cutout and Frames in the Fuselage of A Transport Airframe

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Abstract - ***Aircraft is a complex mechanical structure with a very high structural safety. Aircraft will rarely fail due to a static overload during its service life. As the aircraft continues its operation, fatigue cracks initiate and propagate due to fluctuating service loads. To ensure airworthiness of an aircraft during its entire economic service life, fatigue and damage tolerance design, analysis, testing and service experience correlation play a vital role. This paper deals with the problem of stress analysis of a fuselage panel. The panel consists of a window cutout and stiffeners on either side of the cutout. The maximum tensile stress location will be identified in the panel. MSC PATRAN and MSC NASTRAN will be used for the static stress analysis.***

In a structure like airframe, a fatigue crack will appear at the location of high tensile stress. Further these locations are invariably the sites of high stress concentration. Therefore, the first step in the fatigue design of an airframe is the identification of high tensile stress. This is facilitated by a local refined FEA. This is followed by an estimation of the local stress at the highest stress concentrator. In the second phase of this paper the problem of prediction of life to fatigue crack initiation under the constant amplitude service loads will be addressed.

Key Words:

1. Introduction

Aircraft is a complex mechanical structure with a very high structural safety. The major aircraft structures are Wings, fuselage, and empennage. The primary flight control surfaces, located on the wings and empennage, are ailerons, elevators, and rudder. These parts are connected by seams, called joints. All joints constructed using rivets, bolts, or special fasteners are lap joints. Fasteners cannot be used on joints in which the materials to be joined do not overlap - for example, butt, tee and edge joints. A fayed edge is a type of lap joint made when two metal surfaces are butted up against one another in such a way as to overlap.

The largest of the aircraft structural components, there are two types of metal aircraft fuselages: Full monocoque and semimonocoque. The full monocoque fuselage has fewer internal parts and a more highly stressed skin than the semimonocoque fuselage, which uses internal bracing to obtain its strength.

The full monocoque fuselage is generally used on smaller aircraft, because the stressed skin eliminates the need for stringers, former rings, and other types of internal bracing, thus lightening the aircraft structure.

The semimonocoque fuselage derives its strength from the following internal parts: Bulkheads, longerons, keel beams, drag struts, body supports, former rings, and stringers.

1.1 Bulkheads

A bulkhead is a structural partition, usually located in the fuselage, which normally runs perpendicular to the keel beam or longerons. A few examples of bulkhead locations are where the wing spars connect into the fuselage, where the cabin pressurization domes are secured to the fuselage structure, and at cockpit passenger or cargo entry doors.

1.2 Longerons and Keel Beams

Longerons and keel beams perform the same function in an aircraft fuselage. They both carry the bulk of the load traveling fore and aft. The keel beam and longerons, the strongest sections of the airframe, tie its weight to other aircraft parts, such as power plants, fuel cells, and the landing gears.

1.3 Drag Struts and Other Fittings

Drag struts and body support fittings are other primary structural members. Drag struts are used on large jet aircraft to tie the wing to the fuselage center section. Body

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DEVELOPMENT OF ENERGY SAVING METHOD IN GAS HEATING USED FOR PRESSURE COOKER ON A GAS STOVE BY REDUCTION OF HEAT LOSSES

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ABSTRACT

This paper aims to present an experimental data which clearly establishes the possible energy and fuel savings in the conventional LPG stove heating abundantly used in cooking of foods. The heat losses occurring in pressure cooking by LPG gas stove configuration are measured. Few lay moulded and suitably configured insulation devices are used to reduce the heat losses. Using these designed insulating devices, the reductions in heat losses are measured. The results and analysis carried out indicate energy savings of ~5 to 10%. Taking into account the large quantity of LPG gas consumed everyday (~ 10 to 20 tonnes per day in Karnataka alone) this can lead to enormous savings in fossil fuel consumptions, as the fossil fuel resources are getting depleted gradually.

I. INTRODUCTION

Gaseous fuel such as Indane (LPG) gas is used abundantly for gas stoves in India in cooking (both for domestic and commercial establishments). Even a small percentage saving in consumption would lead to large fuel economy. LPG gas is a mixture of Butane and propane and has a calorific value of ~ 94 MJ/M^3

The gas stoves presently being used for cooking and pressure cooker used do not take care of certain heat losses that occur. This study was conducted as a part of Graduate level students Project work at Sapthagiri college of Engineering, Bangalore, Karnataka state.

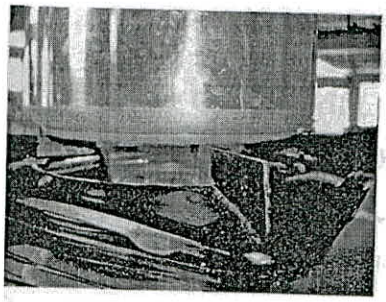

Fig. 1

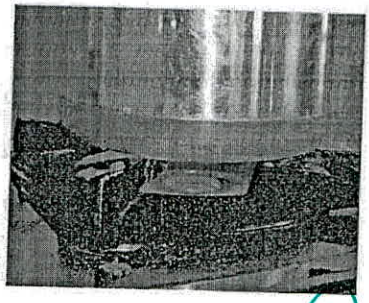

fig.2

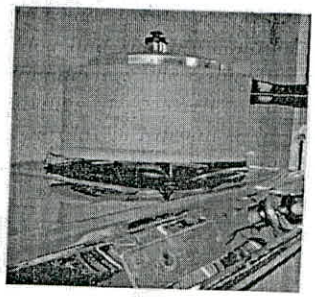

fig.3

Fig 1 shows an uncoated cooker in heating, **Fig 2** shows copper bottom cooker in heating **Fig 3** shows insulation mould around cooker in heating.

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Biogas from Biodegradable Kitchen Waste

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biogas; scrubber; methane;hydrogen and Carbon dioxide

This paper describes about production of biogas from biodegradable waste, an energy resource for the next generation in the upcoming future. The paper defines taking biogas production using kitchen waste into account, explains the need for biogas, and outlines the benefits of biogas, taking facts and figures into consideration. Biogas can be the future resources which are much more ecofriendly and safer to use, leading to a greener tomorrow. Today world is on the verge of major disaster due to the use of conventional fuels as primary fuels. In order to avoid it, it has become our top priority to come with such eco-friendly and flourishing alternative fuels which are available in abundance and easy to harness and can be used as primary fuels of future. This biogas plant can be replicated in an available smaller space and in advocate temperatures. It concludes that to increase the production of biogas from kitchen waste, rice waste should mix with cow dung in 3:2 ratio, with considerable lesser amount of other kitchen waste and also by maintaining the pH of 6.2-6.5. Calorific value is increased by passing the produced gas through scrubber. The calorific value which we obtained is 32.21MJ/kgk which good enough to reduce the requirement of LPG.

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journal

Discovering Coherent Association Rules using Propositional Method

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Abstract— Another system for Information mining through which fascinating association rules called reasonable guideline can be found. Lucid guidelines are those rules that can be mapped to sensible comparability as per propositional method. In the event that positive intelligent standards are found, then nega-tive rational principles between the nearness and nonatten-dance of the same thing sets won't happen and the other way around. The pseudo ramifications of equivalences can be further characterized into an idea called Reasonable Guidelines. The disclosure of coherent rules from exchange records sort of dataset is called Market Basket Analysis. The proposed work provides a framework for discovering coher-ent rules offers a technique for data mining that overcomes the limitationsnassociated with existing methods and enables the finding of association rules among the presence and ab-sence of a set of items without a preset minimum support threshold.

Key words: Information Mining, Association Rule, Coherent Rule, Propositional Method, Minimum Support, Market Basket Analysis

I. INTRODUCTION

With the introduction of the PC, scientists were given the force and comfort to investigate and find intriguing and non-evident information from expansive databases. The procedure of getting this learning through the PC is known as Information Mining. The prominence and significance of information mining has its roots in two causes: the always expanding volume of in-formation and calculation power. The measure of data on the planet duplicates like clockwork. Business exercises, for in-stance, keep on producing an expanding stream of information which is put away in bigger and less expensive information stockpiling [1]. Meanwhile, the computational force accessible keeps on expanding. The result of the expanding volume of information and computational force is a chance to make information mining applications taking into account calculations to find intriguing learning from extensive volumes of information.

A. Market Basket Analysis

Various capacities are utilized as a part of information mining including, for instance, join examination, expectation and perception. A connection examination commonly finds the information of "what runs with what" and "what takes after what". The last is called arrangement investigation and recognizes a grouping of occasions, while the previous is known as fondness examination [2]. A case of fondness examination in the retail division is the Business sector Wicker container Investigation (MBA). Given an arrangement of retail exchange records, a MBA discovers relationship between the diverse things that clients place in their shopping market crate. A few things are frequently bought together and different things are most certainly not. For instance, thing A is frequently acquired together with thing B. Finding these associations portrays clients' purchasing propensities. Knowing such associations helps a retailer to devise successful promoting techniques. An advancement to build the offer of any one thing inside an association could expand the offers of another thing.

One great way to deal with finding the examples that go together is by means of the backing and certainty system proposed by Agrawal, Imielinski and Swami. Utilizing this structure, designs that can be watched every now and again in an arrangement of exchange records are recognized. To distinguish these examples, the system requires a client to preset an edge that isolates as of-ten as possible watched designs from rare examples. This limit is known as a minimum support. Later, arrangements of things that have seemed together over this minimum support are looked. Decides that interface two arrangements of much of the time watched things that have seemed together over a support are found and a second measure of interestingness, for example, certainty [3].

B. Motivation

Finding a complete arrangement of association rules in infor-mation mining. The unfavorable impacts of settling on choice taking into account deficient data can be exorbitant to an association. The unfavorable impacts are an outcome of the accompanying reasons:

1) It is misdirecting to report an inadequate arrangement of te-nets and in the meantime make a feeling that all accessible stan-dards have been found. This circumstance deludes a chief into imagining that just these guidelines are accessible which thusly will lead a leader to dissuade fragmented data. Dissuading fragmented data while not realizing that it is deficient may prompt wrong choices [4].
2) Because of the substantial measure of tenets accessible, a client regularly designs an association rule mining calculation to yield just the most grounded guidelines. It is dangerous to make examination in view of the reporting of the most grounded accessible standards from the computational pursuit that does not cover a complete arrangement of guidelines [5]. There is no assurance that the most grounded association rules found are in reality the most grounded when different standards that might be covered up are considered. It is conceivable that the most grounded tenet lies among the shrouded rules. This circumstance can again prompt a basic leadership unconsciously reaching mistaken determinations about the relationship among things in a dataset.
3) Reporting an association that disregards the nonattendance of things in a given exchange record amid the information mining procedure is deluding. For instance, to report that thing A is connected with thing B is deceiving if a more grounded association can be

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Maximizing Accuracy of Electricity Load Forecasting with Deep Learning

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Abstract— Electricity is one such kind of energy that cannot be stored for a longer duration. The excess production than what is required can cause wastage where as the limited production can lead to scarcity. Thus, it is important to have a balanced production and consumption of electricity. Predicting the consumption that could occur in advance can help in this regard. The work involves generating more accurate predictions with the aid of deep learning. Initially, the neural network is made to learn from the historical data based on which it is expected to produce predictions for a new data set. The number of hidden layers and the hidden neurons is adjusted so as to get the minimum error. The accuracy of prediction is measured in terms of root mean square error (RMSE) and correlation coefficient. The number of hidden layers is increased gradually and accuracy of prediction is measured and compared with different network configurations.

Key words: Deep learning, Electricity load forecasting, Neural networks, RMSE

I. INTRODUCTION

In recent days, neural networks have gained wide importance in solving problems related to pattern recognition, classification, digital signal processing and many more. Even though concept of neural networks was introduced decades ago, it has now come to limelight due to many successes.

The concept of neural networks is based on the idea of making a machine learn from the previous historical data, observe patterns and work efficiently based on the prior experience when exposed to new data. The actions to be taken are adjusted depending on the patterns observed. A feed forward neural network which has more number of hidden layers is an example of deep architecture.

Deep learning can be defined as a branch of machine learning which comprises of visible layers of input and output and more than one hidden layer [1]. Deep neural networks require a huge set of data to work well. Thus it can be used for forecasting the electricity load because of the availability of historical data of load. This kind of historical data is categorized as time series data as it consists of a sequence of data points, which is measured successively over a regular interval of time.

II. RELATED WORK

The important characteristic of a neural network is its ability to learn from the environment and improve the performance through the experience gained from the learning process. Deep learning is said to add on to the accuracy by allowing the network to learn in depth through its multiple layers of hidden units. There has been an extensive research carried out in various areas such as weather forecasting, wind prediction, stock prediction and many more.

Xiao Ding et al [2] adopted deep learning method for stock market prediction. The work presents extracting events from news text and the training is carried out. It is claimed that this system is more capable than the previously reported ones in making profits.

James N.K Liu et al [3] apply deep learning to process massive weather data that involved millions of atmosphere records. The results of the work show that the deep neural network is able to give better predictions and thus deep neural networks can be the potential tools for time series problems.

Thomas Unterthiner et al [4] used deep learning for toxicity prediction. The major goal of the work was to identify toxicophores which are the sets of steric and electronic properties that combine to produce toxicological effect. The work proved that the deep neural networks outperformed all other traditional approaches.

Mladen Dalto et al [5] present the application of deep neural networks for ultra short term wind prediction over various locations. The results of the work prove that the deep neural networks provide increased efficiency over shallow neural networks.

III. METHODOLOGY

The work presented here is intended to know what accuracy a neural network can produce for forecasting electricity load data with different configurations of the network. The deeper networks are expected to produce greater accuracy of prediction. The methodology adopted for carrying out the work is as shown in Fig. 1.

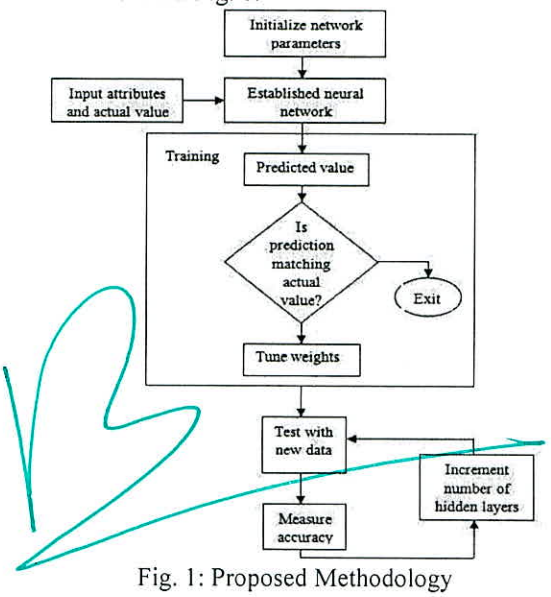

Fig. 1: Proposed Methodology

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"Effect of Fiber Volume on Mechanical Properties of Alkaline Treated Unidirectional Long Kenaf Fiber with Egg Shell Powder Reinforced Polymer Matrix Composite"

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Abstract - **Recently due to increasing interest in eco-friendly materials, studies on ecofriendly fiber obtained from nature have been actively conducted to the area of composite. Natural plant fibers like Jute, Sisal, Coir, Kenaf, Flax, Hemp, Sugarcane Bagasse, Bamboo pineapple leaf and Banana are typically used in composites as a reinforcing material either as continuous (very long) or discontinuous (chopped) fibers due to their low cost, high tensile strength, low thermal expansion, high strength to weight ratio, renewability, biodegradability and exponential growth. Although, the natural fiber has less strength than the synthetic fiber such as carbon fiber, it has similar strength to glass fiber. Accordingly, it can apply as very advantageous composite when an appropriate resin has been selected. Environmental concerns are now driving demand for recycled polymer (Thermoplastics) such as Polypropylene (PP), Poly Ethylene (PE), Polystyrene (PS), Polyethylene Sulphide (PPS), and Polyolefin etc. For various applications, especially in automotive and aircraft industries. The specimens are prepared according to ASTM standards and the different values are observed. Here filler material used is Egg powder which enhances the tensile property of the material.**

1.0 INTRODUCTION

The composites industry has begun to recognize that the commercial applications of composites promise to offer much larger business opportunities than the aerospace sector due to the sheer size of transportation industry. Thus the shift of composite applications from aircraft to other commercial uses has become prominent in recent years. Increasingly enabled by the introduction of newer polymer resin matrix materials and high performance reinforcement fibers of glass, carbon and aramid, the penetration of these advanced materials has witnessed a steady expansion in uses and volume. The increased volume has resulted in an expected reduction in costs. High performance FRP can now be found in such diverse applications as composite armoring designed to resist explosive impacts, fuel cylinders for natural gas vehicles, windmill blades, industrial drive shafts, support beams of highway bridges and even paper making rollers. For certain applications, the use of composites rather than metals has in fact resulted in savings of both cost and weight.

1.1Definition of Composite

A composite material is defined as the combination of two or more macro constituent materials, which are essentially insoluble into each other such that the properties of the combination are better than the sum of the properties of each constituent taken separately. The objective of this combination is to derive the best qualities of the constituent materials. These composites exhibit desirable qualities, which the constituents themselves may not possess.

1.2types of Composites

In a broad way composite materials can be classified into three groups in the basis of matrix materials. They are:

1. Metal matrix composites (MMC)
2. Ceramic matrix composites (CMC)
3. Polymer matrix composites (PMC)

1.2.1metal Matrix Composites:

These composites have many advantages over monolithic metals like higher specific strength, higher specific modulus, better properties at elevated temperatures, and lower coefficient of thermal expansion. Due to these attributes metal matrix composites are under consideration for wide range of applications.

1.2.2ceramic Matrix Composites:

One of the main objectives in preparing ceramic matrix composites is to increase the toughness. Naturally it is hoped and also it is found that there is a contomitant improvement in strength and stiffness of ceramic matrix composites.

1.2.3polymer Matrix Composites:

Most commonly used matrix materials are polymeric. In general the mechanical properties of polymers are inadequate for many structural purposes. Generally their strength and stiffness are low compared to metals and ceramics. To overcome these difficulties other materials are reinforced with polymers.

Two types of polymer composites are:

- Fiber reinforced polymer (FRP)
- Particle reinforced polymer (PRP)

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HARDWARE IMPLEMENTATION OF ARTIFICIAL NEURAL NETWORKS USING BACK PROPAGATION ALGORITHM ON FPGA

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Abstract

In order to handle problems such as massive parallelism, Fault tolerance, self learning, adaptivity, computational complexity researchers have developed intelligent system such as artificial neural networks. ANN(Artificial neural network) addresses the issues related to pattern recognition, prediction, associative memory and control. It mimics the human biological neural network and has a human like learning ability and is inspired by its structure, processing method and its learning ability like a human brain. Different algorithms are proposed by the designers to train the neural networks, among those Back propagation algorithm in its gradient descent form is widely used algorithm which provides better performance. Verilog coding is done for ANN and Back propagation training algorithm . The functionality of Verilog is verified by simulation using ModelsimSE 6.3F Simulator. The Verilog code is synthesized using Xilinx ISE 14.7 tool. Finally ANN and Back propagation algorithm was successfully implemented.

Keywords: *ANN, Back propagation algorithm, Fuzzy logic, Synapses*

---

1. INTRODUCTION

ANN also known as neural networks are the systems which has human like learning ability. It replicates the human biological neuron system. The gained information is stored in internal elements called synapses. It can be used for classification, pattern recognition, weather forecasting, medical science etc. ANN finds major application in the field of image processing. Very complex relation between the input set and the output set can be handled using ANN. They also have the advantages of self learning, adapt easy to the situations, flexibility which make them suitable for noise classification. Many algorithms are proposed to train the ANN among those BPN(Back propagation algorithm) is widely used. In BPN the errors are propagated in backward direction and the weights are updated. Weight Updation may take several iterations until the difference in the actual and obtained value becomes zero. Neuro-fuzzy model are neural network based fuzzy system where ANN is used for processing of data and fuzzy sets are used to handle the randomness. They are also used in image processing for various applications such as classification, enhancement, edge detection, segmentation. The fuzzy sets are controlled using neural networks with a pair of inputs and outputs. First the system behaves as ANN which is trained with suitable algorithm and at execution time it behaves like fuzzy. Generally the neural chip is implemented using ANN which is trained using software but this makes the chip fixed without further modifications. In order to overcome this limitation learning algorithm in ANN can be implemented using hardware. The selection of training algorithm depends on hardware implementation, so training sets which occupies less FPGA area is most suitable. So gradient descent BPN in its steepest form is considered. The FPGA implementation of the proposed method gives better performance compared to the existing methodologies.

2. DETAILS EXPERIMENTAL

2.1 Artificial Neural Network

ANN is the model which computes the complex relationship between inputs and the outputs. It is a non-linear modeling tool. The basic computing elements are neurons. They are responsible for processing of information through interconnection. They are non-linear data modeling tools which are used for patterning the data, classification etc. There are basically two types of learning algorithm: Supervised learning and unsupervised learning. In supervised learning the inputs and outputs are known prior to the computation whereas in unsupervised learning is similar to learning without a teacher. From the below figure it can be seen that the neural network consists of input layer, hidden layer and output layer. Initially all the calculations from the input sets are carried towards the output layer through the hidden layer. Each neuron is a combination of a summer and a activation function. Initially the inputs from the input layer are multiplied with the weights and given to the hidden layer where the multiplied values are summed up and given to activation function. In the proposed model sigmoidal activation function is used

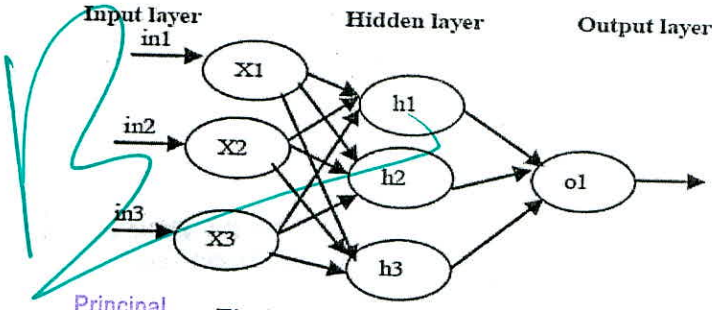

Fig 1: Neural network structure.

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Packet Switched Wormhole Router Design and Low Latency Adapter Design for NOC Architecture and Its FPGA Implementation

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Abstract— As growth in an integrated technology the number of processing elements used in single chip increases, which causes the interconnection of elements in a chip is complex using conventional bus based system. A network on chip (NoC) is new paradigm for communication between components in a system on chip. Other aspect is the speed of communication between nodes gets reduced, for this reason various routing algorithms and switching techniques are introduced, amongst selection is a main criteria. In this project wormhole switching with XY routing algorithm is used. The speed of the communication between components is increased though adapter design. In this project wishbone architecture is used to communicate between nodes. The Mesh topology is used to reduce the network congestion problems in NoC. IP cores and adapter are designed using Wishbone Protocol to communicate with NoC nodes. The design will be implemented using Artix-7 FPGA board. ISim tool is used to simulate and test the system.

Key words: System on Chip (SoC), Network On chip (NoC), Wishbone Protocol, Field programmable gate array (FPGA), Packet Switched Wormhole Roting (PWR)

I. INTRODUCTION

As Moore's Law continues to hold true for the near future, the design of embedded systems becomes challenging and complex due to large number of hardware modules and the difficulty of interconnecting them. Designers have shifted their focus from micro-level to macro-level system design through the employment of hardware reuse. This shift in focus has opened the way for adoption of System-on-Chip (SoC) paradigm (called FPSoC when implemented in FPGAs). This involves interconnecting pre-made hardware modules together to form a coherent system. These hardware modules are known as Intellectual Property (IP) cores[1].

The NoC medium features a high level of modularity, flexibility, and throughput. The NoC relies on data packet exchange. The path for a data packet between a source and a destination through the routers is defined by the routing algorithm. Therefore, the path that a data packet is allowed to take in the network depends mainly on the adaptiveness permitted by the routing algorithm, which is applied locally in each router being crossed and to each data packet [2].

A NoC consists of four major components shown in Fig.1. IP cores, the network adapters, routing nodes and links. These are similar to the components in a macro computer network. There are many different architectures, mechanisms, parameters and techniques involved in NoCs [8].

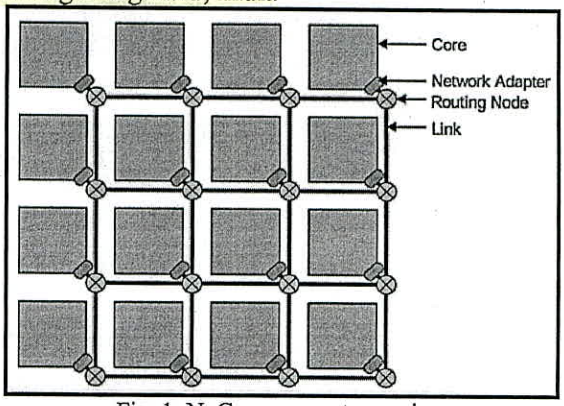

Fig. 1: NoC component overview

The massive design space of NoCs means that even a simple design of a NoC component is a valuable research contribution since it expands on existing understandings and provides reinforcement to existing theories. More precisely, the optimal selection of the channel width in packet-switched routers remains an open research problem [3].

II. LITERATURE SURVEY

Matthew Murawski et al.[1] design and evaluation of two major NoC components: a flexible adapter compatible with the Altera Avalon interconnect standard and a parameterizable wormhole router is discussed, The Avalon compatible adapter will be very useful to NoC designers using IP cores provided by Altera to implement NoC-based systems on Altera FPGAs.

Mohandeep Sharma et al. [2] A survey of the Wishbone bus and its comparison with three other buses AMBA from the ARM, CoreConnect from the IBM and Avalon by the Altera Corporation reveals that in terms of compared performance parameters, the Wishbone bus tends to gain an upper edge over the other three types because it provides for connecting circuit functions together in a way that is simple, flexible and portable due to its synchronous design.

Swati R. Mishra et al. [5] The Wishbone interconnect is proposed as a general purpose interface. As such, it defines the standard data exchange between IP core modules. The Wishbone architects were strongly influenced by three factors.

First, there was a need for a good, reliable System-on-Chip integration solution. Second, there was a need for a common interface specification to facilitate structured design methodologies on large project teams. Third, they were impressed by the traditional system integration solutions afforded by microcomputer buses such as PCI bus and VME bus. A SoC which utilizes ALU master cores and memory slave cores using Wishbone bus interconnection scheme has been designed for this purpose.

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Design and Simulation of Compact Multiband Microstrip Fractal Patch Antenna for C Band Applications

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ABSTRACT: In recent years multiband fractal patch antennas have their own capability because of their multiband operation. This paper presents a rectangular shaped fractal antenna, which resonates at 4.18GHz, 5.02GHz, 6.45GHz,7.08GHz.Three iterations has been applied to basic rectangular patch in terms of rectangular slots to obtain multiband. This antenna finds the application in the area of military and defense applications. The proposed multiband antenna operates in C (4 to 8GHz) band, where it can be used for Radar and secure communication. The antenna is designed in IE3D simulation software. The results are analyzed in terms of return loss, VSWR and gain of the antenna with radiation pattern.

KEYWORDS: Fractal shape, IE3D, Multiband, rectangular slot.

I. INTRODUCTION

The increase in demand for wireless communication system has attracted significant interest in antenna design. Many novel designs are being proposed for multiband antenna. Microstrip patch antennas are gaining popularity for use in modern wireless communications systems due to their low-profile, low weight, low cost structure. Therefore they are extremely compatible for defence antennas in wireless communication such as Radars, satellites etc.

The various fields of applications such as in the radar applications, satellites and even in the military systems like in the aircrafts, missiles, rockets, etc. The microstrip antennas are having more usage in all the fields and areas and now they are gaining popularity in the commercial aspects due to the low cost of the substrate material and fabrication. The patch antennas are also used as wide range over the conventional antennas because of their good advantages over conventional antennas and maximum application in the various areas such as military, defense, radar, satellites, etc.

Radar Application: Radar is used for detecting moving targets example people and vehicles. It requires a low profile, light weight antenna subsystem, the microstrip antennas are the ideal choice. The fabrication technology is based on photolithography and enables the bulk production of microstrip antenna with reconfigurable characteristics and performance at a cheaper cost in a lesser time as compared to the conventional antennas.

Related work

The fractal word meaning is broken or irregular fragments were first defined by Benoit Mandelbrot in 1975 to represent a family of complex shapes that possess an inherent self-affinity and self-similarity in their geometrical structure. A self-affine set is a well-defined contraction which reduces an image by different factors horizontally and vertically [7] whereas a self-similar is one that consists of iterateddown into copies of itself i.e. a contraction which reduces an image by same factors horizontally and vertically [7]. Due to these properties, fractals have infinite complexity and detail. As long as you are zooming in on the right location, their complexity and detail remain the same no matter how far you zoom-in.The patch antennas are having advantages over conventional light weight and low volume, low profile, low fabrication cost, supports multiband frequency operations, and it is mechanically robust when mounted on rigid surfaces [1]in making such low-profile systems in communication domain, the size of the antenna is critical. Therefore, many kinds of miniaturization techniques, such as the substrates of high dielectric constants, applying resistive or

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OPTIMIZED BIOMETRIC SYSTEM BASED ON COMBINATION OF FACE IMAGES AND LOG TRANSFORMATION

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ABSTRACT

The biometrics are used to identify a person effectively. In this paper, we propose optimised Face recognition system based on log transformation and combination of face image features vectors. The face images are preprocessed using Gaussian filter to enhance the quality of an image. The log transformation is applied on enhanced image to generate features. The feature vectors of many images of a single person image are converted into single vector using average arithmetic addition. The Euclidian distance(ED) is used to compare test image feature vector with database feature vectors to identify a person. It is experimented that, the performance of proposed algorithm is better compared to existing algorithms.

KEYWORDS

Biometric, Face recognition, log Transformation, ED, Fusion, Gaussian filter

1. INTRODUCTION

Biometrics is the measurement and analysis of behavioural and physiological trait characteristics of a person. It is used to identify a person to utilise electronic gadgets and entry in to restricted areas through smart gates or doors. The conventional human authentication methods used are smart cards, passwords, Personnel identification number (PIN) etc. The disadvantages are (i) Passwords are hard to remember (ii) PIN and smart cards can be stolen or lost. Biometrics is the alternate to conventional methods of authentication as the traits of biometrics are attached to human body parts and based on the behaviour of person. The biometric system has three divisions viz., (i) enrolment division (ii) test division and (iii) matching division. In enrolment division, the database images are loaded preprocessed and features are extracted. In test division, the test images are loaded, preprocessed and features are extracted. The matching division has classifiers to classify images inside the database.

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Research Article

OPTIMIZATION OF MICROWAVE ASSISTED EXTRACTION OF PHENOLIC COMPOUNDS FROM *DECALEPIS HAMILTONII* ROOT USING RESPONSE SURFACE METHODOLOGY

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ABSTRACT

Polyphenolic compounds comprising flavonoids and phenolic acids are widely distributed in foods of plant origin and counted to be the most abundant antioxidant in our diet. Due to its health benefitting properties they are of great interest in recent days. *Decalepis hamiltonii* is one such plant that is rich in phytochemicals having antioxidant properties and other beneficial medicinal value. Maximum yield of these phytochemicals during extraction requires optimized conditions of process parameters. In the present study, Microwave-assisted extraction (MAE) of polyphenols from the *Decalepis hamiltonii* roots was optimized using response surface methodology. The effect of independent variables such as extraction time (1, 3 and 5 min), solid to solvent ratio (0.5, 1.75 and 3 g/25ml solvent), solvent concentration (30%, 60% and 90% ethanol) and their interaction on Total Phenolic Content(TPC) and Total Flavonoid Content (TFC) were determined by three factor- three level Box-behnken Design. The highest TPC (0.03 mg GAE/mg DHRP) and TFC (0.08 mg RE/mg DHRP) were obtained under the optimum extraction conditions of 3 min, 2.56 gm/25 ml of solvent, 53.77 % ethanol and 2.15 min, 3 gm/25 ml of solvent. 49.18 % ethanol respectively. These findings further demonstrate that extraction of bioactive phytochemicals from plant materials using MAE method consumes less extraction solvent and saves time.

Keywords: *Decalepis hamiltonii*, Polyphenols, Response Surface Methodology, Microwave Assisted Extraction.

INTRODUCTION

Antioxidants are both natural and synthetic compounds able to scavenge free radicals and inhibit oxidation processes (George and Britto, 2015). Polyphenolic compounds comprising flavonoids and phenolic acids are widely distributed in foods of plant origin and found to be the most abundant antioxidants in our diet (Hayat et al., 2009). They are a large family of natural compounds which are secondary metabolites and are derivatives of the pentose phosphate, shikimate and phenylpropanoid pathways in plants. Phenolic compounds exhibit a wide range of beneficial properties to health, such as: anti-allergenic, anti-inflammatory, anti-microbial, anti-oxidant, antithrombotic, cardio protective and vasodilatory effects. Several beneficial effects derived from phenolic compounds are mainly due to their antioxidant activity (Ajila et al., 2011).

Pressurized liquid extractor (PLE), microwave assisted extraction (MAE), ultrasound assisted extraction, soxhlet extraction, heat reflux extraction and supercritical fluid extraction are various efficient and advanced extraction techniques developed for extracting phenolic compounds from herbal medicine (Dahmoune et al., 2015). Microwave Assisted Extraction (MAE) is a relatively new method which has been increasingly used for extraction of valuable compounds from biological cells. This is an extraction technique that delivers microwave energy rapidly to a total volume of solvent and solid plant matrix. This results in subsequent heating of the solvent and solid matrix, efficiently and homogeneously (Kaufmann & Christen, 2002). There are a number of parameters that influence the microwave extraction process such as choice of solvent, solvent volume, microwave power, extraction time and matrix characteristics. Highly polar solvents interact better in a microwave environment, leading to faster heating rate, greater destruction of biological structure and higher extraction yields (Chandrasekar et al., 2015). MAE is increasingly being used as an alternative to traditional extraction method for the removal of phenolics from plant tissues as it significantly reduces extraction time and solvent consumption while generating higher extraction yields (Ballard et al., 2010).

The traditional method of optimization involves the study of one-factor-at-a-time that is laborious and time consuming. Moreover, the interactive effect of individual factors is also ignored and misleading conclusion may be drawn. Because of the above reasons it becomes cumbersome to establish the optimum conditions. It is therefore essential to optimize the procedure yielding highest quantities of phyto compounds with almost preserved functional properties. Recently, response surface methodology (RSM), a statistical experimental protocol used in mathematical modelling, has emerged as an ideal strategy for standardizing process variables of many food processes and is being extensively used. The merits of RSM include use of lesser number of experimental measurements; provide a statistical interpretation of the data and also to identify the interaction amongst variables, if any. RSM has been successfully applied in optimizing extraction condition of a range of polyphenols, antioxidants and other metabolites in plants (Ilaiyaraja et al., 2015; Alberti et al., 2014; Zhang et al., 2013).

Decalepis hamiltonii (Wight and Arn.) belonging to the family Asclepiadaceaeis a climbing shrub that grows in the forests of peninsular India. It is widely studied as it one of the most potent antioxidant source with varieties of biological activity which could be associated with their health benefit (Nayaka et al., 2010; Srivastava et al., 2007). The roots are used in folk medicine and as a substitute for *Hemidesmus indicus* in ayurvedic preparations. The roots are also used to stimulate appetite, relieve flatulence and as a general tonic.

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FPGA IMPLEMENTATION OF MOVING OBJECT AND FACE DETECTION USING ADAPTIVE THRESHOLD

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ABSTRACT

The real time moving object and face detections are used for various security applications. In this paper, we propose FPGA implementation of moving object and face detection with adaptive threshold. The input images are passed through Gaussian filter. The 2D-DWT is applied on Gaussian filter output and considered only LL band for further processing to detect object/face. The modified background subtraction technique is applied on LL bands of input images. The adaptive threshold is computed using LL-band of reference image and object is detected through modified background subtraction. The detected object is passed through Gaussian filter to get final good quality object. The face detection is also identified using matching unit along with object detection unit. The reference image is replaced by face database images in the face detection. It is observed that the performance parameters such as TSR, FRR, FAR and hardware related results are improved compared to existing techniques.

KEYWORDS

Discrete Wavelet Transform, Gaussian Filter, Adaptive Threshold, Object Detection, Face Recognition.

1. INTRODUCTION

Biometrics are used to identify and verify persons based on their physical and behavioural characteristic parameters. The physical characteristic traits are fingerprint, Iris, Palm print, DNA etc. of a person and are constant throughout life span. The recognition using physiological traits are easy and require less number of samples to build high speed real-time biometric system efficiently with less complexity. The recognition using behavioural traits are not very accurate and require more number of samples to build real time biometric system. The behavioural

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Total Additive Expected Time Metric for Scalable Hybrid Wireless Mesh Routing Protocol in Wireless Mesh Networks

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Abstract--Recent developments in the area of mesh networks shows significant achievement in the field of coverage and connectivity. The Wireless Networks provides flexibility and adoptability in terms of service for the Internet users. The scalability is the major concern in the large wireless networks which keep growing randomly. There is a need of scalable routing protocol for Wireless Mesh Networks and interestingly suitable metric is also a major concern. We have proposed a Scalable Hybrid Wireless Mesh Protocol (SHWMP) and also new routing metric named Total Additive Expected Time (TAET) to provide optimal route from source to destination. The new proposed metric covers several parameters such as interference, channel diversity, link quality and hop delay for consideration and results in finding a suitable route for SHWMP. The performance of SHWMP is evaluated in a different network conditions and simulation results show that new metric TAET outperforms MIC, WCETT and other metrics in terms of throughput, end-to-delay and network density.

Keywords--Wireless Mesh Networks, Scalable Hybrid Wireless Mesh Protocol (SHWMP), Routing metric, performance evaluation

I. Introduction

RESEARCHERS have considered Wireless Mesh Networks (WMNs) as a key technology for them to work on next generation wireless networks. WMN is a mesh network which is implemented over a wireless network system with low cost, high scalability, reliable services and easy maintenance. Another direction or alternative for last-mile broadband Internet access which has greatest potential to play a critical role is Wireless Mesh Networks. In case of wireless mobile environment, the network layer and its routing functionality must be tailored to support mobile nodes, dynamic topologies and changing link capacity [1]. Routing needs to be adapted to a specific application and also it must match radio environment. Cross-layered design techniques have been proposed for wireless networks to improve the system performance [2, 3, 4] and security [5].

The present 802.11 based wireless networks completely depend on wired infrastructure to transfer the traffic to end users. This makes wired infrastructure expensive and inflexible for wireless local area networks (WLAN) as coverage cannot be extended beyond the back-haul deployment. The performance of a WMN is mainly dependent on the design of the routing protocols and also associate metric used to measure it. The main goal of any routing protocols is to select the best path between the source and destination based on the routing metric. Most of the existing protocols used in WMNs rely on the network layer (IP) and use hop count to allow multi-hop communication and do not provide an good solution for wireless networks. The new standard IEEE 802.11s was developed by IEEE task group to design and develop a scalable integrated mesh networking solution. Even though, this group set hybrid wireless mesh protocol (HWMP) [6] as default routing protocol, but still there exists scope for extending scalable routing protocol for WMN. In addition this, airtime [7] metric was considered as default routing metric. We designed and developed a new scalable routing protocol called SHWMP (Scalable Hybrid Wireless Mesh Routing Protocol) [8]. In this paper we propose a new metric called TAET (Total Additive Expected Time) is suggested to measure the performance of scalable routing protocol. The airtime metric was only focus on consumption of resource by a packet on a link. This metric only cannot be used as standard, since there are so many parameters which mainly required measuring the overall performance of WMN.

The rest of the paper is organized as follows: In section II, presents the related work carried out recently is discussed. Section III Briefly SHWMP and new routing metric TAET is discussed. In Section IV simulation results are analyzed with comparing other metrics. Finally conclusion is drawn in Section V.

II. Related Work

Many researchers specifically designed and suggested routing metrics for Wireless Mesh Networks. But each metric designed has got a clear involvement of any one of prominent parameters ignoring others. This leads to the development of underutilized metric giving not optimal results. To overcome this problem, a new metric is suggested by using the combination of existing matrices. We discuss few metric such as ETX, WCETT, ETT and airtime already used in the evaluation of routing protocols. The detailed survey of WMN routing metrics are discussed in [8, 9, 10, 11, 12]. The capacity of mesh networks in terms of throughput is increased by equipping each node with a multiple radio interfaces and with multiple channels [10]. The critical performance in wireless mesh networks is considered to be routing metrics. The metrics used in ad hoc networks is not appropriate for wireless mesh networks. The unique characteristics of mesh networks make invalidate existing solutions from both wired

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Study on self healing Metalized polypropylene Film Capacitor and its Uncoupling behaviour of current gates

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Abstract

Polymer dielectrics have largely supplanted other insulators such as paper, because of their excellent dielectric and physical properties, low cost and availability in very thin films. The most important of these are polypropylene, polycarbonate, polystyrene, polyethylene, and polyethylene terephthalate (PET). Recent high power capacitor technology use thin polypropylene (PP) foils as a dielectric with 15 nm thin patterned electrodes instead of all-over metalized films. The metal electrode consists of individual segments interconnected by narrow current gates. The gates serve as fuses in case of a breakdown in one of the segments. They isolate the segment and therefore the breakdown channel from the rest of the electrode. Therefore the capacity only decreases slightly and the capacitor is protected against complete destruction. This process is called self-healing. Capacitors in operation showed that in case of a breakdown not only the defect segment but also the surrounding and the distant segments are often uncoupled, leading to a higher decrease of capacity and consequently of the capacitor lifetime. The aim of the study was to understand the mechanism that breaks off distant current gates. Therefore we stressed current gates with low voltages and currents, determined the energy involved in the uncoupling process and investigated the broken gates with light microscopy. Resistance curves gave important information about the influence of structures at the PP foil surface on the uncoupling behaviour.

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Study on self healing Metalized polypropylene Film Capacitor and its Uncoupling behaviour of current gates

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Abstract— Polymer dielectrics have largely supplanted other insulators such as paper, because of their excellent dielectric and physical properties, low cost and availability in very thin films. The most important of these are polypropylene, polycarbonate, polystyrene, polyethylene, and polyethylene terephthalate (PET). Recent high power capacitor technology use thin polypropylene (PP) foils as a dielectric with 15 nm thin patterned electrodes instead of all-over metalized films. The metal electrode consists of individual segments interconnected by narrow current gates. The gates serve as fuses in case of a breakdown in one of the segments. They isolate the segment and therefore the breakdown channel from the rest of the electrode. Therefore the capacity only decreases slightly and the capacitor is protected against complete destruction. This process is called self-healing. Capacitors in operation showed that in case of a breakdown not only the defect segment but also the surrounding and the distant segments are often uncoupled, leading to a higher decrease of capacity and consequently of the capacitor lifetime. The aim of the study was to understand the mechanism that breaks off distant current gates. Therefore we stressed current gates with low voltages and currents, determined the energy involved in the uncoupling process and investigated the broken gates with light microscopy. Resistance curves gave important information about the influence of structures at the PP foil surface on the uncoupling behaviour.

Keywords— **Self healing; Current gate; Polyethylene teraphtalate foil; Polypropylene foil.**

INTRODUCTION

The primary polymer foil materials used in capacitors are biaxially stretched oriented isotactic polypropylene (PP) and polyethylene teraphtalate (PET). Today high power capacitor technologies use patterned electrodes evaporated on the dielectric instead off all-over metalized films. In a capacitor usually two metalized foils are wound together to a capacitor winding. To avoid air enclosures in the capacitor rolls causing glow discharges in the winding gaps, oil or gas is used as impregnation medium. The excellent large area electrical breakdown strength of PP foils due to the high quality with which they can be made consistently and the homogenization effect taking place with oil impregnation of PP foils [1] are the major reasons why such capacitors can be operated at very high electric fields in the range of 240 V μm^{-1}.

Fig.1 shows mosaic of metallized capacitor film. In self-healing capacitors, the electrodes are evaporated onto the polymer foil as very thin films of metal. The metal used is Aluminium, zinc or a zinc– aluminium alloy. In case of a breakdown through the dielectric, the thin electrode near the defect site is rapidly evaporated and driven outwards from the breakdown site. Thus the plasma of the breakdown arc is interrupted and the site becomes electrically isolated. These are the series of events described as self-healing [2, 3]. This self-healing process makes the system defect tolerant since local breakdowns cause only little damages. The choices of the metallization as well as the thickness of the electrode are important parameters determining the self-healing capability of the system. The thinner the layer is, the more likely the self-healing will be successful. Unfortunately, if one goes too thin, the electrode resistance increases leading to losses of heat. Therefore the thermal stress of the capacitor increases and impairs the capacitor lifetime [4, 5].

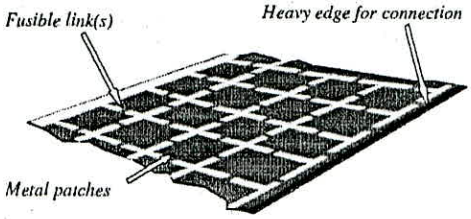
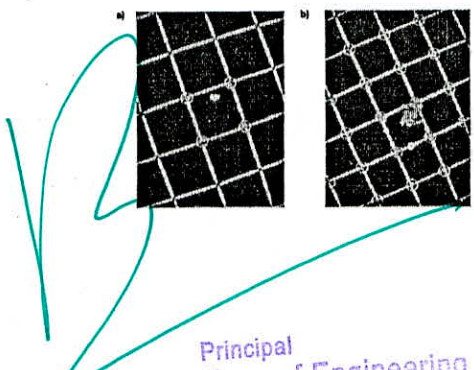


Fig. 1: Patch mosaic of metallised capacitor film.

Incomplete evaporation of the electrode around the breakdown channel and deposition of carbon from the dielectric, which give rise to conductive bridges in the insulating areas free from metal present a danger for continually discharging of the capacitor [6]. Therefore the patterned electrode reveals a second protection concept. The individual segments are interconnected by narrow current gates. In case of a breakdown in one of the segments the gates serve as fuses, they isolate the segment and therefore also the breakdown channel with the surrounding evaporated electrode area form the rest of the electrode. Thus the damage of the capacitor is double localized and the capacitor is prevented from continually discharging leading to large-scale damage and eventual destruction.



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Alternative Approach to Evaluation of Absorption Correction Factor for Cylinder using Generalised Gaussian Quadrature Rule

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Abstract. This paper presents Numerical evaluation of Absorption correction factor for cylinder by using Generalised Gaussian quadrature rule. The new formula increases the accuracy in comparison with the original Gauss-Legendra quadrature rules and Simpson's method which were recently applied by Maslen(1999) and Takashi Ida(2010) et al. results obtained with the Generalised Gaussian quadrature method are compared with the existing formulae. It is shown that the Generalised Gaussian quadrature method has higher accuracy than the existing formulae.

Keywords: Finite element method, Generalised Gaussian quadrature rule, Numerical Integration.

AMS Mathematics Subject Classification (2010): 65R10

1. Introduction

The path traversed by a monochromatic beam of intensity I_0 through a homogeneous isotropic material of linear absorption coefficient μ. Then reduced intensity in the beam is given by

$$I = I_0 e^{-\mu T} \tag{1}$$

The path length T of the beam in the material (crystal) varies as the shape of the crystal. Therefore this equality can also be considered for the X-ray absorption for the crystalline solids whose absorption does not depend on the arrangement of the atoms in the unit cell. If the crystalline solid have a definite shape then different paths have different lengths T, then we have

$$L = \int_v I \, dv \tag{2}$$

Where v is the volume of the crystal the expression for the transmission coefficient is given by $A = \frac{1}{v}\int_v I_0 \, e^{-\mu T} \, dv$ (3)

This formula above Eq. (3) was formulated for the estimation of transmission factor in crystals of uniform cross-section as A depends on the thickness, the shape of the crystal

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2-(6-Methyl-1-benzofuran-3-yl)acetic acid

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Keywords: crystal structure; benzofuran; hydrogen bonding; C—H···π interactions.

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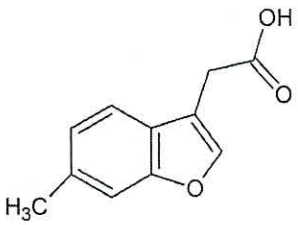
Structural data: full structural data are available from iucrdata.iucr.org

The asymmetric unit of the title compound, $C_{11}H_{10}O_3$, contains two crystallographically independent molecules (*A* and *B*) with nearly matching conformations. Both molecules are almost planar [r.m.s. overlay fit for the non-hydrogen atoms = 0.011 (1) Å] and in each molecule there is a short intramolecular C—H···O contact. In both molecules, the OH group of the acetic acid residue occupies a position approximately antiperiplanar to the C atom of the heterocycle. In the crystal, the two molecules are linked by a pair of O—H···O hydrogen bonds, enclosing an $R_2^2(8)$ ring motif and forming an *A*–*B* dimer. The dimers are linked by C—H···π interactions, forming columns along the [010] direction.

3D view

Chemical scheme



Structure description

Benzofuran derivatives have occupied an important place among various heterocycles by virtue of their involvement in medicinal chemistry and drug discovery (Hiremathad *et al.*, 2015). Carboxylic acids such as arylalkanoic acids exhibit interesting anti-inflammatory, analgesic and antipyretic properties, and so have been in wide clinical use for a number of years (Basanagouda *et al.* 2015).

The asymmetric unit of the title compound contains two crystallographically independent molecules (*A* = C1–C11/O1–O3 and *B* = C12–C22/O4–O6), which are almost identical (Fig. 1). Both molecules are almost planar with an r.m.s. overlay fit for the non-hydrogen atoms of 0.011 (1) Å. In each molecule there is a short intramolecular C—H···O contact present (Table 1). The bond lengths and angles of the title molecules are close to those observed for similar structures, *viz.* 2-(5-methoxy-1-benzofuran-3-yl)acetic

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Research & Reviews: A Journal of Bioinformatics

DNA Barcoding

Gowthami S., Saranya D., Prashanth Kumar H.P., Rohit K. C.

Abstract

Abstract

DNA barcoding system is a promising approach towards the diagnosis of biological diversity using DNA sequences as a primary key for retrieval of genetic information. It is emerging as a standardised method for mapping various species on the earth. DNA barcoding is a tool for identification of new species, conservation of endangered species and clustering of various species under a particular group. Many databases have been developed across the globe for the quick assessment of various DNA barcodes. Consortium for the Barcode of Life (CBOL) and Barcode of Life Database (BOLD) serves as the major barcode sources for the researchers in species identification. There are few accepted barcodes across the globe for identification of the species such as CO1 gene for animals and rbcL, matK, trnH-psbA for plants and ITS gene for fungal species. Hence DNA barcoding is the new modernised, speedy, precise and consistent method for biodiversity identification. This review study shows salient features of DNA barcoding system as a simple modernised taxonomical tool for species identifications.

Keywords: *DNA barcoding, CO1 gene, matK gene, trnH-psbA gene, biodiversity*

Cite this Article

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Physiological studies of *Helminthosporium* Pathovars Isolated from Infected Maize Plant in the Region of Karnataka

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Abstract: *Karnataka is one of the potential maize producing regions in India. Therefore maize in this region has the potential to become diseased under certain conditions. Diseases of crops can affect plant physiological activities, yield and/ or quality of the harvested commodity which can impact profitability and increase the risks of farming. Disease management is one of the major problems faced by farmers, and this has become a big threat and made farmers to become risk adverse to invest in farming as a business. This study is about to determine suitable culture conditions such as different culture media, optimum temperature, pH, carbon source were optimized to culture Helminthosporium in laboratory conditions to do characterize the gene for pathogenicity. Among all the media the best media were found to be the MRBA and PDA. It was found to be the optimum temperature and pH were20°&25° and pH of 5&6.Carbon source for the optimum growth was selected by growing in different carbon sources. It was revealed that best carbon source found to be starch for better growth of colonies. Along with these parameters, toxin study of the Pathogen was done. The crude phytotoxic was extracted from culture filtrate using methanol and chloroform.TLC revealed the presences of toxin in crude extract.*

Keywords: Helminthosporium pathovars, pathogenicity, temperature, pH, carbon source

1. Introduction

Maize (Zea mays. L) Is regarded as the queen of cereals due to its high yield efficiency. Maize is the third most important food grain in India next to wheat and rice. Despite its high yield potential, one of the major limiting factors of maize grain yield is its sensitivity to several biotic stresses especially the diseases. According to some record about 65 pathogens infects maize and of these maydis leaf blight or southern corn leaf blight is considered as one of the serious disease the extent and severity of MLB disease varies from season to season. In worm (20 -- 32°C) and moderately humid environment of the world, maydis blight is potentially damaging and may cause significant yield losses (Thomson and bergquest 1984). Southern corn leaf blight (SCLB) is an important foliar disease of maize crop and caused by fungi

Helminthosporium (Cochliobolus heterostrophus), and also known as (Anamorphs *Bipolaris maydis* or ascomycetes, *Helminthosporium maydis)* but for the sake of brevity we will refer to all of these as *Helminthosporium*. It is reportedfrom most maize growing regions but most devastating in hot and humid tropical and temperate areas of the world. Almost 70% yield loss is recorded due to SCLB (Kump.et.al 2011). No known genes confer complete immunity to this disease; instead, maize breeders rely on polygenic, quantitative resistance to SCLB (Holley and Goodman 1989). Three races of *C. heterostrophus* known as O, T and C have been identified to date (Smith et.al 1970). Race O is considered to be the most common race in most areas and is controlled by nuclear genes. Race T, the cause of the 1970s epidemic inNorth America, is specific to maize containing Texas male-sterile cytoplasm (cms-T) and is controlled mainly by cytoplasmic factors. The most prominent difference between race O and T is that race O only attacks leaves while race T attacks leaves, stalks, leaf sheaths, ear husks, ears and cobs. Race C is a cms-C cytoplasm-specific race reported only in China (Wei.et.al 1988).Karnataka is one of the potential maize producing regions in India. Therefore maize in this region has the potential to become diseased under certain conditions. Diseases of crops can affect plant physiological activities, yield and/ or quality of the harvested commodity which can impact profitability and increase the risks of farming. Disease management is one of the major problems faced by farmers, and this has become a big threat and made farmers to become risk adverse to invest in farming as a business. It is also one of the factors leading to yield reduction; southern corn leaf blight is one of the prone fungal diseases in maize. Therefore it is important to carry out a study on prevalence of southern corn leaf blight pathogen of maize in Karnataka.

2. Materials and Methods

Pathogen culture

The youngest fully expanded mature leaves from zea mays were harvested, washed and dried on the paper towel. Leaf disks of 20mm diameter were exercised carefully with needle from leaf samples. The leaf disks were placed immediately in Petri plates containing SDA/PDA media. Petri plates were placed in growth chamber maintained at 25^0 C for 2-3 days. Mixed cultures were obtained. *Helminthosporiun* pathovars was grown on SDA media and cultured for about 48 hours the culture was grown which results in mixed culture. And it is screened for the presence of *Helminthosporium* pathovars it was sub cultured to obtain pure culture. The pure culture was isolated and identified by using microscope by lacto phenol staining method.

Effect of Different media for colony growth

The effect of culture conditions including media, incubation temperature, carbon source and pH were observed on growth of

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A DETAILED STUDY ON RECLAIMED ASPHALT PAVEMENT IN PAVEMENT QUALITY CEMENT CONCRETE

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ABSTRACT

RAP (reclaimed asphalt pavement) produced from the reconstruction of asphalt road pavements is one of the alternative material proposed. Rap can be used as an alternative material for both fine and coarse aggregate, it is conventionally used as coarse aggregate in asphalt pavement. In this experimental study, Performance of Pavement Quality Cement Concrete(PQCC) is studied when virgin aggregates are replaced by RAP by conducting experimental study in laboratory and also performing numerical analysis on RAP concrete model cube by using ANSYS to find out stress value at different percentage of RAP and age of concrete under loading. Fine aggregate is replaced with RAP by 0%, 15%, 30%, 45%, 60% and Coarse aggregate with RAP by 0%, 15%, 30%, 45%, and 60%.Experimental results are validated with numerical results. It is observed that RAP will reduce the performance of concrete and affects mechanical properties of concrete like compressive and flexural strength, density on increasing the percentage in concrete. But for 15 % replacement, RAP concrete has fulfilled the requirements of M30 concrete and for 30%replacement compressive strength of concrete is 28.45 N/mm² which is very near to the minimum strength value of M30 concrete. For all mix proportion of concrete flexural strength is more than minimum required strength of M30 concrete. The results indicated that RAP can be used as an aggregate in PQCC up to limited percentage.

Key words: RAP, ANSYS, PQCC, M30 concrete.

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http://www.iaeme.com/IJCIET/issues.asp?JType=IJCIET&VType=7&IType=5

1. INTRODUCTION

Recycling of asphalt pavements is one of the most effective and proved and also approved recycling processes. It has been organized and being used successfully for rehabilitation processes in many countries across the globe. The reuse of removed asphalt pavement in India has not given more importance in 20thcentury, because of the poor economic conditions and lack of updated, new technologies. The cost of

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Seismic Analysis of RC Building with Underground Stories Considering Soil Structure Interaction

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Abstract:

Out of Several Countries in the world that is subjected to repeated natural calamities, India is also one of them. While mentioning the natural calamities, one of the calamities that leads to the loss of human life is the earthquake. Earthquake does not give any clue prior to its influence on human life and natural resources. Inspite of the improved technologies it has become difficult to manage with the influence of earthquake. One of the best way to save the loss of human life is that to design the structure in such a way so that it is capable if resisting the earthquake forces to a maximum extent. Hence in present study, an attempt has been made to study the effect of soil structure interaction on an RC framed building with underground stories under seismic loading. Structure is analyzed using response spectrum method. Modeling and analysis is carried out using SAP2000. Results are considered for structure resting on three types of soil namely soft, medium and hard. Raft foundation type is adopted for all models.

Keywords: Soil Structure Interaction, Underground Stories, Raft foundation

I. INTRODUCTION

Seismic waves are generated due to the release of energy in the Earth's crust, which is in turn due to the disturbance caused on the earth's surface. It is well known fact that the building is resting on the soil and the building undergoes displacement during the earthquake. But usually buildings are modeled and analyzed without considering soil structure interaction. When earthquake waves reach the structure, it is subjected to motion. This motion produced due to the earthquake waves depends on vibration characteristics of structure and also on the plan of the structure. If the structure overwhelms its own Inertia force then it is possible for structure to respond to the motion. As a result of this, soil and structure interacts. It is known that at foundation level earthquake motions are observed and character of earthquake motion is based on the level of response of the structure. These factors mainly depend on stiffness and mass of both structure and the soil. From this it can be inferred that, the foundation property plays a major role in the structure's response during earthquake. But when considering the influence of earthquake on the building it is important to consider the interaction effects of the soil and the structure as both the structure and the soil show their influence on each other. In the present thesis underground stories is also considered, since it has become an important wing in the modern urban construction. Due to the reason that underground stories does not fluctuate during the earthquake, basement floors are being ignored throughout the seismic analysis of building which includes underground stories. Hence in the present study, it is shown how the seismic response of those structures that include underground stories is affected.

II OBJECTIVE OF STUDY

The main objective of the thesis is to find the seismic response of the building with underground stories which includes the soil structure interaction. For the sake of analysis and modelling, SAP2000 software is used. The structure is modeled with different types of soil.

III STUDY METHODOLOGY

Using the suitable soil conditions, and by giving the suitable input details of the building, building is modeled and analyzed. For the purpose of the analysis, response spectrum method is adopted. The software used for the study is the SAP2000. The different models considered are fixed base model, Winkler and FEM model. In FEM model, soil is assumed as linear elastic continuum, with its depth equal to 1.5 times the base of the building. Typical 3D model of all types are presented from fig 2, fig 3, fig 4.

Table I. Geometric and material properties

Component	Description	Data
Model details	Number of storeys	15
	Number of bays in X direction	2
	Number of bays in Y direction	2
	Storey Height	3m
	Bay width in X direction	10m
	Bay width in Y direction	10m
	Size of beam	0.3m*0.3m
	Size of column	0.45m*0.45m
	Thickness of slab	0.125m
Materials	Grade of steel	Fe-415
	Grade of concrete	M30
Seismic parameters	Seismic zone	II
	Importance factor	1
	Response reduction factor	3
Foundation Type	Raft Footing	Size:24m*24m Depth:1m

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Modification of block matches three dimension algorithms for de-noising spatial domain optical coherence tomography images.

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Abstract

The analysis in a therapeutic picture assumes an imperative part highlighting on operations as picture rebuilding, include extraction and protest acknowledgment. These operations may end up plainly chaotic if the pictures are debased with clamors. So formulating a proficient calculation for clamor evacuation is a vital and testing research range in nowadays even with plenteous existing de-noising calculation. Creating Image de-noising calculations is a bulky assignment since vital subtle elements in a therapeutic picture inserting symptomatic data ought not be destroyed while expelling the commotion. This paper proposes an altered de-noising approach for retinal Optical Tomography Images by fusing un-annihilated Wavelet Transform to the current piece coordinating three measurement calculation, which that its uses in The outcomes demonstrates that the de-noised picture utilizing adjusted BM3D(Block Matching three measurement) have an enhanced PSNR and visual quality when contrasted with the condition of craftsmanship BM3D calculation which in turns will help the specialists to finding the malady better.

Keywords: De-noise, speckle noise, optical coherence tomography.

Accepted on June 20, 2017

Introduction

Optical intelligibility tomography (OCT) is a rising imaging methodology that has been broadly utilized as a part of the field of biomedical imaging. In the current past, it has discovered uses as a demonstrative apparatus in dermatology, cardiology, and ophthalmology. In this paper we concentrate on its applications in the field of ophthalmology and retinal imaging. OCT can non-obtrusively create cross-sectional volumetric pictures of the tissues which can be utilized for investigation of tissue structure and properties. Because of the hidden material science, OCT pictures experience the ill effects of a granular example, called dot commotion, which limits the procedure of translation. This requires particular clamor decrease strategies to dispense with the commotion while protecting picture points of interest.

Optical intelligibility tomography (OCT) is a capable imaging framework for procuring 3D volumetric pictures of tissues non-intrusively. In basic terms, OCT can be considered as echography with light [1,2]. Dissimilar to echography which is finished by sound waves, OCT imaging is not time-of-flight based but instead produces the picture in view of the impedance designs demonstrates a run of the mill retinal OCT picture with false shading. All through the previous two decades, new advancements in the OCT imaging framework have enhanced the procurement time and furthermore the nature of the obtained pictures. These days taking (μm-level) volume pictures of the tissues is extremely normal particularly in ophthalmology and retinal imaging. Because of the volume of information produced in a clinical setting, there is a requirement for hearty and mechanized investigation methods to completely use the abilities of OCT imaging [3].

In the previous decade thorough and comprehensive research has been done both in the fields of bio restorative imaging and remote detecting for smothering spot commotion. Copious methodologies have been contrived to upgrade the picture quality corrupted by dot commotion [4,5] . A few dot lessening methods are depicted by [6,7]. A wavelet based delicate thresholding procedure has been beforehand connected to OCT pictures adulterated by dot commotion [8]. It registers the un-decimated wavelet change and applies delicate thresholding to the level, vertical and asks few sub groups. The edge is acquired utilizing the measurements of the wavelet coefficients. The wavelet based procedure portrayed in [8] does not lessen the picture sharpness altogether but rather the execution time for the calculation is around 7 min utilizing Matlab usage. Altered Lee and Kuan versatile channels have been connected to SAR spot lessening [9].

Anisotropic dispersion is one of eminent that has been before connected for spot commotion expulsion in OCT pictures. For instance, in references [6,7] the angle of the picture is utilized for the computation of the dissemination coefficient with no thought to the genuine clamor present. Bo Chong and Yong-Kai Zhu proposed a novel dot commotion decrease calculation in OCT. The calculation depends on piece coordinating 3D channel altered by morlet wavelet decomposition. Original OCT picture information changed by logarithmic pressure is deteriorated into 10 segments by morlet wavelet for three levels. Every part is proposed by a suited BM3D channel and the yield picture is recreated by wavelet turn around change [8]. Mashaly et al. exhibited a versatile numerical morphological channel is proposed to lessen the dot commotion in SAR pictures [9]. Optical Coherence Tomography Noise Reduction Using Anisotropic Local Bivariate Gaussian Mixture Prior

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Modelling Selective Perception for Knowledge from Image Database

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Abstract: **Designing a mathematical model for understanding the properties of the images components is a complex task which embodies in it the process of visualizing image for the discrimination features.**

In present work since we are considering a medical image the components or stages like preprocessing will in itself be a tough job.

The process of cognition of images has to be done at a first step for the machine intelligence to create a scale for set of particular images, which in turn will be used to characterize or classify the test image which in a process involved in Recognition phase.

I. INTRODUCTION

Human vision seems to recognize fractured part in X-ray image with relative ease, when compared to machine recognition which is much more daunting task. In addition to cognitive aspects, understanding X-ray is important, since the same underlying mechanism could be used to build a system for the machine identification of fractured part in X-ray image [1]. The machine recognition of fractured X-ray image is emerging as an active research broader area spreading among several disciplines such as Image Processing, Pattern Recognition, Computer Vision and Neural Networks.

We feel, Computers can now out perform human in X-ray identification tasks, particularly those in which large database of X-ray images must be searched. A system with the ability to detect and recognize fractured part in X-ray has many potential applications in medicine. Specially to understand progression of calcification system. But one need to address several related issues such as:

i. X-ray image must be clear noise free, so that we can detect or identify the fractured part.
ii. Search the given X-ray image in data base.
iii. Identification and verification of fractured part in an X-ray using appropriate algorithms.

Identifying fractured part in an X-ray image is a difficult task mostly because of the inherent variability of the image formation in terms of image quality, photometry, geometry, occlusion [2]. While solutions to the task of identifying fractured part in an X-ray image have been presented, recognition performance of many systems are heavily dependent upon a strictly constraint environment. The problem of identifying fractured part in an X-ray image remains largely unsolved.

II. LITERATURE REVIEW

Pattern Recognition

The existence of an uncomfortable situation is very often experienced in almost all the domains man encounters, and it becomes imperative (essential) to apply necessary recovery or corrective operations on the system to reestablish the health of the system.

Cases of such disorders, requiring multi-disciplinary support are to be found in plenty in many fields and in particular, in the medical field. Although, in general, a medical expert is proficient in diagnosing or recognizing the fracture in an X-ray image, it could become difficult to assess and accurately quantify the depth of fracture, which is a very important stage in deciding the course of the treatment to be administered to a patient.

This entire research is due to the inspiration provided by the burgeoning discipline of Pattern Cognition and Recognition (DH-90;FK-99). Pattern Recognition and classification covers a wide spectrum of disciplines (DH-73;DHS-01). The field of Pattern Recognition has attained considerable importance. Pattern Recognition is considered a major field in the wider realm (domain) of Artificial Intelligence (Don-98).

Classification

Classification of an n-dimensional data set or cluster analysis is one of the Pattern Recognition techniques and should be appreciated as such (DH-73; JD-88; DHS-01). The Pattern Recognition field has developed several classification techniques (DK-73; JRD-00). The classification can be of two types: Unsupervised and Supervised (JD-88).

The Unsupervised type of classification is broadly referred to as Cluster analysis. It deals with the problem of finding natural partitions in the n-dimensional data space of m samples, where each partition represents a class of

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An Efficient Digital Baseband Encoder for Short Range Wireless Communication Applications

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Abstract: Various physical layer protocols are employed to encode information bits in short range wireless communication technologies. In this paper, we propose a multimode hardware architecture for a digital baseband encoder which incorporates Manchester, Differential Manchester and FM0 codes. These codes help in achieving good DC balance thereby improving signal reliability. Alternating Manchester with Differential Manchester for different intervals of time improves security at the physical layer level. This work aims at efficient integration of hardware components for the three coding modes.

Keywords: Manchester; Differential Manchester; FM0; Short range wireless communication; VLSI.

I. INTRODUCTION

Short range wireless communication systems have become ubiquitous in our day to day life. To name a few, Wi-Fi Zigbee, Bluetooth, RFID, UWB etc. have worked wonders in several fields including security, medical care, vehicular communication and consumer applications. These technologies employ different physical layer protocols for encoding the information bits. Different standards support different encoding mechanisms. These include Manchester encoding, Differential Manchester encoding and FM0 encoding. These come under the category of bi-phase codes. They have a signal transition within a bit duration thus providing adequate timing information to the receiving end. They have good DC balance – equal number of 1's and 0's throughout a message frame irrespective of its content. Manchester encoding is the simplest of these coding mechanisms and has a lower probability of error compared to other codes [1], [2]. Differential Manchester coding may appear to be superficially the same as Manchester encoding. Unless we know which code is being used, we cannot determine the encoding just by examining the data. FM0 encoding is otherwise known as bi-phase space encoding [3]. In this paper, we modify the existing architecture for FM0/Manchester encoding in [4] to incorporate Differential Manchester code. It focuses on efficient allocation of hardware components to perform the three encoding operations with maximum hardware utilization. This architecture can be used in applications where the system has to switch between different encoding schemes. Having a separate circuit for each encoding method would consume more resources.

II. RELATED WORK

Different types of baseband coding schemes have been in practice for improving performance of communication systems. Here, the discussion is restricted to digital systems. Manchester, Differential Manchester and FM0 Codes are commonly used in short range communication systems like RF. The encoded signals have good DC balance. A signal is said to be more reliable if it has good DC balance.

Combining the use of Manchester and Differential Manchester for different intervals in the same data sequence facilitates data protection [2]. A key will be used to specify the type of encoding used.

In [5], hardware reused architecture for FM0/Manchester encoder is proposed. The original unbalance type architecture has a poor hardware utilization rate (HUR) of 50%. A modified architecture is proposed which balances the computation load between Manchester and FM0. This technique simplifies the Boolean expressions to have common terms. It achieves a hardware utilization rate to 90%.

In [4], the FM0/Manchester encoder of [5] is improved to achieve 100% HUR. Retiming and logic sharing techniques are used to obtain improvement. This architecture is fully reusable and offers competitive performance when compared with other previous works.

Reference [6] proposes a fully reused FM0/Manchester codec for dedicated short range communication (DSRC) based sensor nodes. It has 100% hardware utilization and reduced number of transistors. However, power consumption becomes a tradeoff for HUR.

In [7], the authors propose a modified Manchester/Miller encoder for RFID applications. It has a simple circuit structure and is capable of operating at high frequency. Hardware sharing is adopted to reduce the number of

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Design and Implementation of Sequential Microprogrammed FIR Filter Using Efficient Multipliers on FPGA

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ABSTRACT

Finite Impulse Response Filter plays an important part in digital signal processing applications such as video, audio and image processing. The performance of FIR filter is improved by using efficient multipliers and adders. In this paper 8 tap sequential microprogrammed FIR filter architecture is implemented using Wallace tree and Vedic multiplier. The designs are realized using Xilinx Virtex-5 FPGA. FPGA results are presented and analysed. Implementation results shows that in the proposed method FPGA resource utilization is improved in both Wallace tree and Vedic multiplier compared to the existing work. Hence proposed method is more efficient.

Keywords: FIR Filter; microprogrammed, FPGA, multiplier

1. INTRODUCTION

Digital filters are the discrete time systems that are used for filtering of arrays. The filtering operations performed in filtering operations are low pass, high pass, band pass and band reject. The basic building blocks for the implementation of digital filters are adders, multipliers and shift registers. The transfer function can be achieved by realizing the different architectures of digital filters.

Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) are the two digital filters used in many applications such as image, signal, audio and video processing. Frequency response characteristics of a FIR filter can be realized by varying the weights of the filter coefficients and number of filter taps. The FIR filter performance is better than analog filter techniques.FIR filters performs convolution on window of N data samples which can be expressed as follows [1].

$$Y(n) = \sum_{i=0}^{N-1} H(i).X(n-i)$$

In general for N-tap or (N-1)th order FIR filter consists of N shifters, N multipliers and N-1 adders. The implementation of transposed form FIR filter is shown in Fig. 1.

The objective of this paper is to design sequential microprogrammed FIR filter architecture for 8 tap using Wallace and Vedic multipliers and implementation on FPGA.

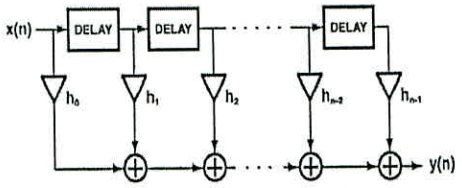

Fig. 1 Transposed form FIR filter [7]

2. MICROPROGRAMMED FIR FILTER

The microprogrammed FIR filter consists of microprogram control unit and data path unit. The advantage of microprogrammed control unit is its flexibility, many additions and any changes can be done by changing the microinstructions in the memory.

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RESEARCH ARTICLE OPEN ACCESS

E-Health Care Smart Networked System

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Abstract:

This is particularly the case on e Health monitoring applications for chronic patients, Where Patients monitoring refers to a continuous observation of patient's condition (physiological and physical) traditionally performed by one or several body sensors. The architecture for this system is based on medical sensors which measure patients' physical parameters by using wireless sensor networks (WSNs). These sensors transfer data from patients' bodies over the wireless network to the cloud environment. The system is aimed to prevent delays in the arrival of patients' medical information to the healthcare providers, Therefore, patients will have a high quality services because the e heath smart system supports medical staff by providing real-time data gathering, eliminating manual data collection, enabling the monitoring of huge numbers of patients. We underline the necessity of the analysis of data quality on e-Health applications, especially concerning remote monitoring and assistance of patients with chronic diseases.

Keywords — -

I. Introduction

Wireless Sensor Networks (WSNs) have facilitated the way for development of various aspects of sensing. WSNs have been applied in different applications such as military applications, climate monitoring applications, underwater networks applications, and structural health monitoring applications. WSN are facing many challenges such as limited computing power, memory capacity and data transmission capabilities. Thus, using cloud computing would be an appropriate solution to improve sensors efficiency.

Cloud Computing is a general expression for any technological services provide through the Internet [1]. Cloud computing provides compatible and on-demand network access for numerous computing resources such as networks, systems, applications, and services. Moreover, cloud computing are using modern and flexible methods to provide, manage, and pay for information technology services with minimal management effort and cost. Cloud computing technology has several advantages such as flexibility, highly auto-mated, low cost, fast services providing, and a huge storage capacity. The Cloud's features enable customers to build, test, and deploy their applications on virtual servers using different infrastructures and multiple operating systems. Cloud service providers offer three different types of services in order to obtain their customers more flexibility, which are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). SaaS provides remotely access to software applications and their functions as a Web based service. (PaaS) offers application frameworks and operating systems, obtains to minimize the development efforts, and provides many applications in the cloud for users without installing any framework or software on their machines. (IaaS), offers a pool of cloud computing resources, including hardware, servers, networking components, and a massive storage space. Finally, cloud computing offers unlimited data storage. Therefore, the organizations and users who are using the cloud do not need to be concerned about the size of their files.

Amazon Web Service (AWS) is one of the famous cloud providers which provides infrastructure as a service with different types of services such as, Amazon Elastic Compute Cloud (EC2). Amazon EC2 is a cloud service that designed to make web-scale computing easier for developers and to provide flexible compute capacity in the cloud. In this paper, we focus on the idea of integration between wireless sensor network and cloud computing. After health sensors that are connected to patients' bodies collect and transmit data to the cloud, services which are available in this cloud are responsible for receiving, storing, processing, and distributing this data. We suppose that this solution offers an appropriate scenario to provide a comprehensive telemedicine service which automates the processes from collecting patients' data to delivering compatible medical decisions based on patients' current conditions and their historical medical data.

The contributions of this paper are:

- A framework for integrating WSN and cloud computing.
- A prototype implementation using e-health sensors and the Raspberry Pi.
- Improve the sensor Efficiency

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IoT Based E-Health Monitoring System

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Abstract— Design and implementation of an e-health smart Networked system. Particularly in the case of e Health monitoring applications for chronic patients, Where Patients monitoring refers to a continuous observation of patient's condition (physiological and physical) traditionally performed by one or several body sensors. The system is aimed to prevent delays in the arrival of patients' medical information to the healthcare providers, particularly in accident and emergency situations, to stop manual data entering. The architecture for this system is based on medical sensors which measure patients' physical parameters of patient by using wireless sensor networks (WSNs). These sensors transfer data from patients' bodies over the wireless network to the cloud environment. Therefore, patients will have a high quality services because the e heath smart system supports medical staff by providing real-time data gathering, eliminating manual data collection, enabling the monitoring of huge numbers of patients. Enable remote monitoring and assistance of patients with chronic diseases.

Key words: Frequent Pattern Mining, High Utility Itemset Mining, Transaction Database

I. INTRODUCTION

Wireless Sensor Networks (WSNs) have facilitated the way for development of various aspects of sensing. WSNs have been applied in different applications such as military applications, climate monitoring applications, underwater networks applications, and structural health monitoring applications. WSN are facing many challenges such as limited computing power, memory capacity and data transmission capabilities. Thus, using cloud computing would be an appropriate solution to improve sensors efficiency.

Cloud Computing is a general expression for any technological services provide through the Internet [1]. Cloud computing provides compatible and on-demand network access for numerous computing resources such as networks, systems, applications, and services. Moreover, cloud computing are using modern and flexible methods to provide, manage, and pay for information technology services with minimal management effort and cost. Cloud computing technology has several advantages such as flexibility, highly auto-mated, low cost, fast services providing, and a huge storage capacity. The Cloud's features enable customers to build, test, and deploy their applications on virtual servers using different infrastructures and multiple operating systems. Cloud service providers offer three different types of services in order to obtain their customers more flexibility, which are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). SaaS provides remotely access to software applications and their functions as a Web based service. (PaaS) offers application frameworks and operating systems, obtains to minimize the development efforts, and provides many applications in the cloud for users without installing any framework or software on their machines. (IaaS), offers a pool of cloud computing resources, including hardware, servers, networking components, and a massive storage space. Finally, cloud computing offers unlimited data storage. Therefore, the organizations and users who are using the cloud do not need to be concerned about the size of their files.

Bebotte is cloud platform for real-time connected objects connecting anything and everything in real-time using rich API supporting REST, Web Sockets and MQTT. Design to empower Internet of Things and real-time communicating applications. Beebotte brings you a platform as a service connecting thousands of objects and delivering millions of messages. One platform suited for diverse applications like instant messaging, dashboards, online gaming and score boards, domotics, Internet of Things and reporting. Seamless scalability to meet your growing demands. Redundant architecture hosted with Amazon's AWS for high availability

In this paper, focus on the idea of integration between wireless sensor network and cloud computing. After health sensors that are connected to patients' bodies collect and transmit data to the cloud, services which are available in this cloud are responsible for receiving, storing, processing, and distributing this data. Suppose that this solution offers an appropriate scenario to provide a comprehensive telemedicine service which automates the processes from collecting patients' data to delivering compatible medical decisions based on patients' current conditions and their historical medical data.

The contributions of this paper are:

- A framework for integrating WSN and cloud computing.
- A prototype implementation using e-health sensors and the Raspberry Pi.
- Improve the sensor Efficiency
- Applying data mining technique to extract an appropriate decision based on patient's condition and historical data.

II. MOTIVATION

Providing healthcare services is very important for people specially who have chronic diseases. Those people need continuous healthcare which cannot be provided outside hospitals. There are a variety of technologies around us, so to get benefits from connecting such technologies to build a new e-health system platform could help to achieve high quality health care services. There are many reasons which motivate us to build this platform: (1) making healthcare more accessible for people who do not have access to healthcare providers in their communities; (2) making healthcare easier for people who do not have access to public transportation in order to go to hospitals; (3)

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MINIATURISATION OF PATCH ANTENNA USING NOVEL FRACTAL GEOMETRY

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ABSTRACT

In the Field of low profile antenna micro strip patch antennas have attracted many researchers due to small size and low cost of fabrication. One of trending member of new designs is Fractal antenna. Fractal shapes are recursive/repetitive self-similar geometries, due to this self-similarity they can provide high gain, multiband, wideband solutions and design miniature antenna. Fractal shapes are widely used in computing, analysis and design; recent trends suggest positive outcomes of using fractal shapes in electromagnetics and communication system. In this paper Jerusalem cube fractal shape is introduced in probe fed conventional patch antenna for L1 band. A dual band antenna resonating at 1.41 GHz (L) and 3.37 (S) GHz, band is constructed using said fractal shape. The comparison of Return loss, Gain, VSWR, % miniaturisation and radiation patterns are shown with conventional patch antenna. Analysis is done on RT duroid 5880 with dielectric constant ε_r = 2.2. The novel fractal antenna is designed, simulated using an soft HFSS 13.0.

Key words: Fractal Antenna, Jerusalem Cube Fractal, Miniaturisation, Patch Antenna

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1. INTRODUCTION

Advancements in Wireless communication have paved the way for many researchers to make the system smarter and smarter. In most of RF and Microwave applications antenna plays an important role, As per the IEEE std.145-1983 the antenna is considered as means for radiating or receiving radio waves. Theoretically they are the transducers which convert RF signal into Electromagnetic waves and viceversa. Antenna in early days used to be voluminous and high profile.

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Transform Domain Based Iris Recognition using EMD and FFT

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Abstract: *Iris is one of the physiological trait which is used to identify the individuals. In this paper Transform Domain Based Iris Recognition using EMD and FFT is proposed. Circular Hough Transform is used in the Preprocessing stage to extract circular part of eye. The circular iris part is converted into rectangular rubber sheet model in Region of Interest (ROI).Empirical Mode Functions (EMF)'s are obtained by applying Empirical Mode Decomposition (EMD) on the Iris. FFT is also applied on ROI to extract the features. These features are added arithmetically to obtain final features. The features of the database are compared with test iris using Euclidian Distance(ED) to compute performance parameters. It is observed that the values of CRR and EER are better in the case of propsed algorithm compared to existing algorithms.*

Keywords: *Iris Recognition, EMD, FFT, ROI, ED and Fusion*

I. Introduction

Biometrics is used to authenticate a person based on physiological and behavioral characteristics of human beings. The physiological traits are Face, Fingerprint, Palm print, DNA and Iris of a person is constant in nature throughout their lifetime. The behavioral traits are Signature, Voice, Keystroke and Gait of a person are based on mood, age and surrounding circumstances, hence are not constant in their life time. The iris is considered for our research work as it is unique, non-invasive features to recognize human beings properly. Iris is a circular part of an eye and lies between sclera and pupil. The iris is an internal organ of human and is well protected compared to other physiological traits. The disadvantage of an iris is that the person has to co-operate to acquire iris image and also the iris image cannot be acquired from long distances. The application of iris recognition system is widely used in airport checking, refugee control, military applications, homeland security, various private and public sectors and the national identification AADHAR systems.

Contribution- In this paper IRFEF algorithm is proposed. The ROI area is extracted from iris using preprocessing. The EMD and FFT is then applied on ROI to generate individual feature vector. The final feature vectors are obtained by fusing individual features. The ED is used to compare test image features with the database image features.

Organization- The paper is organized as section 1 is introduction. The related literature survey is discussed in section 2.The proposed model is described in section 3. The algorithm is presented in section 4. The performance analysis and conclusions are given in section 5 and section 6 respectively.

II. Literature Survey

The application and usage of Iris as a biometric characteristic for individual identification with different technique are described in this section.Ya-Ping Huang et al., [1] proposed an Iris Recognition System which adopts Independent Component Analysis (ICA) in which the iris pattern is represented by ICA coefficients. It determines the centre of each class by competitive learning mechanism to recognize the iris pattern. Tisse et al., [2] proposed a technique which is based on the extraction of instantaneous features in the Iris texture which are the emergent frequency and/or instantaneous phase It is an alternate solution to Daugman's mathematical algorithms for local feature extraction, which allows adjusting the size of the biometric signature without increasing the computation complexity. Daugman [3] is implemented integro-differential operators to detect the inner and outer Iris boundaries. 2-D Gabor filters are applied to extract unique binary vectors constituting an Iris features. Daugman used a statistical matcher (logical exclusive OR operator) which computes the average Hamming Distance between two Iris codes. Hui Zheng and Fei Su [4] proposed an iris recognition using Gabor wavelet method; it includes the iris localization, eyelids detection and the optical filter parameters selection. Lahouari Ghouti and Fares S.Al-Qunaieer [5] proposed Quaternion Phase Correlation for color iris recognition based on a new hyper complex phase-based color iris recognition and matching method is used which has greater accuracy, flexibility in capturing the color iris information and reduces the complexity. Ghassan J. Mohammad and hong BinKung et al., [6] proposed an efficient iris localization algorithm based on Angular Integral Projection Function method The algorithm adopts boundary point detection along with curve fitting and it does not require to find all the boundary points so the localization

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RESEARCH ARTICLE OPEN ACCESS

Face Recognition based on STWT and DTCWT using two dimensional Q-shift Filters

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***University Visvesvaraya College of Engineering, Bangalore University, Bangalore, India*

ABSTRACT
The Biometrics is used to recognize a person effectively compared to traditional methods of identification. In this paper, we propose a Face recognition based on Single Tree Wavelet Transform (STWT) and Dual Tree Complex Wavelet transform (DTCWT). The Face Images are preprocessed to enhance quality of the image and resize. DTCWT and STWT are applied on face images to extract features. The Euclidian distance is used to compare features of database image with test face images to compute performance parameters. The performance of STWT is compared with DTCWT. It is observed that the DTCWT gives better results compared to STWT technique.
Index Terms: Biometrics, DTCWT, STWT,ED, Two dimensional Q-shift filters, Face recognition

I. INTRODUCTION

The biometrics is used to recognize a person based on physiological and behavioral traits. The physiological traits are fingerprint, iris, face, palm print, DNA etc., are depends on physical characteristics of a person and are almost constant throughout lifetime. The behavioral traits are signature, keystroke, voice, gait etc., are depends on behavioral characteristics of a person and are not constant in the lifetime of a person and are depends upon mood and circumstances. The advantages of biometrics identification are biometric traits cannot be lost or forgotten or stolen as they are permanently attached to persons. The biometrics can be used as long as it satisfies universality, distinctiveness, permanence, collectability and acceptability.

The face biometric trait is powerful among all biometric traits as samples of face images are acquired using nonintrusive method and without any cooperation of a person. The steps adopted in face recognition are (i) acquire of face images, (ii) preprocessing,(iii) feature extraction, (iv) matching. In preprocessing the face color images are converted into gray scale images, image resize, illumination compensation, angle rotation etc., are performed. In feature extraction, the spatial domain features are extracted directly from an image, the transform domain features are extracted by converting spatial domain image into transform domain image using transforms such as Fast Fourier Transform (FFT), Discrete Cosine Transform (DCT), Short Time Fourier Transform (STFT), Discrete Wavelet Transform (DWT), DTCWT etc. In matching section the features of test images are compared with features of face images in the database using Euclidian Distance (ED), Hamming Distance (HD), chi-square, Neural Network (NN), Support Vector Machine (SVM), Linear Discriminant Analysis (LDA), and Random Forest (RF) etc.

The biometrics is used in financial transactions, property documents, intellectual property protection, law enforcement, medical records, access to computer and internet etc.

Contribution: In this paper, face recognition based on STWT and DTCWT are compared. The features of face images are extracted using STWT and DTCWT. It is used to compute performance parameters.

Organization: This paper is organized into following sections. Section II is an overview of related work. The proposed model is described in Section III. Performance Analysis of the system is presented in Section IV and Conclusions are contained in Section V and references are given in section VI

II. RELATED WORK

Alaa Eleyan et al., [1] have introduced a face recognition method using DTCWT. PCA is used for face classification which is a linear dimensionality reduction technique. The DTCWT gives better result compares to Gabor wavelet transforms in terms of recognition rate. Zhongxi Sun et al., [2] have proposed a method for face recognition using DTCWT features with 2DPCA. DTCWT has advantage over DWT as it provides local multi-scale description of images with good directional selectivity and shift invariance. DTCWT is robust to illumination variations and facial expression changes. Results have shown that using this technique it's possible to capture the local information of different position, orientation and scales. Sun Yuehui and Du

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Artificial Generation of Visual Evoked Potential to Enhance Visual Ability

A. Vani, M. N. Mamatha

***Abstract*—**Visual signal processing in human beings occurs in the occipital lobe of the brain. The signals that are generated in the brain are universal for all the human beings and they are called Visual Evoked Potential (VEP). Generally, the visually impaired people lose sight because of severe damage to only the eyes natural photo sensors, but the occipital lobe will still be functioning. In this paper, a technique of artificially generating VEP is proposed to enhance the visual ability of the subject. The system uses the electrical photoreceptors to capture image, process the image, to detect and recognize the subject or object. This voltage is further processed and can transmit wirelessly to a BIOMEMS implanted into occipital lobe of the patient's brain. The proposed BIOMEMS consists of array of electrodes that generate the neuron potential which is similar to VEP of normal people. Thus, the neurons get the visual data from the BioMEMS which helps in generating partial vision or sight for the visually challenged patient.

***Keywords*—**Visual evoked potential, OpenViBe, BioMEMS, Neuro prosthesis.

International Science Index, Medical and Health Sciences Vol:10, No:9, 2016 waset.org/Publication/10005303

I. Introduction

THE brain is the most complex part of the body. The function of the human body is frequently associated with the signals of electrical, chemical, or acoustic origin. Such signals convey information which may not be immediately perceived but which is hidden in the signal's structure. This information has to be "decoded" or extracted in some way before the signals can give meaningful interpretations. The neural signals reflect the properties of their associated organs, and decoding this signal is found to be very helpful in various diagnoses.

VEP is one such signal that indicates the eye's electrical activity; it is widely used in eye-related research studies. The generation of VEP by applying various signal processing algorithms and simulation helps to develop a system which aims to provide a functional central vision to assist with tasks such as face recognition and object detection.

Since visually impaired people have damaged eyes, the reason of their loss of sight is that their natural photoreceptors (eye) are unable to generate signals that excite the neurons in the occipital lobe of the brain. The temporal lobe in the brain is responsible for the visual sensation. It is proved that the neurons of the occipital lobe of the blind are healthy and have a potential to create visual sensation, if the required signals are fired to the neurons in that region. Hence, we discuss a technique of transmitting visual data digitally into the occipital lobe of the brain by wireless means. In the brain, a BIOMEMS can be implanted to receive this wireless digital data by using patch antenna present on it. Digital data tapped by patch antenna are converted into analog signal by using a resistor controlled Wein bridge oscillator. Obtained analog signal is equivalent to the signals that are required by the occipital lobe neurons to create visual sensation in human beings.

The visual sensation occurs in temporal lobe, but the image processing in the human beings is done in the occipital lobe of the brain. Our main objective is to generate the same image processing signals in blind people's mind. The brain signals also referred as VEP are obtained from EEG tests of normal people. These signals serve as a means of reference for us to design our system [1].

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II. Literature Survey

The development of several neuro-prosthetic aid or devices such as developing a bionic eye to restore vision to people with retinitis pigmentosa and age related macular degeneration and many other visual problems, is very essential for the human society. Several government and private agencies have taken a research projects related to development of visual aided devices.

The BioMEMS that can be implanted on the human brain are described in [2]. It uses heterogeneous integration of 100-element micro-electro-mechanical system (MEMS) electrode array, front-end CMOS integrated circuit for neural signal pre-amplification, filtering, multiplexing and analog-to-digital conversion, and a second CMOS integrated circuit for the transmission of neural data wirelessly and conditioning of the neural signal. The Prosthesis is the process of generating the electrical signal to simulate any paralyzed limbs and control the operation of any part of subject. Flip-chip technology can be chosen for the integration of the electronics and MEMS electrode array to accommodate the high density of interconnections [3], [4].

An overview on the use of micro-electro-mechanical systems (MEMS) technologies for timing and frequency control is presented. The vibrating RF MEMS are seen frequently as circuit building hinders than as stand-alone device. The analysis of EEG signal and extraction of VEP signal with the help of case studies and examples are described by Rangayanen [5].

III. Image Acquisition and Processing

A digital camera is used to capture the image. The obtained images are then subjected to pre-processing. Viola Jones

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Multi-objective Genetic Algorithm for Optimal Power Flow Including Voltage Stability

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P. Arunajeyanthy, Dinesh Devaraj, S. N. Rekha

A MOGA for solving the multi-objective optimal power flow (OPF) problem is proposed in this paper. In this method, in the genetic population, the optimization variables are represented in their natural form. The algorithm ensures non-dominated solutions and simultaneously maintains diversity among the non-dominated solutions. The new algorithm applied to an IEEE 30 bus system. The Pareto-optimal front obtained from MOGA is compared with reference Pareto front which is obtained with multiple... CONTINUE READING

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ABSTRACT

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Study on polypropylene a c capacitors and its time dependence of loss tangent

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Prof & Head, Dept. of EEE. Saptagiri college of Engg Bangalore[3]

Abstract: *Measurements are presented of the decrease of loss tangent with time of application of a high alternating stress and its return on removal of the stress. Measurements were made at an elevated temperature, as well as at ambient conditions. An explanation of the phenomena in terms of the movement of charge carriers into the polymer and their recombination within the polymer is attempted.*
Keywords: *Dielectric materials, Organic insulating materials, Polymer.*

I. Introduction

Although the ESR (equivalent series resistance) figure of a capacitor is mentioned more often, dissipation factor and loss tangent are also widely used and closely associated with the capacitor ESR.

Although dissipation factor and loss tangent are effectively the same, they take slightly different views which are useful when designing different types of circuit. Normally the dissipation factor is used at lower frequencies, whereas the loss tangent is more applicable for high frequency applications. The loss tangent is the tangent of the difference of the phase angle between capacitor voltage and capacitor current with respect to the theoretical 90 degree value anticipated, this difference being caused by the dielectric losses within the capacitor.

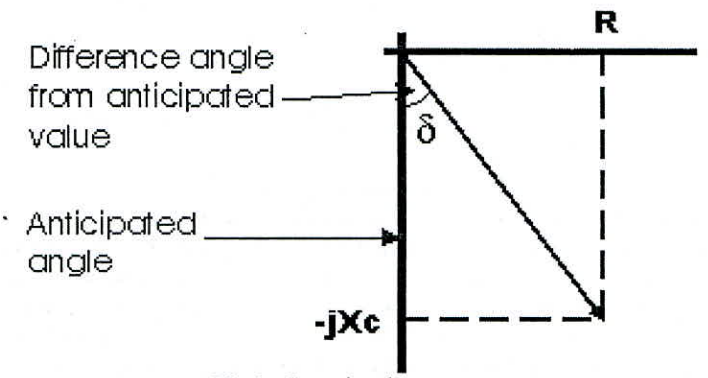

Fig.1: Capacitor loss tangent.

Tan δ =ESR/Xc

There are two deviations from simple linear dielectric behaviour to be found in liquid-impregnated capacitors. There is the well known Garton effect, ie, effectively a decrease in loss tangent with increasing applied measuring voltage, and there is a progressive fall in loss tangent during prolonged application of a high alternating stress. The latter effect is no so well documented, and we present some new experimental results as well as attempting an explanation of the phenomenon.

II. Experimental details

The capacitors investigated consisted of windings made with 6μm thick aluminium-foil electrodes and either 2-layer dielectrics of 2 x 12.7 μm polypropylene film or 3-layer dielectrics, where a paper layer (10 μm thick, density 1.0g cm^{-3}) was inserted between the two polypropylene films. The windings were flattened, and were vacuum- impregnated with epoxy-stabilised trichlordiphenyl (t.c.d.p.) at a temperature of 60°C. The 2-layer samples had a capacitance of 0.23 μF, the 3-layer ones 1 *μF.*

Capacitance and loss tangent measurements were made with an ampere-turns balance transformer bridge at 50 Hz using a tuned detector. The absolute accuracy of tan δ measurement is estimated as ± 5 x 10^{-5}, and repeatability is ± 1 x 10^{-5}

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Study on polypropylene a c capacitors and its time dependence of loss tangent

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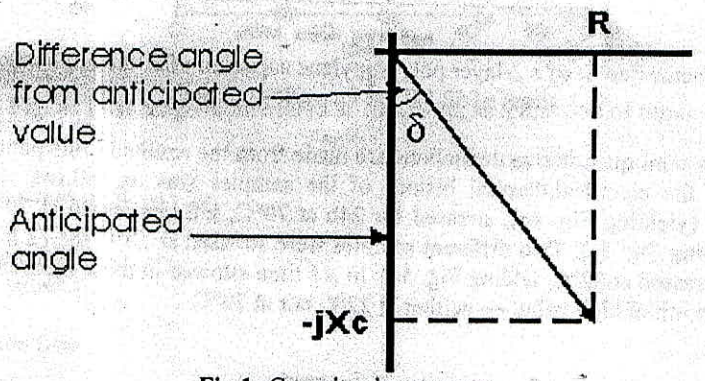

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Capacitance and loss tangent measurements were made with an ampere-turns balance transformer bridge at 50 Hz using a tuned detector. The absolute accuracy of tan δ measurement is estimated as ± 5 x 10^{-5}, and repeatability is ± 1 x 10^{-5}

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An Optimal Technique to Limit the Harmonics Level in Brush Less Alternators

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ABSTRACT: *Harmonic parameters of synchronous machine greatly affect its performance during steady state operation and also during faults and transient. The Harmonics in generated voltage waveforms are often the cause for excessive heating and tooth tip saturation and compel de-rating of such machine, because of this problem it needs to analyze the harmonic content for improving the quality of performance. This paper is focused on investigation and evaluation of harmonics levels, for calculation of proper design input parameters. Hence in this paper we discusses a novel technique to overcome this problem at the design level itself, by introducing the software tool for predetermining the design input data.*

Keywords: Harmonic distortion analysis, Design input data, soft ware tool, Brushless alternators.

INTRODUCTION

Several different technologies are used in alternators to analyze harmonics. Here using a brush less alternator to analyzing the harmonics and minimization of its effects. Majorly harmonics generated in voltage waveforms and in slot tooth.

In the first case harmonics can be minimized by using distributed winding instead of concentric winding; hence we can obtain distribution factor and chording factor for different harmonic orders.

And also the slot harmonics has to be limit to achieve limited total harmonic distortion. This slot harmonics are mainly depends on the slot pitch. By varying slot pitch we can get different harmonic orders and proper design data regarding slots.

In order to achieve this proper design input data I am introducing a new software tool technique, in this I can predefine the design data for different harmonic orders.

BRUSHLESS ALTERNATOR:

All synchronous generators function as magnetic energy conversion devices to convert mechanical power into electrical power by means of magnetic fields. The input torque provided by the prime mover (the turbine) is balanced by the magnetic torque between the stationary and rotating structures in the generator.

Several different approaches are possible to accomplish this power conversion function. For the larger synchronous generators that are primarily discussed in this section, the magnetic fields are typically established by electrical currents circulated in stationary ac windings, and rotating dc windings, and these magnetic fields are circulated within the generator through highly permeable steel structures. In such a generator, the ac winding is electrically connected to an electrical power system and physically mounted on the stationary member of the generator (the stator), and the dc winding is electrically connected to a dc power source and physically mounted on the rotating member of the generator (the rotor). Because of the prevalence of poly phase power generation, distribution, and utilization, the ac winding in all but the smallest synchronous generators is generally a poly phase winding.

The most common number of phases is three. All larger synchronous generators include an ac armature winding and a dc field winding. The electromagnetic interaction of these two windings provides the basis for ac power generation. In some of the smallest synchronous generators, with ratings below a few hundred kilowatts, the magnetic function of the dc field winding is provided by permanent magnets. In all large synchronous generators, the dc field is provided by a dc field winding.

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Supercapacitor Power Managmenent Using Boost Converter Renewable Energy Fed DC Motor

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Abstract— This paper implements a smart boost converter fed DC motor which is powered by photovoltaic cells/ battery. A 220V, 0.8A universal motor which is driven by boost converter and Supercapacitor is used to deliver required power to the load during transient period. Large electric drives require advanced power electronic converters to meet the high power demands. With the shortage of the energy and ever increasing of the oil price, research on the renewable and green energy sources, especially the solar arrays and the fuel cells, becomes more and more important. How to achieve high step-up and high efficiency DC/DC converters is the major consideration in the renewable power applications due to the low voltage of PV arrays and fuel cells. This converter provides the constant output voltage irrespective of the PV panel output and load. The simulation and experimental results of this system are presented and compared. The performance of the converter is also compared with the conventional boost converter. This comparison reveals that the proposed converter system has the advantages of high gain and high efficiency with the minimum number of components. This thesis aims to explain the knowledge about the performance of the boost converter and the performance is analyzed by way of simulation. The variations at the load is overcome by using Supercapacitor and the balancing of Supercapacitor is done.

.ex Terms - Boost converter, DC motor, Supercapacitor, Power management

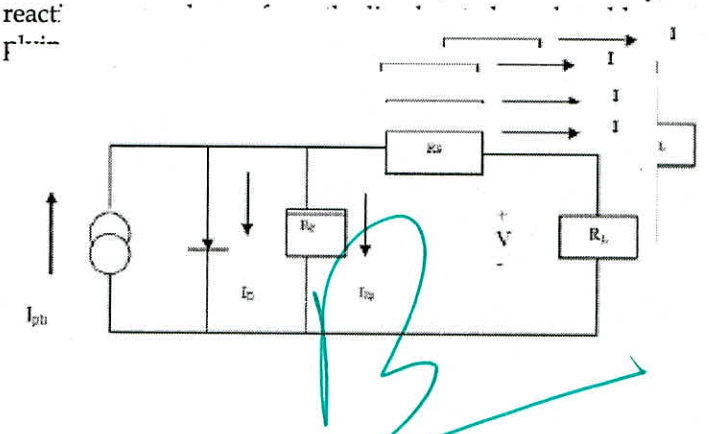
1 Introduction

The usage of the fossil fuels, such as the oil, the coal and the gas, result in serious greenhouse effect and pollute the atmosphere, which has great effect on the world. Meanwhile, there is a big contradiction between the fossil fuels supply and the global energy demand, which leads to a high oil price in the international market recently. The energy shortage and the atmosphere pollution have been the major limitations for the human development. To find renewable energy is becoming more and more exigent. Photovoltaic (PV) sources are one of the significant players in the world's energy portfolio and will become the biggest contributions to the electricity generation among all renewable energy candidates by year 2040 because it is truly a clean, emission-free renewable electrical generation technology with high reliability. The task of a maximum power point tracker (MPPT) in a photovoltaic (PV) energy conversion system is to continuously tune the system so that it draws maximum power from the solar array regardless of weather or load conditions. Since the solar array has a non-ideal voltage – current characteristic and the conditions such as insulation, ambient temperature, and wind that affect the output of the solar array are unpredictable, the tracker must contend with a nonlinear and time-varying system. Many tracking algorithms and techniques have been developed.

The limitations of the conventional boost converters are analyzed and the conceptual solution for high step-up conversion is proposed in this paper. Then the state-of-the-art topologies are covered and classified based on the circuit performance. The challenges in high step-up renewable energy applications are summarized to generate the next generation non-isolated high step-up DC/DC converters.

2 Literature Survey

Electric motors have broad applications in such areas as industry, business, public service and household electrical appliances, powering a variety of equipment including wind blowers, water pumps, compressors and machine tools. In industrially developed nations and large developing nations, electric motors account for a considerable proportion of total national power consumption. Statistics indicate that electric motors are generally responsible for about 2/3 of industrial power consumption in each nation, or about 40%of overall power consumption By introducing variable speed to the driven load, it is possible to optimize the efficiency of the entire system, and it is in this area that the greatest efficiency gains are possible Power factor correction equipment that can be applied at the motor level will not only decrease energy use but will significantly extend the life of the equipment. Additionally, it also maximizes the capacity of the power system, improves the quality of voltage, and reduces the power losses. In order to decrease the cost and to improve the efficiency, the react



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Novel Framework for Predicting Fault Tolerance using Stochastic Modelling on Distributed Power Line Transmission

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Abstract

The usage of renewable power sources are the best alternatives to solve the problems of constantly saturated conventional energy sources in very near future. However, owing to the time-variant properties of renewable resources, it is very challenging task to ensure its resiliency towards utility failures unlike in existing distributed generation system does today. We reviewed the existing system to find that studies towards forecasting of failures are still open-end problems. Therefore, this paper presents a novel framework those targets to incorporate a predictive modelling scheme efficient enough to withstand dynamic interruption by consistently supplying local load. A stochastic modelling is carried out for computing capacity, demands, as well as outage using analytical research methodology. The study outcome was compared with most frequently practiced forecasting technique to find that proposed system offers better power capacity with very less errors for larger customer base.

Keywords: Power Transmission, Prediction, Outage, Stochastic Approach, Fault Tolerance

1. INTRODUCTION

The existing forms of the power transmission network targets mainly to leverage the higher degree of fault tolerant performance [1]. Such incorporation of fault tolerance is obtained by integrating additional hardware-based resource that has the capability to perform better reconfiguration of the network in to more efficient manner. However, such operation includes more cost of new components and doesn't offer reliability at same time [2]. With the increasing demands of the users, the future demands of the power distribution changes are in constant pace of upgradation [3]. Incorporation of such features calls for proper assessment of resiliency towards potential failures along with minimization of outage. The area of distributive generation essentially uses both conventional as well as renewable source of energy [4][5], where still majority of the developing country still uses conventional sources of energy which is saturating very fast. This leads to emphasize on the future usage of renewable energy whose adoption in power generation is increasing in a faster pace [6]. Although, usage of renewable energy sources are the only best alternative at present as well as in future for applying it in the process of distributive generation system, but it is shrouded with some potential problems. The first problem associated with the usage of renewable sources is its increased dependencies on various input which often changes in different circumstances of usage. The energy that is produced from such form of energy sources also includes higher fluctuation that makes it very much challenging for its behavior to be detected in future [7]. There are certain applications in power transmission system (e.g. industrial, emergency, healthcare, etc), which demands highest level of resiliency towards any form of faults. On the other hand, the biggest problem in using renewable source of energy is that it is very difficult to extract a particular trend in its behavior where prediction can be made accurately. In such situation, there is all the possibilities of non-matching of supply factor and actual demands owing to various forms of possible interruption that will be surfaced by using renewable resources in distributive generation. Therefore, in presence of any form of interruption, the source of distributive generation is often subjected to disconnection. The extent of distributed generation towards trustworthiness resides in the side of user and never for any component of utility causing the system to be pretty expensive at present. However, it should be noted that a better form of fault tolerance can only be offered if involved components as well as utilities in distributive generation is protected well. One way to do so is to perform proper identification of failure type and another way is to ensure seamless transmission of load when the system encounters a condition of power interruption. However, at present, both the solutions are hard to be retained at same time. For better solution, it is anticipated that occurrences of failures should be as low as possible along with a hope of enhancing the system tolerance level by supplying load during the mode of islanding process. At present, there are availability of various forms of prediction-based algorithms [8][9][10] trying to solve complex forecasting problems, however, they cannot be directly applied on such distributed generation system

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An Enhanced Cat Swarm Optimization for Power Loss Minimization in Distributed Power Flow Controller

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Abstract—Voltage instability and power loss scenarios are the most common problems in power systems. This paper deals with the proposal of Cat swarm optimization Algorithm [CSO] and Genetic Algorithm [GA] in FACTS Controller for voltage stability improvement and minimization of the power loss. CSO Model in this system is been used to solve the problem of voltage instability. CSO model is based on the cat nature, which is categorized into searching and trapping schemes.. In a Distributed Power Factor Correction [DPFC] scheme, voltage stability improvement is a key factor due to the chance of more losses in the transmission system. The Voltage stability improvement will be perpetuated by the optimally placing and sizing of the IEEE 64 bus In DPFC System. For sizing and placing, GA is used. The proposed technique is implemented in MATLAB SIMULINK and tested for IEEE 14, 30, 57 and 118 bus systems respectively.

Keywords- Bus, Cat, CSO, DPFC, Genetic Algorithm, GA, RTS, Power Factor, Voltage Level Balancing, Power Loss.

I. INTRODUCTION

In today's fast growing technical world Power Quality management is the most important concern. For improving the power quality, the power electronic system devices like Versatile AC Gear [FACTS] are required to achieve the new power management capabilities. The moderation of FACTS devices based on empowered power management scheme and signified semi-conductor changes, an innovative approach is required to maintain the quality and avoiding the loss in power factors. In conventional systems, passive L-C filters are used to break the reverse harmonics as well as the capacitors are used to boost up the power issues.

Apart from the all specified things, passive filters by default have certain limitations such as accumulating recompense, large size and resonance. For these reasons, in conventional systems, a new method of Unified Power Flow Controller [UPFC] was introduced, to resolve the problems quoted above and achieve the high power stability and minimum amount of power loss strategies.

II. UNIFIED POWER FLOW CONTROLLER [UPFC]

UPFC is considered as a most powerful device which might at the same time, managing power factors with all the parameters of the system like line resistivity, transmission angle, bus voltage and so on. UPFC is that the mixture of Static Compensator (STATCOM) and Static Synchronous Series Compensator (SSSC) coupled via a standard DC link. The UPFC model usually provides higher support with the following applications such as: (a) Enhancing the transient stability of inter area power systems, (b) Employ for tacking power system fluctuation, (c) for improving microgrid voltage profile, (d) for improvement of voltage profile and reduction of losses and (e) Employs in High Voltage DC transmission systems.

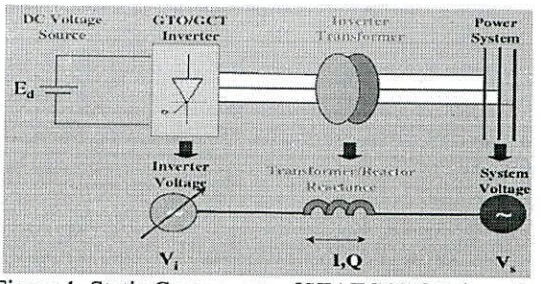

Figure 1. Static Compensator [STATCOM] Schematic Design

III. STATIC COMPENSATOR [STATCOM]

The urgency of FACTS instruments and especially GTO thyristor based STATCOM has facilitated like expertise to be employed as stern spirited substitutes to conservative SVC. A Static Synchronous Compensator [STATCOM] is a regulating tool used on discontinuous current electricity communication networks.

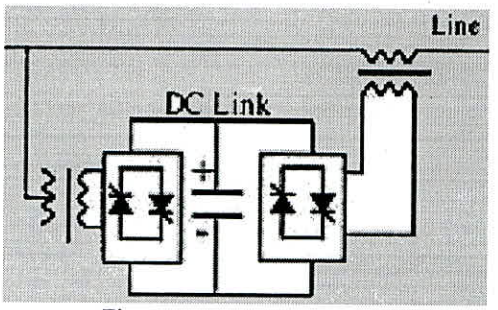

Figure 2. Structure of UPFC

It is purely based on a power electronics voltage source converter and can do something as moreover a source or sink of reactive AC power to an electricity network. If connected to a source of power it can also supply active

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Energetic Designing of Fault Analysis Model Using Cat Swarm Optimization with DPFC Implementations

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ABSTRACT: The main aim of the proposed work is to experimentally prove the efficiency of Cat Swarm Optimization Technique with Distributed Power Flow Correction (DPFC). The DPFC consists of AC-DC Serial Converter as well as Shunt Converter. Serial Converter, which connects the AC to DC converters serially and makes the fine AC output, that AC output is feeded back to IEEE-16 bus system. Each bus system consists of Cat Swarm, which monitors the incoming and outgoing voltages. If it finds any fault condition over the block it immediately notified by means of MATLAB Simulink Model. Shunt Converter, which connects the AC to DC converters parallely and it contains transformers as well as bridges, which converts DC voltage to AC voltage and given back to the transmission line. In this system we form IEEE-16 Bus System, in that one bus acts as a master, which gives power supply to all the other buses. Each bus is connected in different logic to get different output power based on the RLC load. If any fault condition occurs into the bus system, Cat Swarm algorithm identifies the fault over the buses and informs that via resulting scopes. The Cat Swarm algorithm efficiency is compared against the genetic algorithm along with DPFC model. The experimental results prove that the Cat Swarm Optimization Algorithm with DPFC improves the power factor and identify the fault conditions better than the genetic algorithm with DPFC.

KEYWORDS: Cat Swarm Optimization, Genetic Algorithm, DPFC, UPFC, AC-DC, IEEE-16 Bus System, Power Flow Correction, Shunt Converter, Series Converter.

I. INTRODUCTION

The main objective of the system is to experimentally analyze the fault over the bus system and prove the efficiency of Cat Swarm Optimization with Distributed Power Flow Correction (DPFC) as well as compare that with Genetic Algorithm and prove CSO is better than GA. Voltage dependability is the capacity of a force framework to keep up relentless voltages at all buses in the framework under typical working conditions, and subsequent to being subjected to an unsettling influence. In the event that the transport does not keep up the consistent state esteem it is called as the voltage precariousness that may bring about the type of a dynamic fall or ascent of voltages at those transports. Power System Load demonstrating is a strategy used to display the force framework and vital for voltage strength examines. In this paper, we are attempting to investigate displaying parameters of different burdens for voltage solidness thinks about. We are performing static burden demonstrating study. The exactness and rightness of the outcomes are straightforwardly identified with the heap models utilized as a part of this investigation. The technique is examined utilizing continuation power stream schedule. Truths innovation with a blend of Cat Swarm Optimization heuristic methodology is connected to give an answer for the issue of precariousness because of different burden models. The adequacy of the proposed technique is exhibited through quantitative studies on standard IEEE 16 Bus framework.

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Design of fixture for gear cover component machining on VMC

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Abstract
Gear cover is very important part of the gear transmission system, where the gear gets fixed inside firmly. It should be accurately machined with the acceptable tolerance. Also the fluctuations of dimensions in work-piece to work piece should be minimum so That it will be easier to assemble the gears inside the gear cover perfectly.
This casted gear cover component requires machining (Facing, Drilling, Tapping, Boring, Counter Boring operations as per the requirement at each faces) on four sides. At present the industry is utilizing 3 separate fixtures for machining of all four sides of the die casted Aluminium gear cover component. Due to this, the maintenance of accuracy of the machining becomes the burden on the operator to adjust the fixtures each time. This increase the setting time, handling time, tool change time. Also the cost per component increases.
The aim of this project is to design and development of a single new fixture connected to turret which replaces the old three fixtures for machining operation using designing software's i.e. Pro ENGINEERING, AutoCAD and analysis using ANSYS, which can eliminate the said problems. Also costing analysis is carried out by comparing old and newly designed fixture. The production rate will also increase up to 50% and cost per component machining decreases, which is quite objective.
Thus, we are designing the fixture for such gear cover component machining for 2-wheeler excel TVS vehicle.

Keywords: fixture, clamping, holder, turret, AutoCAD, pro e, ANSYS

1. Introduction

Fixture [1] – A fixture is a work piece holding device which is rigidly fixed using fasteners on to the machine bed. It has no special arrangements to guide the tool as in jigs. In a setup using a fixture, the responsibility of accuracy is dependent on the operator and the construction of machine tool. In fixtures, the method of clamping and locating should be such that it reduces the idle time to a minimum. Fixtures vary in design from relatively simple tools to expensive, complicated devices. In order to decide upon the location method, one has to consider the work piece shape, size, surface and features that are likely to affect obstruct the tool movement.
The correct position of the work piece essentially require restricting of all Degree Of Freedom of the work piece positively. Once a work piece is located, it is necessary to press it against the locating surface and hold it there against the forces acting upon it.

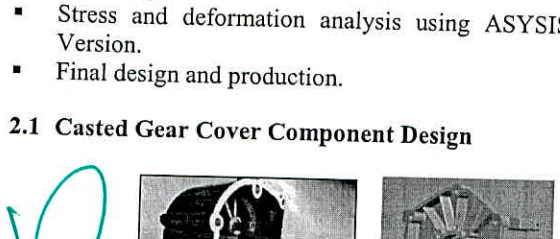
1.1 Elements of Fixture [2]

- Fixture Body – This is the main structural element of the fixture. This body is designed as per the dimensions of the required component that is to be machined. In our Design, we have provided the profile cut, that fits the gear cover component on to it. And the size of the fixture body must not be heavy so that it is easy to place it on to the machining bed.
- Clamps - It is necessary hold the work piece firmly against the forces acting upon it. This action refers to as Clamping and the mechanism used for this action is called Clamp.
- Locators - Fixed component of a fixture. It is used to establish and maintain the position of a part in the fixture by constraining the movement of the part. For work-pieces of greater variability in shapes and surface conditions, a locator can also be adjustable.
- Supports – These are the elements that are provided on the fixture body to provide the required force against the deformation which are caused due to the action of clamping.

2. Fixture Design Steps

- Dimensional analysis of the Casted Gear Cover Component.
- Modelling of the component in 2D and 3D.
- Analysis of the time and cost of old 3 Fixtures that were used for machining earlier.
- Concept designing of the new fixture considering Design specification, Factory requirements, economy, ease of use and safety.
- Stress and deformation analysis using ASYSIS R16.2 Version.
- Final design and production.

2.1 Casted Gear Cover Component Design



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Wear and Impact Characterization of A356.1 Aluminium Alloy Reinforced with Magnesium Nano Particle

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Abstract - **Aluminum matrix composites (AMCs) reinforced with Nano-sized Magnesium particles are widely used for high performance applications such as automotive, military, and aerospace and electricity industries because of their improved physical and mechanical properties. In this research, Magnesium Oxide (MgO) Nano particles were synthesized by Solution Combustion Synthesis process. Prepared Nano particles were characterized by Powder X-ray diffraction (PXRD). A356.1Aluminium alloy was successfully reinforced with a variation of 0.25 0.5,0.75and 1.0,Wt.% of the Synthesized Magnesium Oxide Nanoparticle, via stir casting Technique at a temperature of 800^{0}C.Prepared composites were then characterized by scanning electron microscopy (SEM). Wear tests were carried out at Varying Wt. % ratios with varying Conditions of Speed, Load and Time. The results reveal that the Nano Metal Matrix Composite (NMMC)'s containing 1.0 Wt.% reinforcement particle hasshown improved mechanical properties.**

Keywords— *Nano Metal Matrix Composite, Magnesium Nano A356.1 aluminium alloy, Stir casting*

INTRODUCTION

The aluminum-based metal matrix composites (AMCs) have a high potential for advanced applications when high specific strength and modulus as well as good wear resistance are important [1,2]. The properties of the composites are influenced by the chemical nature of the components, morphology of particles, their spatial distribution and interface interaction. The high volume fraction of fine and thermally stable reinforcement yields good mechanical properties of the composite [3].Development of new structural materials with higher strength to-weight ratios is one of the biggest challenges in transportation industry to reduce fuel consumption and to reduce greenhouse gas emissions [4–10]. Accordingly, close attention is paid to light metals and alloys such as magnesium, due to its intrinsic characteristics of low density, good machine ability and availability in the global market [5]. However, the relatively low strength, poor room temperature ductility and toughness limit the range of magnesium applications. Alloying with Al, Zn, Mn, Ca and other elements is a conventional way to improve properties of magnesium. The enhancement in mechanical properties of the obtained alloys, however, might not be as high as those obtained by composite reinforcements [5]. Since composite materials have several advantages over pure metals and alloys, numerous studies have been conducted on the addition of discontinuous particles in micron- to Nano-scale and their effects on the achieved properties during the last two decades. Selection of reinforcements is typically governed by cost, availability and compatibility with matrix. Most research studies have investigated the properties of magnesium composites containing different hard ceramic nanoparticles.

Aluminium based metal matrix composites (NMMCs) have been extensively studied as an attractive choice for aerospace and automotive applications due to their low density and superiorspecific properties including strength, stiffness and creep resistance [1–13]. To fabricate aluminium based NMMCs, Nano sized magnesium particle used. As compared to the unreinforced aluminium alloy matrix, Magnesium reinforced aluminium NMMCs have a considerably improved strength, but also a significantly reduced ductility, Nano particle reinforcements can significantly increase the matrix mechanical strength by more effectively promoting particle hardening mechanisms than micron size particles. Solidification processing such as stir casting that utilizes mechanical stirring is a widely used technique of producing aluminium matrix composites that are reinforced by Nano sized magnesium particles. A combination of good distribution and dispersion of Nano particles can be achieved by mechanical stirring.

In the present work, we attempted to synthesis magnesium Nano particle using combustion synthesis method and to fabricate aluminum alloy Nano metal matrix composite with different volume fractions of Nano magnesium particles using stir casting technique. The aim has been to study the effect of Nano reinforcement in to A356.1 aluminium alloy and characterization of the NMMCs.

Experimental procedure

Preparation of magnesium Nano particle

Table 1. A356.1 Aluminium alloy composition

Elements	Al	Si	Fe	Cu	Mg	Mn	Zn	Ni
Wt. %	91.73	7.23	0.32	0.18	0.38	0.02	0.05	0.05

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Mechanical Properties of Sisal Fiber Reinforced Thermoplastic Starch Bio-Composites

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Abstract

Natural fiber reinforced starch based composites are processed by compression molding technique. Corn starch is used as matrix. 65% w/w Sisal fiber were used in preparing the composites. Glycerol and water are used plasticizers. Mechanical properties like ultimate tensile strength and impact strength were found. In both cases, improved mechanical properties are obtained at increasing fiber contents. Tensile strength look noticeably improved with the addition of 10% by weight of sisal fibers, while the results for impact strength obtained for sisal fibers are fall apart.

Keywords: Compression molding, starch polymers, natural fiber composites.

INTRODUCATION

Bio degradable Composites were produced from natural resources. Many of the researchers all over the world developing green composites as a alternative to the petroleum based materials which causing environmental problems. The present study is the first of an arrangement that report information for the portrayal of starch–natural fiber composites delivered from a wide assortment of local starch grids and normal filament sisal, while utilizing distinctive plasticizers, and is concerned principally with the investigation of the preparing techniques and the portrayal of the mechanical properties of the bio-composites.

Starch are produced from plant extract, many parts of the world starch were used as food. It consists of amylase and amylopectin, and glucose [4]. Despite the fact that starch granules are totally insoluble in frosty water, they change physically when

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A Review about Scope of Traditional Medicinal Plants in a New Drug Discovery

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Abstract

'AYUSH' is the most important traditional system of medicine, which has been practised since thousands of long years by our ancestors. AYUSH has a very good healing power for so many problems by using both traditional and natural medicine. The new drug discovery is taking long time to produce its products and thus there is a reduction in number of new drug approvals due to different issues like legal problems or additional effects or the end result and its costs are also very high compared with AYUSH medicines. On doing bio-assay to the identified plant, it may lead to the isolation of a druggable compound called new drug. The success rate is more in herbal medicine than the drug that is chemically synthesized and economically friendly in nature. Mother Nature has an abundant wealth of medicinal plants. About 50% of all modern drugs consist of derivatives of natural products which are derived from medicinal plants. So, since in the recent year's development, the drug discovery from plant source is more focused than the drugs synthesized chemically. Medicinal plants are highly valued as a source of molecule for therapeutics. The medicinal plant drugs can also act on pharmacological targets like cancer, malaria, HIV and so many harmful diseases to the mankind. The methods used to extract the new drugs from different medicinal plants are proved to be the best successful approaches to discover the new medicinal plants.

Keywords: AYUSH, medicinal plants, drug discovery, bio-assay, therapeutics, pharmacological targets, herbs

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INTRODUCTION

Nature is the best example for the phenomenon of symbiosis. The natural product from plants and animals are used as the basis for the treatment of diseases. India has a rich heritage of traditional system of medicine which is very well documented. India has a rich culture of medicinal herbs and spices. There are more than 2000 species with high potential ability for AYUSH medicines. Since most of the people in popular countries cannot afford pharmaceutical products they rely on Ayurveda medicines as they are cheaper and safer [1].

The term medicinal plants, includes various types of plants which are used in herbal medicine. It is the use of plants for medicinal purposes and the study of such uses. Traditional plant medicines continue to be widely used on many purposes like rise in population, inadequate supply of drugs, high cost of treatment, side effects and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of medicinal plants as asource of medicine for a wide variety of human ailments.

In India, we have large amount of forest land which is a reservoir for many medicinal and aromatic plants, which are mainly used as a source of raw materials for drug manufacturing and perfume products. About 8000 herbal products are currently present in AYUSH systems in India [2, 3].

Recently WHO estimated that 80% of people use herbal medicines for their primary health care and about 21000 plant species have the potent to be used as a medicinal plant. Over the past two decades, there has been a tremendous increase in use of medicinal plants because they are very significant and there is also a lack of research data in this field [2].

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Mechanical Properties of Sisal Fiber Reinforced Thermoplastic Starch Bio-Composites

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Abstract

Natural fiber reinforced starch based composites are processed by compression molding technique. Corn starch is used as matrix. 65% w/w Sisal fiber were used in preparing the composites. Glycerol and water are used plasticizers. Mechanical properties like ultimate tensile strength and impact strength were found. In both cases, improved mechanical properties are obtained at increasing fiber contents. Tensile strength look noticeably improved with the addition of 10% by weight of sisal fibers, while the results for impact strength obtained for sisal fibers are fall apart.

Keywords: Compression molding, starch polymers, natural fiber composites.

INTRODUCATION

Bio degradable Composites were produced from natural resources. Many of the researchers all over the world developing green composites as a alternative to the petroleum based materials which causing environmental problems. The present study is the first of an arrangement that report information for the portrayal of starch–natural fiber composites delivered from a wide assortment of local starch grids and normal filament sisal, while utilizing distinctive plasticizers, and is concerned principally with the investigation of the preparing techniques and the portrayal of the mechanical properties of the bio-composites.

Starch are produced from plant extract, many parts of the world starch were used as food. It consists of amylase and amylopectin, and glucose [4]. Despite the fact that starch granules are totally insoluble in frosty water, they change physically when

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Evaluation of Performance And Emission Characteristics Of Biodiesel Derived from Diary Scum oil on a Computerized C.I Engine

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Abstract

The potential of using dairy waste scum as a feed stock for bio-diesel production was investigated.Experiments carried out by using diary waste scum as the raw material to produce biodiesel by using transesterification process .The various properties such as flash point pour point calorific value kinematic viscoscity compared with ASTM biodiesel standards.Experiments conducted using the fuel blends of B10, B30, B40, B60, and B80 and for 100% diesel and 100% bio-diesel and its comparison of brake thermal efficiency, brake power and brake specific fuel consumption for the various blends were made with diesel with an engine speed of 1500rpmPresent study shows that B40 blend of dairy scum oil have a better performance characteristics compared to diesel oil and better emission characteristics of blend B10 compared to diesel oil The present analysis confirms that bio-diesel from dairy waste scum is quit suitable as an alternative to petroleum diesel . This new way for using dairy waste scum reduces the cost of production of bio-diesel and the problem related to the disposal of Dairy scum.

Keywords: Dairy scum oil, Biodiesel, Transesterification

I Introduction:

Biodiesel as an alternative fuel for diesel engines is becoming increasingly important due to diminishing petroleum reserves and the environmental consequences of exhaust gases from petroleum-fuelled engines. As a future prospective fuel, biodiesel has to compete economically with petroleum diesel fuels. The availability and sustainability of sufficient supplies of less expensive feedstock will be a crucial determinant delivering a competitive biodiesel to the

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2-(5-Methyl-1-benzofuran-3-yl)-*N*-(2-phenylethyl)-acetamide

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Keywords: crystal structure; benzofuran; hydrogen bonding; π–π stacking.

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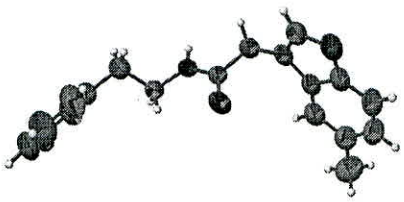
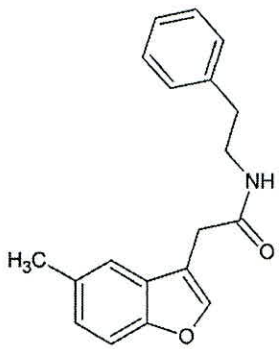
Structural data: full structural data are available from iucrdata.iucr.org

The title compound, $C_{19}H_{19}NO_2$, is non-planar with the phenyl ring of the phenethylacetamide residue inclined to the benzofuran ring system by 84.8 (3)°. The methyl group lies in the plane of the fused ring system [C—C—C—C torsion angle = −179.6 (3)°]. In the crystal, N—H···O hydrogen bonds link the molecules into chains along the *a*-axis direction. π–π stacking interactions with a centroid-to-centroid distances of 3.497 (3) Å further stabilize the structure, stacking the molecules along *a*.

3D view



Chemical scheme



Structure description

Benzofuran derivatives with an amide linkage have attracted attention due to their wide range of biological activities. These include acting as melatonin receptor selective ligands (Wallez *et al.*, 2002), glycogen synthase kinase 3β inhibitors, which suppress proliferation and survival of pancreatic cancer cells (Gaisina *et al.*, 2009), and ischemic cell death inhibitors (Suh *et al.*, 2010). They are also used as antitubercular and antifungal (Telvekar *et al.*, 2012) or anticonvulsant agents (Shakya *et al.*, 2016). They inhibit monoamine oxidase (Pisani *et al.*, 2013), the hepatitis C virus (Bowman *et al.*, 2015) and NF-kB activity (Choi *et al.*, 2016). Other pharmaceutical applications include the treatment of cognitive disorders (Mazurov *et al.*, 2012) and as anti-oestrogen breast cancer agents (Li *et al.*, 2013). Chemically they are used as intermediates for the synthesis of morphine alkaloids (France *et al.*, 2008).

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Corn Silk- A Medicinal Boon

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Abstract : Herbs are one of humanity's oldest known health care therapeutic essentials for a sustainable health, which forms the basic platform of modern medicines. Through out the world, there is now an inclination and search for stable diets with added value. One such important herb which is found extensively all over the world is corn silk. It is scientifically referred to as *Maydis stigma or Zea* as they reflect the soft, fiber-like growth that accompanies the ear of the corn.

Corn silk is an essential herb that is used traditionally to treat a wide range of diseases. Its potential use is very much related to its properties and mechanism of action of its plant's bioactive constituents such as flavonoids, terpenoids, etc. Pharmacological studies have proved that this traditional herb was found to have medicinal properties like anti-oxidant, anti-depressant, anti-hyperlidemic, anti-diabetic,anti-inflammatory,neuroprotective toxicity and many more properties.

Keywords : therapeutic; Corn silk; traditionally; Pharmacological studies.

Introduction

Corn silk is considered as a waste byproduct of maize(corn). Maize being the third most planted food crop and one of the major energy sources,it is also one of the essential cereal and edible grain the world possesses. Cornsilk,a part from having proteins, vitamins, carbohydrates, also is an excellent source of fixed and volatile oils, steroids like sitosterol, stigmasterol, alkaloids, saponins and other natural antioxidants like flavanoids. The flowers of corn are monoecious. The male flowers called as tassels which produce yellow pollen. The female flowers produce corn silk. The silks function as a stigma of a female flower and as the fruit develops, the silk elongates beyond the cob covering the edible part of the plant. Initially, the colour of corn silk is light green, which later turns to red, yellow or light brown. Each silk of corn may be pollinated to produce one kernel of corn.It also contains maizeric acid, resin, sugar, mucilage, fibres that are essential for diet[1].It also contains chemicals that work like water pills(diuretics),and it can also alter blood sugar levels and is also helpful in reducing inflammations.[2]

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"Effect of Fiber Volume on Mechanical Properties of Alkaline Treated Unidirectional Long Kenaf Fiber with Egg Shell Powder Reinforced Polymer Matrix Composite"

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Abstract - **Recently due to increasing interest in eco-friendly materials, studies on ecofriendly fiber obtained from nature have been actively conducted to the area of composite. Natural plant fibers like Jute, Sisal, Coir, Kenaf, Flax, Hemp, Sugarcane Bagasse, Bamboo pineapple leaf and Banana are typically used in composites as a reinforcing material either as continuous (very long) or discontinuous (chopped) fibers due to their low cost, high tensile strength, low thermal expansion, high strength to weight ratio, renewability, biodegradability and exponential growth. Although, the natural fiber has less strength than the synthetic fiber such as carbon fiber, it has similar strength to glass fiber. Accordingly, it can apply as very advantageous composite when an appropriate resin has been selected. Environmental concerns are now driving demand for recycled polymer (Thermoplastics) such as Polypropylene (PP), Poly Ethylene (PE), Polystyrene (PS), Polyethylene Sulphide (PPS), and Polyolefin etc. For various applications, especially in automotive and aircraft industries. The specimens are prepared according to ASTM standards and the different values are observed. Here filler material used is Egg powder which enhances the tensile property of the material.**

1.0 INTRODUCTION

The composites industry has begun to recognize that the commercial applications of composites promise to offer much larger business opportunities than the aerospace sector due to the sheer size of transportation industry. Thus the shift of composite applications from aircraft to other commercial uses has become prominent in recent years. Increasingly enabled by the introduction of newer polymer resin matrix materials and high performance reinforcement fibers of glass, carbon and aramid, the penetration of these advanced materials has witnessed a steady expansion in uses and volume. The increased volume has resulted in an expected reduction in costs. High performance FRP can now be found in such diverse applications as composite armoring designed to resist explosive impacts, fuel cylinders for natural gas vehicles, windmill blades, industrial drive shafts, support beams of highway bridges and even paper making rollers. For certain applications, the use of composites rather than metals has in fact resulted in savings of both cost and weight.

1.1Definition of Composite

A composite material is defined as the combination of two or more macro constituent materials, which are essentially insoluble into each other such that the properties of the combination are better than the sum of the properties of each constituent taken separately. The objective of this combination is to derive the best qualities of the constituent materials. These composites exhibit desirable qualities, which the constituents themselves may not possess.

1.2types of Composites

In a broad way composite materials can be classified into three groups in the basis of matrix materials. They are:

1. Metal matrix composites (MMC)
2. Ceramic matrix composites (CMC)
3. Polymer matrix composites (PMC)

1.2.1metal Matrix Composites:

These composites have many advantages over monolithic metals like higher specific strength, higher specific modulus, better properties at elevated temperatures, and lower coefficient of thermal expansion. Due to these attributes metal matrix composites are under consideration for wide range of applications.

1.2.2ceramic Matrix Composites:

One of the main objectives in preparing ceramic matrix composites is to increase the toughness. Naturally it is hoped and also it is found that there is a contomitant improvement in strength and stiffness of ceramic matrix composites.

1.2.3polymer Matrix Composites:

Most commonly used matrix materials are polymeric. In general the mechanical properties of polymers are inadequate for many structural purposes. Generally their strength and stiffness are low compared to metals and ceramics. To overcome these difficulties other materials are reinforced with polymers.

Two types of polymer composites are:

- Fiber reinforced polymer (FRP)
- Particle reinforced polymer (PRP)

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Analysis and design of multistoreyed parking building proposed at Jalahalli cross, Bangaluru

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Abstract - Now-a-day there is an increase in the number of vehicles on road. For proper storage of vehicle when not in use "parking space" is needed. When the person has to stop on route for some purpose other than traffic related, the vehicle needs some halting facility, without disturbing traffic flow otherwise on the street Such a facility is called parking. Due to increase in population there is increase in vehicle demand and we require more parking space thus in control by constructing multi-storeyed parking building.

Where parking area is unplanned, there is a need to make an improvement in the parking area by constructing multi-storeyed parking building. Parking structures has been an important element in today's urban and suburban environments.

Key Words: analysis, design, shear wall.

1. INTRODUCTION

Parking is the act of stopping and disengaging a vehicle and leaving it unoccupied. Parking on one or both sides of a road is often permitted, though sometimes with restrictions. Some buildings have parking facilities for use of the buildings' users.

TYPES OF PARKING LOT

- On street parking
  It is having three types:
  a) Parallel parking
  b) Perpendicular parking
  c) Angle parking

- Off street parking
  Off street parking are having five types:
  a) Surface car parking
  b) Multi story car parking
  c) Roof parking
  d) Mechanical car parking
  e) Underground car parking

Most multi-storey car parks are located where land costs are so high, e.g. in or about the central areas of large towns, that it is more economical to build vertical facilities rather than purchase additional land for surface parking. Multi-storey facilities can be or multi-purpose, i.e. containing other uses (e.g. offices or shopping) within the same structure; however, the more expensive the land the greater the likelihood of a parking facility being designed for multi-usage purposes. The city of Bengaluru is seeking proposals from professional designing teams to provide all labour, materials and provisions necessary to produce conceptual designs, final design, construction documents and construction of a parking building at Jalahalli cross, Bengaluru. The facility will provide a suitable parking environment for citizens and visitors to the commercial area.

2. LITERATURE REVIEW

1. Design And Analysis Of Multistorey Parking
B Vamsi, Dr. Dumpa Venkateswarlu, Dr. D V Rama Murthy [Ijrsae].
This project is aimed to design an efficient parking system and helps to minimize the parking area in the city. In the modern world where the parking space has become a major concern, in our city. The VISAKHAPATNAM city is recommended for smart city, which includes all the facilities like tourism, commercial complexes, institutions etc.
The traffic scenario is changing from day to day. All these facilities leads to the traffic congestion and efficient need for parking. To avoid this problem we suggest the design of "Multi-storey parking" at Dandubazar market near Jagadamba center, which might be a shopping hub in future. To control parking problems we suggest multi story parking system in this place. This multi storey parking enables the parking of vehicles, floor after floor and thus reducing the wastage of space. Here, we provided parking for more than 277 cars according to design. In order to determine the requirements of such parking system, we designed the building for G+3 floors.

2. A study of analysis and design of multi level parking
Upendra singh dandotia1 , Rakesh Gupta2 , Mukesh Pandey3 (IJEDR)

Car parking has been a serious issue due to rapid increase in vehicles and to cater this problem we require parking slots in important markets. We have limited land source so the construction of multilevel parking is very important as it accommodates large no. of vehicles at one place. In this project we have designed multi-level parking for capacity of 600 cars and 550 bikes. Multilevel parking is of G+2+2 Basement having 13 shops on ground floor and its design is based on framed structure. In this work we have designed different components of the multi-level parking i.e. raft foundation, retaining walls, beams, column and flat slab

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Analysis and design of Indoor Stadium building Using ETABS proposed at Sapthagiri college of Engineering, Bangalore

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Abstract - In this growing world, as civil engineering student one needs to be fully aware of structural elements and the safety parameters before and during the execution of project. As an outcome to this an attempt has been made to learn the process of analysis and design of multistory building using Limit state method. This project focuses on Analysis and Design of Indoor Stadium for Sapthagiri College of Engineering. The design, using Limit State Method is taken up. In the limit state of collapse, the strength and stability of structure is ensured. The guidelines being followed are as per IS 456:2000 and IS 800:2007. The present project deals with the Analysis and Design of Indoor stadium of G+2 Floors proposed for Sapthagiri College of engineering. All the structural elements are designed as per codal provision ETABS features contains powerful graphical interface with modeling, analytical, and design procedures. It is quick and very easy for simple structures. It can handle the largest and most complex building models.

Key Words: Design, Analysis, ETABS, AUTOCADD.

1. INTRODUCTION

The indoor stadium is a covered or a not covered enclosed area, often circular or oval shaped, designed to showcase theatre, musical performances, or sporting events. It is composed of large open space surrounded on most or all sides by seating for spectators. The key feature of an indoor stadium is that the event space is the lowest point, allowing for maximum visibility.

College indoor stadium is an important indicator to measure universities physical education, its function not only is required to meet college sports education , sports events undertaking, but also it should provide social services for mass sports activities development An Indoor stadium is a group of sports facilities. The sports facilities are of indoor kind for e.g. table tennis, carom, chess, gymnasium etc. sports are the integral part of the student life so it is the essential requirement of good educational institution. It makes institution reputation higher and also increases the financial status.

The design guide provides design principles to achieving an appropriately high quality stadium development that makes a positive contribution to the public environment.

The stadium sites is ideally suited for its intended use, being large, flat and also close enough to the city to be identified with its center and to facilitate excellent access to all modes of transport. Furthermore this site being close to the railway station, defining a major route into the city, provides an ideal setting for building that by virtue of its scale and function alone will become a major land mark and make a positive contribution to the urban form and image of the college.

Indoor stadium solve all the problems and limitations inherent in outdoor stadium. You do not have to skip games because of the weather and you can play in comfort in a controlled environment.

2. LITERATURE REVIEW

1. Analysis& Design of sports complex using ETABS

Sachin P Dyavappanavar ,Maheshkumar VS, Abhishek GJ, Chethan GN (IJIRSET)

The design process of structural planning and design requires not only imagination and conceptual thinking but also sound knowledge of science of structural engineering besides the knowledge of practical aspects. The purpose of standards is to ensure and enhance the safety, keeping careful balance between economy and safety. In the present study G+1 building is designed (Slabs, Beams, Columns and Footings) ETAB's software. In order to design them, it is important to first obtain the plan of the particular building that is, positioning of the particular rooms, that they serve their respective purpose and also suiting to the requirement and comfort of the users. Thereby depending on the suitability; plan layout of beams and the position of columns are fixed. Thereafter, the loads are calculated namely the dead loads, which depend on the unit weight of the materials used (concrete, brick) and the live loads, which according to the code IS:456- 2000 and HYSD BARS Fe500 as per IS:875-1987 part II. Safe bearing capacity of soil is adopted as 140KN/m2.

2. Seismic Analysis of Indoor auditorium

DilipanboseS, Aravindan S (JCEE) The project titled "Seismic analysis of Indoor Auditorium" has been taken up with an objective to determine the seismic response and behavior of an Auditorium constructed in Chennai area. Even though Chennai is considered as least prone to major earthquake, it is expected that a structure would survive major

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COMPARATIVE STUDY OF SEISMIC ANALYSIS OF MULTISTORIED BUILDING WITH SHEAR WALL AND BRACINGS

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Abstract

Multistorey building would be the greater part influenced by quake constrains to seismic prone areas. The major concern in the design of the multi-storey building is the structure to have enough lateral stability to resist lateral forces, buckling, to control lateral drift and displacement of the building. The application of the shear wall system in Reinforced Concrete (RC) buildings has been widely used to minimize seismic consequences. Besides, the buildings with concentrated steel bracings system are used for the same reasons in steel structures buildings. Both of the systems have significance of the structural performance. Although both systems are used for same reasons, their effect shows unequal variations and behavior against seismic load.

In this project, G+9 storey building, along with shear wall and bracings are being considered for the analysis. The performance of building will be evaluated on the basis of following parameters –Storey displacement, Storey drift, Base shear. In this work, the shear walls and bracings are provided at different locations with the overall analysis to be carried out using Etabs9.7 software.

Keywords: *ETAB, Seismic analysis, Bracings, Shear wall.*

---

1. INTRODUCTION

1.1 Overview

An earthquake is a sudden movement of earth's crust, which originate naturally at or below the surface. In the previous twenty-eight years, considerable severe earthquakes occurred in the world at intervals of 5 to 10 years, have caused severe damages. Socio investment misfortunes have been expanded in the planet because of foundation about new urban communities to seismic tremor inclined zones. Among all the natural hazards, earthquake is most dangerous. For safety of the buildings, it is necessary that structures should have adequate lateral stability, strength, and sufficient ductility. In place to secure structures against harms previously, advancing earthquakes to extend edifices alternately should change their applications, concentrating on available states for structures and making them safe against quake may be a greater amount crucial. This work focuses on comparison of seismic analysis of G+9 building with bracings and shear walls. The performance of the building is analyzed in Zone IV and Zone V.

For my study I considered bare frame, shear wall at corners, shear wall at sides, shear wall at core, bracings at corners, bracings at sides and bracings at core are considered.

Shear Wall

Shear divider is a structural framework made for propped panels would otherwise called shear panels to counter the impacts of parallel load acting on the structure. Generally, shear divider is characterized as structural part equipped will stand up to consolidation of shear wall. Furthermore, pivotal load prompted by parallel load and gravity load exchange of the divider starting with different structural part. Wind seismic loads need aid practically as a relatable point loads that shear dividers are planned to convey. Shear dividers stand up in-plane loads need aid connected along its tallness. RC Multi-Storey structures need aid sufficient for opposing both different and level load.

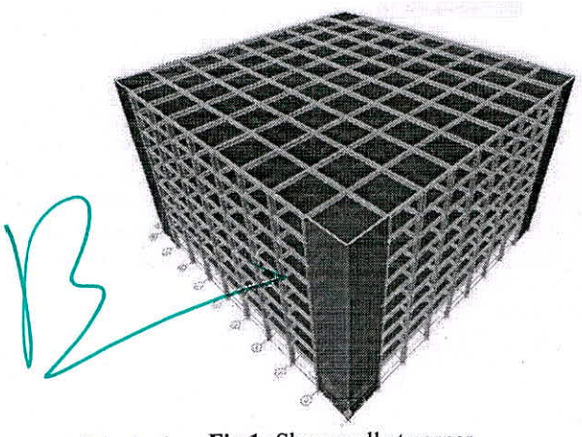

Fig 1: Shear wall at corner

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Identification of Lung Cancer Related Genes Using Enhanced Floyd Warshall Algorithm in a Protein to Protein Interaction Network

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Abstract: Lung cancer is defined as an uncontrolled cell growing in the tissues of lung, which is also said to be lung tumor. The lung cancer is curable in the starting stage, but identifying the lung cancer in starting stage is very difficult. In recent decades, researchers showed great interest on gene level lung cancer identification using shortest path between the lung cancer related genes. Many research has been done to identify the shortest path between the genes, but the conventional methods consumes more time for processing the data. In this research, Protein to Protein Interaction (PPI) structure is constructed from the weighted protein present in the Search Tool for the Retrieval of Interacting Genes/Proteins (STRING) database. For identifying the shortest path between the genes in PPI, an effective algorithm: enhanced Floyd warshall algorithm is proposed. Floyd warshall is efficient in finding the shortest path between the genes and also solves all pairs of shortest path problem. A major drawback of Floyd warshall algorithm is, it works slower than other conventional algorithms designed to perform the same task. To improve the performance of traditional Floyd warshall algorithm, an iterative matrix is used for eliminating the invalid path. Then, the comparison between the proposed method and existing system is given in the experimental result. Experimental outcome shows that the proposed approach improved the time consumption up to 2-3 sec compared to the existing methods: Dijkstra's algorithm and Floyd warshall algorithm.

Keywords: Dijkstra's algorithm, Enhanced Floyd warshall algorithm, Protein to protein interaction, Search tool for the retrieval of interacting genes/proteins.

1. Introduction

In recent decades, lung cancer is one of the leading causes of cancer mortality [1]. Generally, primary lung cancer is characterized into two types such as, Small Cell Lung Cancer (SCLC) and Non-Small Cell Lung Cancer (NSCLC) [2]. Whereas, the most common types of NSCLC are squamous cell carcinoma, large cell carcinoma and adeno-carcinoma. In the clinic, approximately 20% of lung cancer patients are diagnosed with SCLC and 80% are diagnosed with NSCLC [3, 4]. Hence, the biological behavior of SCLC and NSCLC are significantly different, these two distinct types of lung cancer grow in different ways and also treated differently. SCLC is highly malignant that is characterized by rapid proliferation and metastasis [5]. Some NSCLC tumours grow and spread more slowly, making them less prone to developing early metastases and more amenable to surgical treatment during the early stages of the disease. Due to advancing experimental techniques, it was possible to research PPI [6, 7].

Currently, system biology is the most effective approach for understanding the molecular mechanisms of lung cancer [8]. Use of bio-informatics, enables the identification of unknown protein functions as well as new functions for familiar proteins based on the PPI analysis. Identifying the key nodes of proteins would be helpful in revealing the molecular mechanisms underlying lung cancer [9, 10]. In this experimental research, an enhanced Floyd warshall algorithm is

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Bitcoin Service Transaction

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Abstract:- Bitcoin is the first decentralized digital encrypted currency and worldwide payment system. The system works without a central bank or single administrator. It has a peer-to-peer network. The transactions take place between users directly, and no intermediary necessary. The verification of transactions takes place with the help of network nodes by means of cryptography. Blockchain is the public distributed ledger used to read transactions. The smart coins with associated non uniformed funds for smart transactions are created. These transactions are with secured online OTP gateways with user friendly selection with volume of transactions. Fully service oriented architecture has to be online with asynchronous transactions facility and automated with selective transactions with email security gateway (OTP). This way transactions will carry on with fully non distributive model with a new framework (in this work we created a new framework called CST). So transactions with funds framed from coin's funds is reduced and visually appears to the user.

Keywords:- Cryptocurrency, blockchain, gateway, OTP.

I. INTRODUCTION

Bitcoin is a digital currency system proposed by Satoshi Nakamoto and then gained popularity due to its invisibility and decentralized design characteristics. One core technique of Bitcoin is called Blockchain, which is a peer-to-peer ledger system keeping track of all bitcoin transactions and the order of the transactions. The set of bitcoin transactions are recorded in blocks. Owners of bitcoins can generate new transactions by broadcasting blocks of the transactions to the Bitcoin network. Then, a process called mining confirms the transactions and includes the transactions to the Blockchain. Essentially, mining is a randomized distributed agreement of component that confirms pending transactions by including them in the Blockchain.

To process electronic payments, the financial institutions serve as trusted third parties, where the online commerce relies on it. Even though the system works fine for most of the transactions, trust based model is its major weakness. It is not possible to perform completely non-reversible transactions, since financial institutions cannot give up on mediating disputes. The transaction costs are raised due to the raised median cost and also limiting the minimum practical transaction size and lowering the possibility for small casual transactions, and there is a greater cost in the loss of ability to make non-reversible payments for non-reversible services. As the possibility of reversal is needed, the need for trust becomes essential. Vendors must be careful about their customers, not giving out more information than they would otherwise need. A certain percentage of fraud is accepted as unescapably. There is no existing mechanism to make payments without the trusted party, expect for the transactions with physical currencies. Cryptographic electronic payments are the major alternative for trusted third party system. The main objective of work is, in the existing scenario bitcoins mechanism was selective and equally distributed and the transactions were also equally distributed. But by using randomly distributed artificial intelligence mechanism, the transactions are user independent for the chosen coin frequency, as the procedure is offline hackers cannot easily intrude into the transactions, or obtain the amount details. This is unstable and unstructured flow. Transactions are limited in the existing scenario, which is enhanced.

II. RELATED WORK

A. Social media networks Fraud

Everybody is tending to use the e-wallet in the current situation of currency demonetization. Among the e-wallets, simpler and useful for making money is the Bitcoin wallet. A trusted confirmation is required for bitcoin transactions. Anju et al [1] proposed a framework; bitcoin trading including the social media which is new method was introduced. A trusted confirmation can be got from friends in a friend circle of a social media. But still by using the information of real users some fraud identities can create fake news about bitcoin trading. The system blocks the fake posts and reports about fake identities in such situations.

B. Use of digital signatures to prevent double spending

Online payments would be allowed to be sent directly from one party to another without going through a financial institution by a purely peer-to-peer version of electronic cash. The main part of the solution can be digital signatures, but in order to prevent double spending trusted third party is still required where its benefits are lost. Satoshi Nakamoto [2] proposed a solution using a peer-to-peer network for the double-spending problem. When forming a record that cannot be changed without redoing the proof-of-work, the transactions are time stamped by network by hashing them into an ongoing chain of hash-based proof-of-work. The proof of the sequence of events witnessed and the proof that it came from the largest pool of CPU power is the longest chain. They'll generate the longest chain and outpace attackers as long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network. A minimal structure is required by the network. On a best effort basis messages are broadcasted, and nodes can leave and rejoin the network, accepting the longest proof-of-work chain as proof of what happened while they were gone.

C. Bloom Filter Implementation

Kota et al [3] have proposed a privacy-preserving Bloom filter design for Bitcoins' SPV (Simplified Payment Verification) client based on Y-Deniability. Although it has been said that introducing Bloom filter improves the privacy

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Secure Data Transmission in MANET using Hybrid-RSA Algorithm

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Abstract— **Network is a group of computers or servers connected which communicates over a wired and wireless network to exchange the information in a secure manner. In wired networks, there are firewalls and a secured gateway which prevents the malicious hackers from corrupting the data, but in the case of a wireless network like MANET (Mobile Ad-hoc Network) providing security is one of the biggest challenges. Security is an important factor in networks required to lessen the risk of unauthorized information disclosure, modification, and destruction. It is at the forefront of every conversation in all the sectors. Many network security threats like viruses, worms, hacker attacks, identity theft, and denial of service attacks etc. spread over the Internet. It is important to prevent the data from being infected by an intruder. One of the widely used techniques is encrypting the data by exchanging a common key which is used to decrypt it. By increasing the complexity of the key, security can be increased which in turn increases the time to encrypt and decrypt the data. To transmit the data efficiently, both speed and security play a vital role. In this paper, HRSA (Hybrid-RSA) algorithm has been proposed which increases the security of data during the transmission without having to compromise the speed of encryption and decryption and achieves strong privacy by increasing the complexity of the key.**

Keywords— MANET, Cryptography, Security, Encryption, Decryption, Key Complexity, HRSA (Hybrid-RSA)

I. INTRODUCTION

Mobile Ad-Hoc Network (MANET) is a collection of multiple mobile nodes connected wirelessly which are free to move randomly in any direction without having centralized and fixed infrastructure. MANET consists of open peer-to-peer, self-configuring, self-healing multi-hop networks where each node act as both host and a router. Since the nodes are mobile in nature, network topology changes rapidly. MANETs are more prone to attacks when compared to wired network but they are more advantageous which makes it as the finest medium in networks. The main advantages of MANETs are flexibility, low cost, and robustness. MANETs are widely used in military application. [8]

The ad hoc routing and data packet forwarding are the two main operations performed by the network-layer in MANETs. The routing messages are exchanged between the nodes and the routing table are maintained by MANET protocol. Based on the states in the routing table, the source forwards the data packets to the destination through intermediate nodes along an established path. The intermediate nodes are used to communicate with the destination, when it is not in the range of source node. These intermediate nodes can act as both host and a router. This dual role of nodes may cause packet drop and the intermediate node might transfer the data to the wrong destination. The routing and packet forwarding operations are more prone to malicious attacks. [9]

The architecture of MANET which evolves with time has the potential to resolve issues such as disconnection from the network. Since the data can take multiple paths, single point failure in MANETs are reduced. The MANETs have no fixed infrastructure which makes it more suitable for the applications such as environmental monitoring. On the contrary, MANETs have some drawbacks. One of biggest drawback is reduced data rates. The wave characteristics of wireless communication causes inefficient transmission of data when compared to wired networks. Routing packets between any pair of nodes is a challenging task due to its constant change in network topology. [10]

MANETs are used to provide security services such as confidentiality, authentication, integrity, availability, and anonymity. Both authorized network users and malicious hackers can access the wireless channel. As a result, providing protection is a challenge from security design perspective. Proactive and Reactive are the two approaches used to secure MANETs. In proactive approach, various cryptographic techniques are used to prevent security threats. On the other hand, the reactive approach detects threats and react accordingly. These two approaches have its own advantages and are suitable for addressing different issues. [11]

Security has become a primary concern when setting up a network due to the high rate threat of malicious hackers who try to harm as many networks as possible. It has been one of the active research topics in wireless networks. In MANET, many types of security attacks can occur which disturb the operation of data transmission. To intercept the unauthorized users from corrupting and stealing the data, several encryptions and decryption techniques have evolved over time. In cryptography, it is an important process that is

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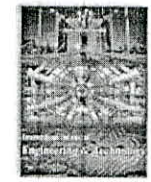

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A Comparative Study of Indian Food Image Classification Using K-Nearest-Neighbour and Support-Vector-Machines

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Abstract

Food being the vital part of everyone's lives, food detection and recognition becomes an interesting and challenging problem in computer vision and image processing. In this paper we mainly propose an automatic food detection system that detects and recognises varieties of Indian food. This paper uses a combined colour and shape features. The K-Nearest-Neighbour (KNN) and Support-Vector - Machine (SVM) classification models are used to classify the features. A comparative study on the performance of both the classification models is performed. The experimental result shows the higher efficiency of SVM classifier over KNN classifier.

Keywords: Food Classification, KNN (k-nearest-neighbour), SVM (Support Vector Machine), Template Matching

1. Introduction

Dietary food nutrients are the essential source for sustain life. Food being the most important source of energy it is consumed in a variety of style with diverse presentation. Earlier food was consumed mainly as whole vegetables, fruits, grain, dairy product and honey. Preparation of any food with the best nutrient values is of major concern both in domestic and industrial setting. There is a plethora of food delicacies available globally, due to which food industry is a major key player in economic growth of a country. Extensive and diverse platters offer a nutritional pallet so elaborate and attractive that the consumer inculcates both good and bad food habits. People face difficulty in choosing the best food with high nutrient value to stay healthy, thus we are proposing an openCV based food identification system to detect, localize and recognise Indian food items.

The proposed food recognition system is developed in such a way that it can classify the Indian food items based on two different classification models i.e. SVM and KNN. Food images are captured using high resolution portable cameras or cameras attached to a wearable glass, cap or hat. Eventually this system can also aide the visually impaired recognise the food on the platter with its features like colour, texture and shape.

The paper mainly classifies Indian food items. The main reason for opting Indian food is the diversified eating habits present in India. As an example the simple staple food: rice is prepared with different styles patterns. It is often difficult and challenging to classify rice as rice considering few features. Hence more complex algorithms based on colour texture and shape feature training and learning is required.

The other intricacies are, the colour of food items may resemble another dish itself example colour of idly resembling rice. In this paper we use the combine feature present in food images and classify with KNN and SVM classifiers. Fig 1 shows the sample image used in the proposed system as in put images.

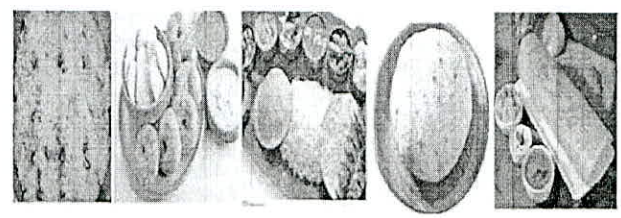

Fig. 1: Indian Food Images

The paper is organised as follows: in section 2, a brief coverage of related literature is given. In section 3, we discuss few challenges faced during the detection and recognition process. In section 4, we have discussed the how processing is done using Indian food images. In section 5 the Pre-processing in Indian Food Images are discussed. In section 6, gives the detailed insight about the proposed system. In section 7, the observational results are discussed. In section 8, we conclude the paper.

2. Literature Survey

There are several on-going research works based on food detection and recognition. Several android applications based on dietary nutrients management also exist. Brief appraisals on the available literatures are illustrated in this section.

Most of the literatures used methods that include naïve Bayes classifier, support vector machines, K-nearest neighbors, Gaussian mixture model, decision tree and radial basis function (RBF) classifiers [3,4].These classifiers are used in algorithms that involve food recognition.

An alternative technique proposed in [6] is visual life logging that consists of using a wearable camera that automatically captures pictures from the user point of view (egocentric point of view) with the aim to analyse different patterns of his/her daily life and extract highly relevant information like nutritional habits [6].

Marios M. Anthimopoulos, Lauro Gianola, Luca Scarnato, Peter Diem, and Stavroula G. Mougiakakou, in [15], proposed the Computer vision-based food recognition could be used to estimate

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AN ALGORITHM FOR ENHANCING THE SECURITY ON CLOUD DATA SHARING SYSTEM

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ABSTRACT

Cloud data Storage is a new innovative service model of data storage where data from the organizations are remotely maintaining, managing, and backup. This system will allow the users of different prospective and requirements to store their files online and access them from any location via the Internet The most critical aspect in cloud data storage environment will rise the different security issues based on the group data sharing which relates to both cloud centric and conventional insider treats. The focus of cloud data storage architecture is to achieve the goal of providing the security and privacy for the user data that is shared among the group of defined user. However there are many ways that the malicious users are attempting the get an access to the shared data and also the personal information stored on cloud servers. Thus there is a need of new techniques to solve the serious problems in the area of information security for group sharing concept. To highlight this aspect, in this paper we are proposing and developing an prototype system that will encrypt the user file to be shared with the group through the use of trusted cryptographic server to ensure the data sharing, confidentiality and access control.

Keywords: .NET framework, Cloud computing, C# language, Single key encryption, Information security.

INTRODUCTION

The new evolution in recent days of cloud computing is the cloud computing storage system which was not designed from scratch but it is an evolution of the many of the computer architectures such as web system, networking, application infrastructure, database management system. The Cloud computing system constitutes infrastructures, platforms and applications on demand. Now cloud storage system is an integrated cross platform system for mechanism of storage and retrieval of data. It is a data model which stores huge digital data in logical pools of physical storages. The physical storages will span over multiple servers (often located in different places of the world) and the physical data storage environment is owned by the hosting company.

Cloud computing is an growing architecture continues to provide an large savings for investment in IT Industries, the popularity for cloud is rising in many mission-critical areas which are very sensitive such as medical areas and energy areas. The Cloud computing always provides cost effective scalable services for deployment and infrastructure for these sectors with large computing power and increase in productivity. But, the availability of data, confidentiality and integrity of data are of great importance in these sectors. The chapter provides a brief introduction of cloud security. This

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A SURVEY ON NETWORK TRAFFIC CLASSIFICATION TECHNIQUES

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Abstract*— Network traffic classification process deals with various parameters such as port and protocol based that are used to automatically identify the traffic classes. This type of classification is used to provide security in network level as well as system level in a complex classification environment where data is in encrypted form. It also addresses the issues related to Encryption of data, Security in Modern Network Architecture and its Management, Controlling QoS for products, Identifying Intruders in the Network and Privacy protection of users among the network. This paper lists the problems faced by Traffic Classification while handling the network traffic. Most of the traffic classification methods are not able to satisfy the special requirements of individual datasets. There are massive amount of network traffic datasets and limited numbers of resources are available to produce classification analysis. The survey reveals that traffic classification need to be updated regularly to maintain the accuracy and should be able to adapt the dynamic behaviour of network flow.

Keywords*— Network Traffic, Network Traffic Class, Network Features, Statistical features, Classification

1. Introduction

Internet has become an unavoidable information hub in our daily life and in the work place. Internet today has created a great evolution in network technology and interconnection of networks. Newly emerging network architectures, network protocols and the applications are becoming complex to understand and research community spurred a lot to invent a noble research work in complex networks. Network traffic classification can be adopted in the important applications such as network operators, Twitter, Facebook, Bit Torrent, WhatsApp, Skype, Youtube (i.e., live video streaming) or Uploading and Downloading Videos. Network traffic classification help for planning and designing new infrastructures. Through this accurate classification, Internet Service Providers (ISPs) can be able to provide appropriate billing based on user's actual usage and recommend for Quality of Service (QoS) based on the application needs. Research Community has invented various methodologies of traffic classification from real time network traffic. Internet Assigned Number Authority (IANA) assigns port numbers for TCP or UDP in Port based attributes and also assigns source port and the destination port for every packet in the IP traffic. All the applications in the network traffic do not have registered port numbers, hence it's very difficult to identify the unknown application using port based methods. Some applications dealing with online games and peer to peer networks are using dynamic port numbers so that it's difficult to classify such applications using port based techniques. In Payload based approach, attributes are based on application layer level traffic signatures. Statistical based attributes related to traffic such as duration between the flow, packet ideal time, Length of the packets and it's inter arrival time also play an important role in traffic classification. Payload based uses the technique named deep packet inspection that match both the payload of the packet and known traffic signature but this method will not produce good classification accuracy in encrypted packets.

Assigned Port	Application
20	FTP Data
21	FTP Control
22	SSH
23	Telnet
25	SMTP
53	DNS
80	HTTP
110	POP3
123	NTP
161	SNMP
3724	WoW

Basically there are two types of flows in the network traffic: unidirectional and bidirectional. The unidirectional flow shares information such as source and destination ports, IP and Transport Protocol. In bidirectional the analysis of flow between source and destination starts from the establishment of connection to end of the network connection. Flow Directional Neutrality is calculated from the forward and backward direction of individual statistical features. IP traffic indicated by the Traffic classes can be caused by a single application or multiple applications. Features are in the form of numerical attributes and usually more number of packets belong to same flow

P2P Protocol	String	Trans. Prot.
eDonkey 2000	0xe319010000	TCP/UDP
	0xe53f010000	
Fasttrack	"Get /.hash"	TCP
	0x2700000002980	UDP
BitTorrent	"0x13Bit"	TCP
Gnutella	"GNUT" "GIV"	TCP
	"GND"	UDP
Ares	"GET hash:"	TCP
	"Get sha1:"	

Network Feature selection play a major role in providing accurate results. It is necessary to identify unique attributes in the network traffic flow and in the flow observation taken

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Identification of lung cancer related genes using enhanced Floyd warshall algorithm in a protein to protein interaction network

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Abstract: Lung cancer is defined as an uncontrolled cell growing in the tissues of lung, which is also said to be lung tumor. The lung cancer is curable in the starting stage, but identifying the lung cancer in starting stage is very difficult. In recent decades, researchers showed great interest on gene level lung cancer identification using shortest path between the lung cancer related genes. Many research has been done to identify the shortest path between the genes, but the conventional methods consumes more time for processing the data. In this research, Protein to Protein Interaction (PPI) structure is constructed from the weighted protein present in the Search Tool for the Retrieval of Interacting Genes/Proteins (STRING) database. For identifying the shortest path between the genes in PPI, an effective algorithm: enhanced Floyd warshall algorithm is proposed. Floyd warshall is efficient in finding the shortest path between the genes and also solves all pairs of shortest path problem. A major drawback of Floyd warshall algorithm is, it works slower than other conventional algorithms designed to perform the same task. To improve the performance of traditional Floyd warshall algorithm, an iterative matrix is used for eliminating the invalid path. Then, the comparison between the proposed method and existing system is given in the experimental result. Experimental outcome shows that the proposed approach improved the time consumption up to 2-3 sec compared to the existing methods: Dijkstra's algorithm and Floyd warshall algorithm.

Keywords: Dijkstra's algorithm, Enhanced Floyd warshall algorithm, Protein to protein interaction, Search tool for the retrieval of interacting genes/proteins.

1. Introduction

In recent decades, lung cancer is one of the leading causes of cancer mortality [1]. Generally, primary lung cancer is characterized into two types such as, Small Cell Lung Cancer (SCLC) and Non-Small Cell Lung Cancer (NSCLC) [2]. Whereas, the most common types of NSCLC are squamous cell carcinoma, large cell carcinoma and adeno-carcinoma. In the clinic, approximately 20% of lung cancer patients are diagnosed with SCLC and 80% are diagnosed with NSCLC [3], [4]. Hence, the biological behavior of SCLC and NSCLC are significantly different, these two distinct types of lung cancer grow in different ways and also treated differently. SCLC is highly malignant that is characterized by rapid proliferation and metastasis [5]. Some NSCLC tumours grow and spread more slowly, making them less prone to developing early metastases and more amenable to surgical treatment during the early stages of the disease. Due to advancing experimental techniques, it was possible to research PPI [6], [7].

Currently, system biology is the most effective approach for understanding the molecular mechanisms of lung cancer [8]. Use of bio-informatics, enables the identification of unknown protein functions as well as new functions for familiar proteins based on the PPI analysis. Identifying the key nodes of proteins would be helpful in revealing the molecular mechanisms underlying lung cancer [9], [10]. In this experimental research, an enhanced Floyd warshall algorithm is developed for predicting the patient susceptibility of lung cancer and to identify the diagnostic molecular markers for detecting early

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Providing Security to Cloud Data using key Exposure

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ABSTRACT: Cloud computing is the technology of using a network of remote servers on the internet . It further avoids the use of a local -server. Customer can use applications without installations and access their personal files at any computer with internet access. Day to day usage of cloud has attracted attackers to break data security in the cloud data storage system. Security of cloud data is ensured by means of cryptographic keys which when exposed facilitates the attackers access the ciphertext. This paper reveals an overview and study of providing security to cloud data using key exposure.

KEYWORDS: Cloud, Data, Key exposure, Data confidentiality, Dispersed storage

I.INTRODUCTION

Cloud Computing is the fundamental change happening in the field of Information Technology .It is a representation of a movement towards the intensive large scale specialization. On the other hand it brings about not only convenience and efficiency problems but also great challenges in the field of data security and privacy protection. Currently security has been regarded as one of the greatest problems in the development of Cloud Computing .This paper describes the great requirements in Cloud Computing security key technology standard and regulation etc. and provides a Cloud Computing security framework using key exposure .This paper argues that the changes in the above aspects will result in a technical revolution in the field of information security.

Cloud system can be used to enable data sharing capabilities this can proven abundant of benefits to the user. There is currently a push for IT organization to increase their data sharing efforts. In enterprise settings, there is the rise in demand for data outsourcing, which assists in the strategic management of corporate data. It is also used as a core technology behind many online services for personal applications. With current technology user can access almost all of their files or emails by mobile phone or computer from any corner of the world.

In the cloud storage efficient public key encryption scheme which support flexible delegation in the sense that any subset of the cipher texts is decryptable by a constant-size decryption key.

Cloud computing has a lot of security issues that are gaining great attention nowadays, including the data protection, network security, virtualization security, application integrity, and identity management. Data protection is one of the most important security issues, because organizations won't transfer its data to remote machines if there is no guaranteed data protection from the cloud service providers. Many techniques are suggested for data protection in

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Research paper

Effect of different attacks on image watermarking using dual tree complex wavelet transform (DTCWT) and principle component analysis (PCA)

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Abstract

Perceptibility and robustness are two incongruous requirements demanded by digital image watermarking for digital right management and other applications. A realistic way to concurrently satisfy the two contradictory requirements is to use robust watermark algorithm. The developed algorithm uses DTCWT and PCA techniques to embed watermark signal in host signal. To prove the algorithm robustness without much affecting perceptibility several attacks like noises, cropping, blurring, rotation are applied and tested by varying attack parameters. Parameters like Peak signal noise ratio and Correlation Coefficient are calculated for each attack. Attack percentage is varied and performance parameters are calculated to prove the robustness of the developed algorithm.

Keywords: *Attack; DTCWT; Perceptibility; Robustness; PCA; Cropping.*

1. Introduction

Robustness is a measure of immunity of watermark, against attempts to image modification and manipulation. Imperceptibility is the most significant requirement in watermarking system, and it refers to the perceptual similarity between the original image before watermarking process and the watermarked image. The challenge is that imperceptibility could be achieved, but the robustness and the embedding capacity will be reduced, and vice versa, imperceptibility may be sacrificed by increasing the robustness and the embedding capacity.

Attacks are the intentional distortion introduced at transmission in order to check the robustness. These attacks types can be divided into three main categories [1].

Unauthorized removal, unauthorized embedding, and unauthorized detection. According to the specific usage of watermarking, the specific feature should be available in the watermark to resist the attacks [2]. Therefore, for unauthorized removal, the watermark should be robust and not to be removed, and for unauthorized embedding (also known as forgery), the watermark should be fragile or semi fragile to detect any modification.

In this paper, section 1 describes watermark embedding and extraction algorithm, section 2 describes embedding and extraction algorithm. Section 3 describes the application of different attacks like Gaussian Noise, Salt and Pepper Noise, Speckle noise, Poisson noise, rotation attack, compression attack, resizing and blurring, contrast attack on developed watermarking algorithm.Section 4 describes conclusion.

2. Embedding and extraction of watermarking

Image watermarking is a growing technology to protect the copy right for the digital images [3]. The Fig. 1 shows the block diagram to embed the data called watermark data or image. This embedded information [9] is insensible to human visual system. This embedded image is transmitted through the channel and reaches the receiver. During the journey the image may be corrupted by many attacks i.e. different noises, compression cropping, rotation, contrast etc.

The extraction process will extract watermark, it is expected to be similar to the original watermark image. Figure.2 shows extraction process.

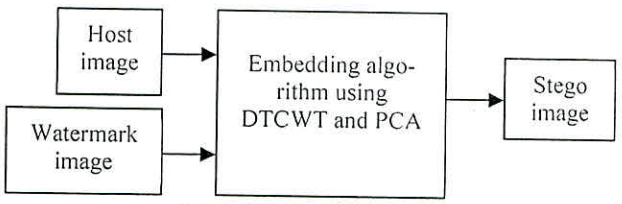

Fig. 1: Process of Embedding.

Embedding algorithm is developed in dual tree complex wavelet transform domain which is an advanced version of DWT. principle component analysis and Least Significant Bits (LSB) technique are used in the embedding process to generate the watermarked or stego image. Inverse dual tree complex wavelet transform domain is used and LSB algorithm. The extracted watermark image may not be same as original watermark and quality of host image may also be degraded. To study the robustness of the algo-

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Review on Performance Analysis of UWB Bandpass Microstrip Filters

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Abstract

In the last few years, several microwave filter design with band-pass response have been proposed for ultra-wideband (UWB) application. Among various microwave filter design, microstrip filter are most widely used by researcher due to the features like light weight, easy to fabricate and low cost. Conventional microstrip filter can be in any shape like circular, rectangular or elliptical but some modification or additional variation in their basic design can be made for different purposes. This paper reviews the performance analysis of Microstrip UWB bandpass filters designed using MMR, Multi Short Circuited Stubs, PCML, Ring Resonators, SIR. In this paper an effort is made to review performance in terms of insertion loss, return losses, bandwidth and group delay.

Keywords: Multiple Mode Resonators (MMR), parallel coupled microstrip line (PCML), stepped impedence resonator (SIR), Federal Communication Commission (FCC)

I. INTRODUCTION

In early 2002, the U.S. Federal Communication Commission (FCC) approved the unlicensed use of UWB systems for a variety of applications. The FCC defined that bandwidth for indoor and hand-held UWB systems must be strictly in between 3.1 to 10.6 GHz with maximum Equivalent Isotropic Radiated Power (EIRP) equal to -41 dBm as shown in Figure 1.To fullfill the UWB bandwidth constraints sited by FCC, transmitted signal must be shaped to fit the FCC UWB PSD mask. Therefore, there are needs to design the UWB bandpass filter covering the whole UWB passband with the fractional band-width of 109.5% at center frequency of 6.85 GHz, since that, Band Pass Filter (BPF) become one of main blocks that make up UWB transmitter system. Often, in such application, passive filters are used rather than active counterpart. Passive filters designed around reactive elements only, using lumped-components such as inductors and capacitors or distributed elements such as cascaded resonators, can operate up to the microwave region. At upper microwave frequencies, the parasitic in the inductors and capacitors often proved too much constraint to use them in the wireless system. Hence, many of the filters used in microwave communication systems employed the distributed elements types. Prime advantages of Microstrip are low cost and compact sizes.

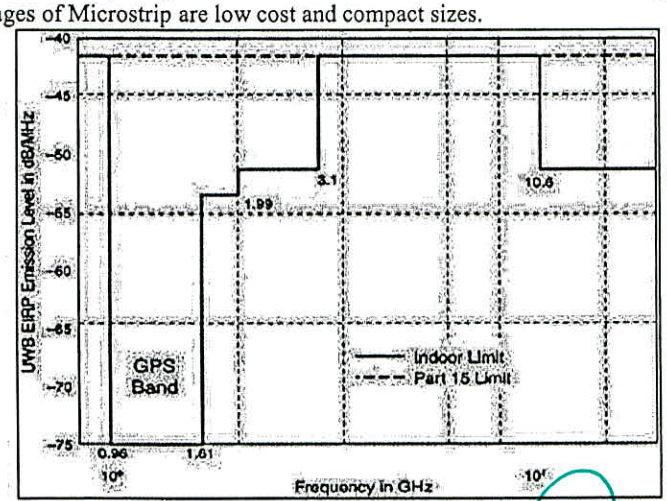

Fig. 1: Spectrum mask in indoor FCC [1]

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Image Encryption Method based on Hybrid Fractal-Chaos Algorithm

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Abstract: In recent years, there has been an increasing interest in the field of cryptography. Cryptography has applied in diverse applications and the researchers mainly concentrates on Image Encryption (IE) field. This paper proposes a hybrid encryption technique in order to provide high secure transmission. Here, an IE and decryption process is proposed by employing hybrid fractal-chaos technique. This proposed methodology consists of four modules like key generation, fractal encryption, chaos encryption and decryption. Initially, a key that is generated is utilized to encrypt and decrypt the image or data. Subsequently, fractal-IE is carried out by applying L-shaped tromino. Likewise, chaos encryption is carried by employing Discrete Cosine Transform (DCT), to have the final encrypted image. Whereas, the decryption process is carried out using chaos decryption and fractal decryption algorithms. Finally, the experimental outcome confirms that the projected technique delivers high security level network with low computational complexity.

Keywords: Discrete cosine transform, Image encryption, Key generation, L-shaped tromino.

1. Introduction

In the current scenario, information security is essential in various areas like internet communication, multimedia systems, medical imaging, tele-medicine, military communication, and so on, leading to an increasing interest in the field of cryptography [1, 2]. Cryptography is the progression of hiding information or try to keep the information safe and secure [3]. In cryptography, the image is one of the important tool for carrying information. By applying encryption process, the message or information is encoded by the authorized persons. IE schemes have been increasingly studied to meet the demand for real-time secure image transmission over private or public networks [4, 5]. Conventional-IE algorithms are not suitable for IE, because of the special storage characteristics of an image and weakness of low-level efficiency when the image is large [6]. In order to overcome these difficulties, two effective algorithms are combined for encryption and decryption process such as, fractal and chaos-based encryption algorithms [7].

Initially, the fractal based encryption algorithm encrypts the image by applying fractal key with the combination of L-shaped tromino method [8]. On the other hand, Chaos-based algorithm has found wide popularity among researchers, because of the inherent features of chaos systems, such as sensitivity to initial value and randomness, the chaos system-based IE method appears to be suitable for high-security encryption [9, 10]. This type of encryption typically requires two stages like permutation and diffusion. In the permutation step, image pixels are reallocated with the help of a chaotic map without changing the pixel's gray levels. Then, in the diffusion step, the value of each pixel is changed by applying a chaos sequence. Proposed chaos-based IE algorithm performs encryption using DCT algorithm. After encryption, the decryption procedure is performed by employing chaos and fractal based decryption methods. Finally, the experimental outcome shows that the projected hybrid technique delivers a high secure transmission with low computational complexity.

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Detecting and Monitoring of Climate Conditions by Using "Arduino UNO Microcontroller" with MATLAB

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ABSTRACT: As the speedy of Internet of Things (IoT) is rising and is habituate for remote checking of the encompassing limits and different stuffs with the utilization of sensors that familiarize for 'remote detecting of ongoing information' and move them into the desirable frame and help to send the detected information over the system cloud by means of 'web Connection'. This work depicts a Sensing and Monitoring (SM) System to detect, screen, and trade the quick natural information between the IoT cloud administrations. The IoT 'Thingspeak' web benefit is a sort of liberal API benefit that is used as a part of this venture which go about as a host for the assortment of sensors to imagine the detected information at cloud level. This work likewise emphasizes the part of light sensor, DHT22 sensor, MQ-135 sensor, BMP-180 sensor, Rain sensor that are interfaced and working under the field of ongoing condition.

KEYWORDS: IoT, Thingspeak, SM, light sensor, DHT22 sensor, MQ-135 sensor, BMP-180 sensor, Rain sensor

I. INTRODUCTION

Today, those expanded request from claiming administration through the web required the information gathering Also trade done effective way. In place should obtain the productive IoT achievement to an application; the best possible sensing Also screening framework are vital. For the most part a sensing unit will be created for different sensors like temperature, humidity, gas and so on. At the same time a following unit made for current and voltage parameters. Those IoT need made an upset throughout the globe Furthermore fascinatingly it needs turn into essential analytics and only our exists [01]. Whether we expect, an day will turn up At the Facebook. Furthermore twitter might need their uniqueness like Facebook about things and twitter about things.

The day need landed that those legislature parts would likewise embrace the IoT due to its gigantic importance done every what's more each territory [02, 03]. This engineering headway could make more occupation scopes furthermore investigate thoughts. Those information focus ability will a chance to be 65% private. The headway done information collection, analysis, What's more association might a chance to be attained Eventually Tom's perusing checking also sensing. Besides performs the data taking care of and Moreover majority of the data transportation [05, 06]. That blend of identifying Also checking part will be superior instrument flying for propelled data gathering [07]. The correspondence between the machines should machine with web need given gadget coded those gigantic number for gadget association and robotics majority of the data exchange [08]. Those unstoppable augment in the electronic gadgets obliges the new advanced connectivity and likewise those oversaw economy rules [09]

The possibility tending to What's more ID number for units number needs correct scalable, adaptable What's more dependable framework to worth of effort "around the commercial enterprises What's more shoppers. The blending about sensing Furthermore observing aides done information gathering starting with the machines Furthermore humans; check them effectively. Those information privacy, proprietorship Furthermore administration procurement are tumbles under advanced mobile economy. The sensing what's more screening for information empowers those clients should make exceptional ongoing choice [10, 11]. The Mammon extension about "Internet of

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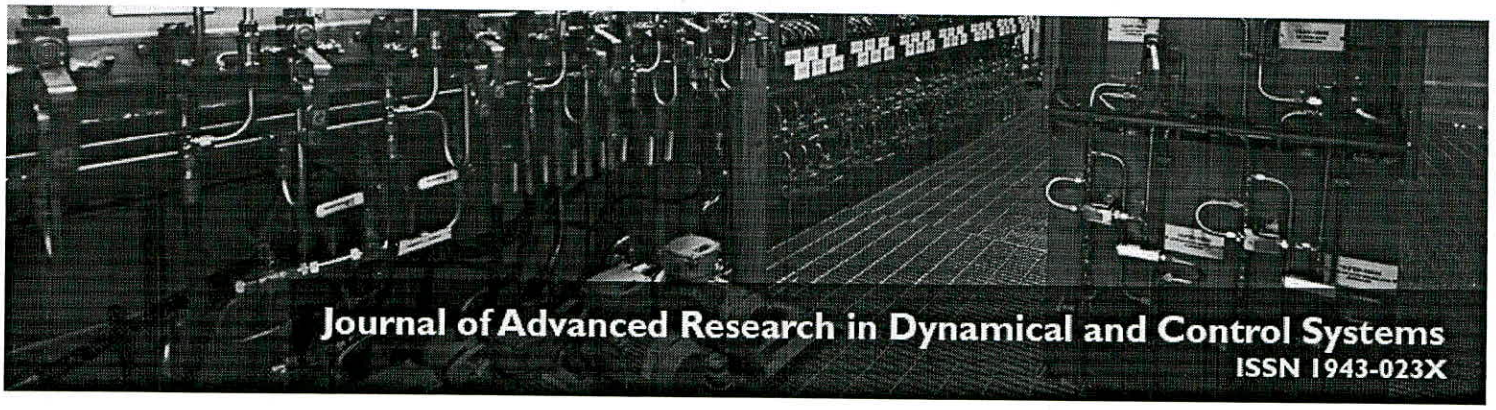

An Efficient Fault Tolerant and Cost Optimized Power Model for Distributed Power Generation System

G. Raghavendra and Dr. Manjunath Ramachandra

Abstract:

The research area of power system is always got an attention because of growing power demand. The existing conventional power systems are failing to fulfill this dynamic power demand. Thus, the idea of renewable resource based power systems are like solar, wind etc has arrived. Many power industries were focusing on the adopting the renewable power sources to fulfill the power demand to a great extent. A distributive power generation (DPG) is concept which relies on the renewable resources and is mainly used in industrial and commercial aspects. However DPG lags with performance issue under dynamic load scenario and also higher cost in power consumption. This paper introduces a stochastic model based on prediction theory and a cost optimization model based on Markov decision principle. In this, the power output of entire year is used to calculate the rate of load demand and corresponding power supply through stochastic model, while the cost optimization model is introduced to minimize the cost of electrical appliances power consumption in distributed power grid. The outcomes of the both the methods offer significant results with respect to delay constraints, energy storage capacity and financial cost of smart appliances.

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Situation Analysis of Load Shedding and its Effectiveness in the Area of Power System Security

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Abstract

With the hasty growth of the power system to impact increased consumer demand and with more inflexible economic and ecological boundaries, power systems become more composite and severely stressed. Subsequently, system extensive disturbances which lead to the disturbance of voltage and frequency stability which is a critical threat to the power system security. The frequency and voltage instability may lead to the blackout and severely damages the power system gadgets. This upturns the significance of instigating a protection scheme that conserves the system stability. The ultimate procedure prevents the occurrence of a system collapse incident is the functioning of a load shedding scheme. These paper emphases on the overview of the UFLS and UVLS scheme. This paper performs the situational analysis of the existing load shedding scheme. And reassessments some of the frequently adopted techniques along with the brief discussion of the existing scheme to extract the research gap in this area. The outcome of the review will assist the researcher to have a greater visualization of the contribution of the earlier studies.

Keywords: Under voltage load shedding, Under frequency load shedding, power system blackout

INTRODUCTION

In the area of power security, load shedding plays a vital role to captivate the dynamic power requirements of the customers. When all fundamental controls are vulnerable to preserve the power system security operation during a disturbance or contingency, load shedding will be used as the last procedure to make the loss of blackout minimum [1]. The core objective of an effective LS scheme is to curtail a lowermost number of loads and deliver a rapid, steady, and safe transferal of the system from an emergency situation to a normal stability state[2]. The Power system reaches to emergency state at the moment of an unexpected increase of system load, the unanticipated outage of the transmission line or generator or malfunction in any of the power system constituents. This disturbance may result in some problems alike line overloading, under frequency, voltage collapse, and angle insecurity. The disturbances in the power system differ in magnitude and will cause the instability of the power system. This needs, the stability condition of the system must be reviewed and forecast to avoid such incidences. The prominence of stabilizing electric power system equilibrium and consistency has encouraged the evolving of novel methods to capitalize the system stability. The main issues in load shedding are the location of load shedding, amount of shedding load, and time of load shedding. Consequently to avoid post contingency problems, detecting the location of the buses for load shedding must be determined based upon the load significance, curtailment cost and the distance of the curtailed load to the contingency location[3].

Basically, the load shedding scheme is categorized into Under frequency Load shedding (UFLS) and Under voltage load shedding (UVLS). As previously stated, when a power system distraction creates active power imbalance, consequential causes in a frequency deterioration and emergency action such as UFLS may be enforced. If system frequency decline further than the given threshold, for a short amount of time, power stations may trip off causing additional load imbalance which may lead to a power system collapse [4,5]. To prevent massive voltage collapse due to the occurrence of desperate inadequacy in reactive power reserves, power utilities designate Under voltage load shedding(UVLS) because it is an economical procedure to accomplish voltage stability.[6]

The load-shedding schemes proposed by many researchers can be categorized into three groups.

• **A fixed amount of load shed:** The number of loads to be shed is fixed earlier. This group uses time simulation analysis to determine the minimum amount of load shed using dynamic parameters. The shortcoming of such group is time-consuming and in addition incorporating optimization technique in time domain analysis.

• **Dynamic features:** In this group minimum load, to be shed is determined by using load dynamic parameters, tries to determine a minimum load for shedding by estimating dynamic load parameters. This procedure is, results are extremely vulnerable to dynamic load model parameters.

• **Optimal power-flow equation**: Lastly, in this group, minimum load shedding is fixed using optimal power-flow equations by employing the static model of the power system. The dynamics associated with voltage stability are often slow, and hence static approaches may represent a good approximation. The preliminary idea of this method is to establish a sensible solution to the power-flow equations. [7,8]

This paper, therefore, discusses various traits of the DG system with special emphasis on the research contribution in the same topic. The primary aim of this paper is to find the effectiveness of the available research contribution and elicit significant open issues and research gap at the end of the discussion. Section II of this paper discusses the significance of the distributed generation followed by a brief discussion of

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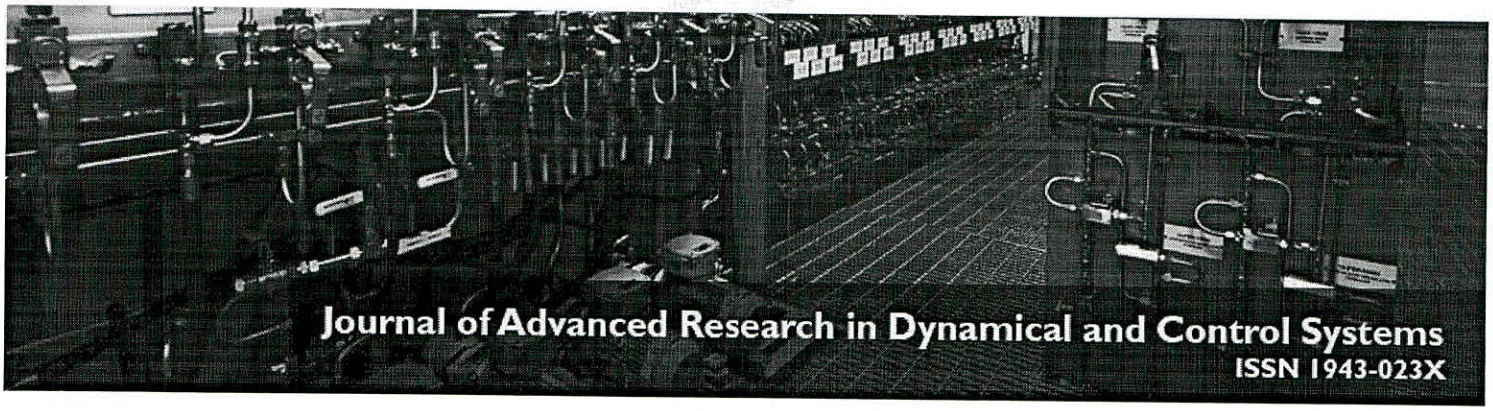

CASE STUDIES ON VVVFD PART I: ESTIMATION OF HARMONICS AND INTERHARMONICS AT VARIOUS OPERATING FREQUENCIES

G.S. Mahesh, H.M.Ravi Kumar, N.Lavanya ,G.Raghavendra

Abstract:

The primary objective of this paper is to present the impacts of power quality events like harmonics and interharmonics in an industrial distribution system, where regulating the temperature is the significant parameter of the space. The Variable Voltage Variable Frequency Drives are most popularly used equipment in controlling the valve pressure of the compressor, where the temperature is varied. When the drive is operated at different frequencies, the amount of power consumed and increase in the current harmonic distortion also varies, thus reduces the life of the expensive drive. Various case studies are performed on Variable Voltage Variable Frequency Drives using Harmonic Analyzer.

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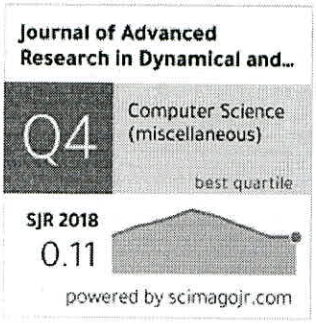

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Test and Comparison of Vegetable Oil Impregnated Polypropylene Film AC Capacitors

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Abstract--- The aim of this research is to do the test and analyse the polypropylene-aluminium capacitors with oil impregnated with three different of dielectric oil. The soybean oil, Envirotemp FR3, and sunflower oil are the three different dielectric liquids which are used as impregnated fluid. The electrical properties of all the oils tested according to the liquid insulation standards. The capacitor considered for the test is a double layered single element and its value is 1.9 μF (1500ACV). The capacitor to be tested was impregnated at different temperature levels. From the test results, it is found the that dielectric oil type, the treated temperature level and space factor affected to the value of capacitance and dissipation factor of a capacitor.

Keywords--- Polypropylene, Dielectric Liquids, Dissipation Factor, Aluminium Foil, Space Factor.

I. Introduction

The polypropylene (PP) capacitor is manufactured by using pp films and aluminium foil wound together and it will form an element. This element is impregnated with oil. The pp film is used in oil impregnated capacitor is a stretched, electrical insulating film of pp, comprising zones having different degrees of roughness which lies inside side by side form fine channels between each other[1]. The pp film is very much suitable for the construction of oil impregnated capacitors. Paper film, pp film aluminium, pp film-zinc, metalized pp film-paper are the different combinations which are used in oil impregnated capacitors. This combination of capacitor elements impregnated using oil treatment chamber machines at different value of temperature. In recent trend, the development in decrease in size of the capacitor and the capacitors are built of pp film and aluminium or of metalized pp films are known as "all film capacitors".

II. Testing of Capacitors: Value of Capacitance

The bridge meter is used to measure the model capacitors parameters, particularly its capacitance value and capacitance tolerance. All manufactured capacitors will have plus or minus of some percentage of its original value. The table 1 and table 2 show the capacitance of test capacitor unit measured at 30^0 C, 1.1 times of rated voltage. The two capacitor elements are tested and their thickness of 9.0and 9.4 mm. The elements are rectangular in cross section as shown in Fig.1.

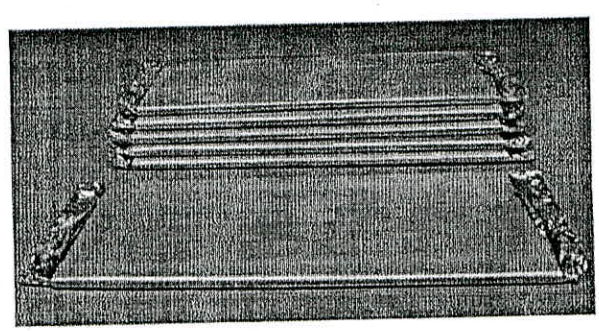

Figure 1: Polypropylene-Aluminium Capacitor Elements

All the capacitor value Graph of capacitors impregnated with different dielectric liquids for element with 9 mm thickness measured at temperature 30^0c are corrected for the temperature at 20^0C. From table 1 it is observed that the capacitance value of capacitor is increases with increase in temperature.

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HLA BASED PUBLIC AUDITING ARCHITECTURE TO FIND MALICIOUS NODE IN AD HOC NETWORK - A REVIEW

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ABSTRACT

There are two sources for packet loss i. e link error and malicious packet dropping. It is important to find whether packet losses are due to link errors only or is due to both link error and malicious packet drop. Here, I am mainly interested in the insider attack case where malicious nodes drops packets selectively to degrade the network performance. Packet dropping rate in the insider attack case is nearly equal to normal link error because of which existing algorithms cannot find the exact cause of the packet loss. I am going to find the correlation between lost packets and to ensure that these correlations are accurate i am going to use Homomorphism Linear Authenticator (HLA) based public auditing mechanism.

Keywords – Packet loss, Truthful detection, Homomorphism Linear Authenticator, Malicious node, Cryptography.

INTRODUCTION

In multi-hop wireless network, nodes help to transfer packets from source to destination. Malicious node when added into network, first it works in a cooperative way when finding the route from source to destination and when added into the route, node starts to drop the packets i.e it stops forwarding almost all the packets that are received from its upstream node. This type of dropping is called as persistent packet dropping. This type of dropping completely lowers the performance of the network. It is easy to find this type of dropping because here most of the packets are dropped.

There is another type in the packet dropping which is called as selective packet dropping. Here attacker node calculates the importance of various packets and will drop only those packets that are very important. This also lowers the performance of the network as in persistent attack case. Here the probability of getting detected is very low when compared to persistent packet dropping. In this paper I am mainly interested in finding this type of dropping. It is very difficult to detect the position of selective packet dropping and also to identify whether the packet loss is intentional or unintentional. Intentional packet dropping is because of attacker's node and unintentional packet dropping is because of harsh channel conditions. Usually link errors exist in the open environment so the attacker will make use of harsh channel condition to drop the small amount of packets. Here just by observing packet loss it is not possible to find the real culprit for the packet loss. The packet dropping rate should be greater than the link error for the accurate detection.

In this paper accurate algorithm is developed to detect the malicious packet drop. Here detection accuracy is very high which is achieved by finding the correlation of lost packets which is obtained by using the bitmap of packet reception maintained by each node. By finding correlation between lost packets we can find whether packet loss is only because of link error or is the effect of combination of both link error and malicious packet drop because both correlation gives different patterns for packet loss as shown in figure 1.In the figure the simulation of autocorrelation of two different packet loss process is shown. The packet loss in one process is caused by 10% of link error and in another process packet loss is caused by 10% of link error and 10% of malicious packet dropping.

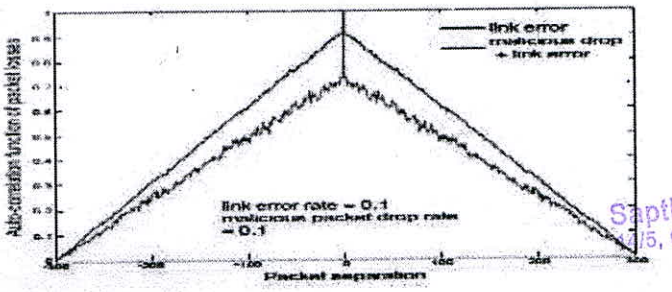

Fig.1 comparison of correlation of lost packets

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INVESTIGATION OF EFFECT OF INJECTION PRESSURE ON PERFORMANCE AND EMISSION CHARACTERISTICS OF COMPOSITE OIL BIODIESEL ON DI CI ENGINE

TILAK. S. R[1], K. CHANDRASHEKARA[2], H. YOGISH[3] & A. M. MAHESHA[4]

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ABSTRACT

The objective of the present investigation is to evaluate the Performance and Emission characteristics of Blends of methyl esters of composite oils(COme) of Karanja (PO) and Waste cooking oil(WCO)(B10, B20, B100) with Performance and Emission characteristics of methyl esters of Karanja oil(B100), methyl esters Waste cooking oil(B100) and diesel fuel at injection pressures of 160 bar, 180 bar and varying load conditions. The Transesterification process was carried out for composite oils of Karanja and Waste cooking oil (P50: W50), Karanja oil(PO), Waste cooking oil(WCO) and obtained biodiesel are blended with diesel in B10, B20, B100 for P50: W50 and B100 for individual oils of Karanja oil and Waste cooking oil. The Physico-chemical properties of biodiesel are presented and obtained as per ASTM standards. The effects of injection pressures, varying loads and blends of biodiesel with diesel on the Performance and Emission characteristics were evaluated using a Direct Injection (DI) Compression Ignition (CI) engine and tested at a constant engine speed of 1500 rpm. It was observed that there is an improvement in BTE (Brake Thermal Efficiency), while BSFC (Brake Specific Fuel Consumption) decreased when used with biodiesel blends in comparison with conventional diesel. The obtained results showed better Performance and Lower Emission of biodiesel from B20 of COme compared to biodiesel obtained from individual oils and diesel fuel and can be used without engine modification in a DI CI engine.

KEYWORDS: Transesterification, Composite Oil Biodiesel, Performance, Emission, Karanja Biodiesel,Waste Cooking Biodiesel & Diesel Engine

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Original Article

INTRODUCTION

Energy is a principal prerequisite for human existence. Consumption of fossil fuels has exceptionally expanded and the utilization of these energy assets has a major ecological effect. Diesel fuel, to a great extent, utilized as a part of transport, business, agriculture, domestic and modern divisions for the era of mechanical energy and power[1,2]. Out of all the substitute fuels accessible, bio-diesel procured from edible oils like Palm, rapeseed, Soybean, peanut, and sunflower oils suits well in biodiesel production, further even non-edible oils available like Cottonseed, Mahua, Jatropha and Karanja exhibit better properties in comparison to their edible oils counterparts. Availability and cost are the main factors for the choice of feedstock for biodiesel production and animal unsaturated fats guarantees to be more eco-accommodating at the point when contrasted with diesel fuel [3,4,5]. Notwithstanding, the cost of vegetable oils as of late has developed significantly, which will prompt higher

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Evaluation of Mechanical Properties of Polymer Composites Reinforced with Jute Mat Fiber and Egg Shell Powder for Ligaments and Tendons Replacement

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Abstract — **In this present world scenario composite materials have a wide range of applications, but we are basically concerned over their medical applications. Fiber reinforced composite materials comprises of fiber embedded in matrix materials, which are discontinuous fiber or short fiber composites. These composites have a better bending ,buckling and good tensile properties. Of the commonly available annual crop fibers jute contains one of the highest proportions of stiff natural cellulose, approximately 75 wet %. Jute may be combined with phenolic, epoxy and polyester resins to form composite materials, and it has been laminated with glass fiber to form hybrid composites. Further to enhance then flexural strength, jute fiber is treated with urea. The composite fiber is incorporated with egg shell powder to increase the tensile strength and bending properties, because greater the filler contents higher are the properties.**

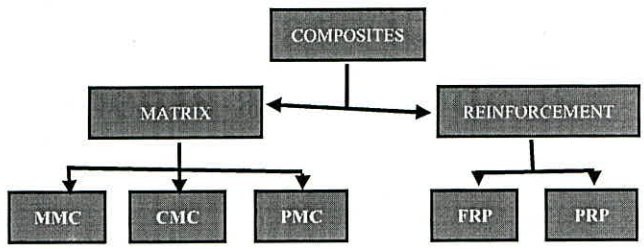
I. INTRODUCTION

Basically, when two or more than two chemically distinct materials are combined, produces synergistic effect, with a distinct separating interface of component. Due to this the component gets aggregate properties different from the component by which it is formed. The main components cannot compete with the composites in terms of properties. The component materials can be metal, ceramic or polymer etc. The use of natural or plant fiber reinforced composite is increasing with time. This is due to its advantages like low cost, ease of availability, light weight etc. The important and exclusive properties of natural composite are its renewability and biodegradability. These properties with low cost fulfil the economic interest of industries. These materials are eco-friendly and use of green materials in these composites also provides an alternative way to deal with agricultural residue. Apart from the industrial application composites have wide range of medical application and researches have been extensively carried out for their implementation. One among such application is replacement of ligaments and tendons with composite fibers whose failure is mostly common during accidents and injuries in day to day life. Composite fibers produced from naturally occurring jute fibers have extensive tensile strength and bending properties and are also safe to be embedded in human body.

1.1 DEFINITION OF COMPOSITES

A composite material is a material made from two or more constituent materials with significantly different physical or chemical properties that, when combined, produce a material with characteristics different from the individual components.

1.2 Classification of Composites



1.2.1 Basic Types of Composites

Based on Matrix

1. Metal Matrix Composites (MMC)
2. Ceramic Matrix Composites (CMC)
3. Polymer Matrix Composites (PMC)

Based on Reinforcement

1. Fiber reinforced polymer (FRP)
2. Particle reinforced polymer (PRP)

1.3 Natural Fiber Reinforced Composite

Natural fibers are used for reinforcing material. These have complicated structure, with crystalline cellulose micro fibril-reinforced amorphous lignin or/and hemi-cellulose matrix. Natural fibers are constitutes of cellulose, hemi-cellulose, lignin, waxes and some water-soluble compounds. The major component of it are cellulose (60%-80%), hemi-cellulose (5%-20%), lignin and moisture (20%). They are renewable, cheap, completely or partially recyclable, and biodegradable. Plants such as flax, cotton, hemp, jute, sisal, pineapple, ramie, bamboo, banana, etc., as well as wood, used from time immemorial as a source of lingo celluloses fibers are more and more often applied as the reinforcement of composites. Their availability, renewability, low density, and price as well as satisfactory mechanical properties make them an attractive ecological alternative to glass, carbon and man-made fibers used for the manufacturing of composites. The natural fiber containing

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Free Vibration Behaviour of Alkali Treated Long Kenaf Fibre Reinforced Epoxy Composites

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Abstract—**Two or more chemically different constituents combined macroscopically to yield a useful material are called composites. There are several naturally occurring composites such as Wood where cellulose fibers are bounded by lignin matrix, also bone and granite are typical examples of naturally occurring composites. Some of the manmade composites are concrete, plywood, glass, Kevlar etc. During recent times, due to increasing interest and research focus in eco-friendly materials, studies on natural plant fibers like Kenaf, Jute, Hemp, Coir are typically used in composites as reinforcing materials. These natural fibers are not only strong and light weight but also relatively cheap and biodegradable. Nowadays manufacturing sectors are in constant research of such materials having low density, low cost, corrosion resistance, good impact toughness as well as chemical resistance. The natural fibers have all these required properties and hence they serve as better replacement for the present materials in various fields including automotive industries. These natural fibers can be very advantageous composites when proper resin has been selected with it.**

Keywords—Long Kenaf fiber, Epoxy resin

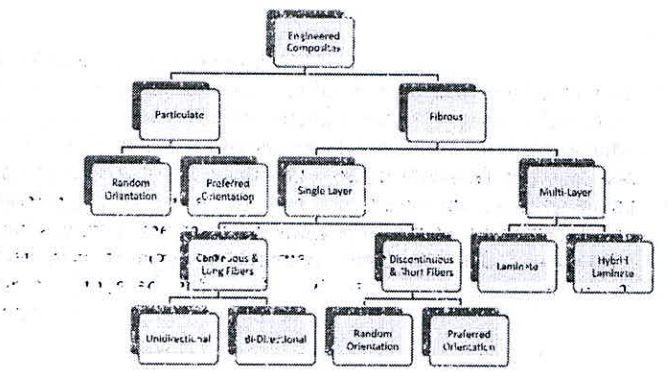
I. INTRODUCTION

The major automakers are increasingly turning to composites to help them meet performance and weight requirements, thus improving fuel efficiency. Cost is a major driver for commercial transportation, and composites offer lower weight and lower maintenance costs. typical materials are fiberglass/ polyurethane made by liquid or compression molding and fiberglass/ polyester made by compression molding. recreational vehicles have long used glass fibers, mostly for their durability and weight savings over metal. the product form is typically fiberglass sheet molding compound made by compression molding. For high-performance Formula 1 racing cars, where cost is not an impediment, most of the chassis, including the monologue, suspension, wings, and engine cover, is made from carbon fiber composites. The commercial applications of composites offer larger business opportunities. Hence introduction of these new polymer resin matrix materials and high performance reinforcement fibers of glass, carbon etc. and the penetration of these advanced materials has witnessed a steady expansion in uses and volume has resulted in reduction of cost. These Fiber Reinforced Polymers has huge applications such as in window panels, doors of automobiles, fuel cylinders, wind mill blades, beams of bridges, drive shafts.

1.1 Definition Of Composites

A Composite material can be defined as a combination of two or more materials that results in better properties than those of the individual components used alone. In contrast to metallic alloys, each material retains its separate chemical, physical, and mechanical properties. the two constituents are a reinforcement and a matrix. the main advantages of composite materials are their high strength and stiffness, combined with low density, when compared with bulk materials, allowing for a weight reduction in the finished part.

1.2 Classification of Composites



1.2.1 Basic Types of Composites

Based on Matrix

1. Metal Matrix Composites (MMC)
2. Ceramic Matrix Composites (CMC)
3. Polymer Matrix Composites (PMC)

Based on Reinforcement

1. Fiber reinforced polymer (FRP)
2. Particle reinforced polymer (PRP)

1.2.2 FIBRE REINFORCED POLYMER

These fiber reinforced polymers (FRPs, hereafter referred to as conventional composites) are gaining popularity as primary and secondary structural materials in aerospace, marine, automobile, civil construction applications, sports industry, defense, renewable energy sectors, textile industries and othe.

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Sugarcane Bagasse Reinforced Polyester Composites

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Abstract: *A composite material is made by combining two or more materials to give a unique combination of properties, one of which is made up of stiff, short fibres and the other, a binder or 'matrix' which holds the fibres in place. The fibres are strong and stiff relative to the matrix and are generally orthotropic. More recently natural fibers have been employed in combination with plastics. The abundant availability of natural fibre in India such as Jute, Coir, Pineapple, Sugarcane, Kenaf, Bamboo, Banana etc. gives attention on the development of natural fibre composites primarily to explore value-added applications. Reinforcement with natural fibre in composites has recently gained attention due to low cost, low density, acceptable specific properties, ease of separation, enhanced energy recovery, C02 neutrality, biodegradability and recyclable nature. Recently the interest in composite materials reinforced with natural fibers has considerably increased due to the new environmental legislation as well as consumer pressure that forced manufacturing industries to search substitutes for the conventional materials, e.g. glass fibers. The objective of paper is to evaluate the mechanical properties and characterization of sugarcane bagasse reinforced polyester composite.*

Keywords: Sugarcane Bagasse Composite, Tensile Test, Bending Test, Water Absorption Test.

1. Introduction

1.1 Need of Composites:

Plastics and Ceramics have been the dominant emerging materials. The volume and numbers of applications of composite materials have grown steadily, penetrating and conquering new markets relentlessly. Modern composite materials constitute a significant proportion of the engineered materials market ranging from everyday products to sophisticated niche applications. While composites have already proven their worth as weight-saving materials, the current challenge is to make them cost effective. The efforts to produce economically attractive composite components have resulted in several innovative manufacturing techniques currently being used in the composites industry. The composites industry has begun to recognize that the commercial applications of composites promise to offer much larger business opportunities than the aerospace sector due to the sheer size of transportation industry. Thus the shift of composite applications from aircraft to other commercial uses has become prominent in recent years.

1.2 Definition of Composite

Composites are multifunctional material systems that provide characteristics not obtainable from any discrete material. They are cohesive structures made by physically combining two or more compatible materials, different in composition and characteristics and sometimes in form. The weakness of this definition resided in the fact that it allows one to classify among the composites any mixture of materials without indicating either its specificity or the laws which should given it which distinguishes it from other very banal, meaningless mixtures. The composites should not be regarded simple as a combination of two materials. In the broader significance; the combination has its own distinctive properties. In terms of strength to resistance to heat or some other desirable quality, it is better than either of the components alone or radically different from either of them.

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Design & Fabrication of Remote Controlled Solar Lawn Mower

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Abstract - A remote controlled solar lawn mower is a device which reduces the work load on humans for trimming lawn. Rapid growth of various high-tech tools and equipment makes our work comfortable, accurate and time efficient. This project considers the implementation of a device which can be operated wirelessly with the help of a remote. Every action of the lawn mower is controlled by IR relays. The project also aims at fabricating a lawn mower in which, the motors run with the help of solar energy.

The requirement of electricity around the world is increasing at an alarming rate due to industrial growth, which in turn leads to increased and extensive use of electrical gadgets. Solar energy is the best alternative source, which is both renewable, and an eco-friendly source of energy. This project will reduce environmental and noise pollution caused by conventional lawn mowers. This prototype is user friendly, cost efficient and environment friendly.

***Key Words*: Robot, IR relays, Pollution, Renewable, Electrical gadgets.**

1. INTRODUCTION

A lawn mower is a machine that uses cutting blades or strings to trim lawn at an even height. The working principle of a lawn mower is: High speed of rotation of cutting blades provide the force required for effective and accurate trimming of lawn. Lawn mowers have become very essential in our daily life. More and more lawn mowers have been manufactured and used in the last few years. When we put all this together, a lot of power is being consumed by lawn mowers. Also, we can observe that lawn mowers have been the cause for a lot of air and noise pollution around the globe. This has led to consumers seeking for ways to reduce and solve their own carbon footprints. Also, there are government regulations limiting the pollution level of the device to a certain maximum level, which is decreasing over the years.

Our three member project team have observed this, and decided to design and fabricate a remote controlled solar lawn mower, which not only reduces air and noise pollution and dependence on non-renewable energy sources, but also reduces the work load on laborers and speeds up the work. This lawn mower integrates a conventional lawn mower with solar panels, remote controlled operation and a storage unit for collecting trimmed lawn. We have incorporated all these features in our lawn mower at the lowest price possible, without compromising much on quality of the product. We hope to see this device as the future of lawn mowers around the globe in the years to come.

2. LITERATURE REVIEW

2.1 Self-Efficient and Sustainable Solar Powered Robotic Lawn Mower. (December 2015)

Srishti Jain, Amar Khalore and Shashikant Patil

This paper proposes a solar powered vision based robotic lawn mower which is an autonomous lawn mower that will allow the user the ability to cut the grass with minimum effort. Unlike other robotic lawn mowers in the market, this design requires no perimeter wires to maintain the robot within the lawn and also with less human effort in the manual mode operation. Through an array of sensors safety takes major consideration in the device, this robot will not only stay on the lawn, it will avoid and detect objects and humans. Here they used a 12V 310mA solar panel in their project. There are 24 solar cells on the solar panel, each contributing to 0.5V each. They could attach a battery but as the lead acid rechargeable battery used is rated 12V 1.2Ah, it won't be overcharged due to the small output of solar panel. To detect the obstacles, they used IR sensors which has 1m 555 IC. There are two sensors, one on each side. This is because in case the obstacle is on the left then it will move in right direction and if the right sensor detects the obstacle then it goes towards the left. [1]

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Effect of Fiber Content on Mechanical Properties of Alkali treated Unidirectional Long Kenaf Fiber Reinforced Epoxy Composites.

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ABSTRACT

Environmental awareness of the general public and depletion of petroleum resource have trigged an enormous interest in utilizing the natural fibers, and their composites as environmentally friendly. Now a days, the numerous researchers, scientists and engineers have explored the production and properties of natural fibers and utilization of natural fibers as effectively and economically as possible to produce good quality fiber reinforced polymer composites. This will be helpful to evaluate the development and properties of natural fiber reinforced polymer composites. The use of natural fiber as reinforcement for polymer composites have generated much interest due to their availability, renewable, low cost, light weight, relative high specific strength and modulus, in explosive, minimal health hazardous, biodegradable and possibility of environmental protection. Also the use natural fibers offer some advantages regarding mechanical thermal properties.

Keywords: *Natural fiber, Kenaf, Epoxy, Alkali, Tensile test, Fexural test, Impact test, Hardness test.*

1. INTRODUCTION

Composite material is a materials system composed of a suitable arranged mixture or combination of two or more micro or macro constituents with an interface separating them that differ in form and chemical composition and are essentially insoluble in nature. The engineering importance of a composite material is that two or more distinctly different material combines to form a composite material that possesses properties that are superior or important in some other manner, to the properties of the individual components [1]. Generally composites are made of just two materials one is the matrix or binder, which surrounds and binds together fibers or fragments of the other material which is called the reinforcement. By choosing an appropriate combination of matrix and reinforcement, a new material can be made that exactly meets the requirements of a particular application. Due to their low weight and ability to be tailored for specific end use, they have gained a considerable ground in high performance applications such as aerospace and automobile industry.

2. MATERIALS, EQUIPMENT'S AND METHODS:

2.1 Materials:

The raw materials used in this study are Kanaf fiber (cannabinus –hibiscus) due to its high toughness and high aspect ratio, Epoxy resin LY-556 due to its excellent adhesion property, hardener HY-951 and sodium hydroxide. Kenaf fiber is the natural fiber available in all over places. Kenaf or hibiscus cannabisnus is a member of Malvaceae family having good mechanical and other properties also. Cannabinus as shown in figure1. Hibiscus Cannabinus is in the genus Hibiscus and is probably native to southern Asia, though is exact natural origin is unknown. The name also applies to the fiber obtained from this plant. The fiber forms are

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Effect of Graphene and Silica Fillers on Mechanical Properties of Polymer Nano Composites

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ABSTRACT

In the recent years Polymer Nanocomposites have become promising materials in all engineering materials for transportation, automotive, and biomedical applications. This paper presents various combinations of Nano fillers and matrix materials which were used to develop the Nano composite material by means of simple compression molding technique and characterization of mechanical properties. The effect of Nano Silica (0-25% by weight) and these properties was studied. The silica Nano filler has received much attention due to their ordered structure and high surface area. The Graphene has attracted considerable interest over recent years due to its intrinsic mechanical properties. Finally, Nano composites were subjected to tensile, flexural, impact and hardness testing to analyse the mechanical properties.

Key words: Polymer Nanocomposites, Nano Silica, Graphene, Nano fillers.

1. NANO COMPOSITES (NCs)

Nano composites are a class of materials in which one or more phases with nanoscale dimensions (0-D, 1D, and 2-D) are embedded in a metal, ceramic, or polymer matrix. The general idea behind the addition of the nanoscale second phase is to create a synergy between the various constituents, such that novel between the various constituents, such that novel properties capable of meeting or exceeding design expectations can be achieved. The properties of nanocomposites rely on a range of variables, particularly the matrix material, which can exhibit nanoscale dimensions, loading, degree of dispersion, size, shape, and orientation of the nanoscale second phase and interactions between the matrix and the second phase.

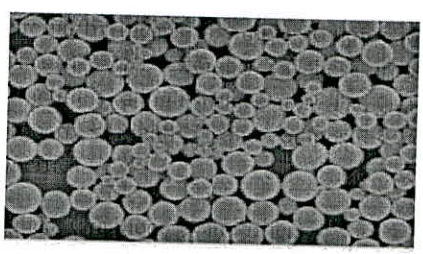

Figure 1: Nano particles

Polymer nanocomposites are defined as polymers in which small amount of Nanometer size fillers are homogeneously dispersed and will have potential significant impact on materials mechanical, electrical and thermal properties etc. Therefore in recent years polymer based nanocomposites with excellent mechanical, thermal and properties have drawn more and more attention to the research and industry peoples. Polymericnanocomposites can be broadly classified as:

1. Nano clay-reinforced composites.
2. Carbon nanostructures (Graphene, carbon nanotubes and carbon Nano diamonds) -reinforced composites.
3. Nanofiber-reinforced composites.
4. Inorganic particle reinforced composites.

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NUMERICAL ANALYSIS OF TENSILE PROPERTIES OF UNIDIRCECTIONAL COIR FIBER REINFORCED EPOXY COMPOSITE LAMINATE

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Abstract

In this paper numerical analysis of obtaining tensile strength properties of unidirectionally arranged coconut fiber reinforced epoxy composite laminate is discussed. Micromechanical analysis techniques are used to determine the elastic constants which are used as input to determine the stress and strain values. The strength and mechanical properties of the composite laminate can be predicted by knowing the stress strain values by using finite element analysis software. The stress-strain values are determined using empirical models. The empirical results have slight deviation from real time model because of different environmental conditions and this can be validated by performing the experimental testing of the composite laminate. Here the finite element analysis is carried out by considering the composite material as layered element and stress- strain values are computed using ANSYS software.

Key Words: FRP Composite, Coir Fiber, Numerical Analysis

1. Introduction to FRP Composite

Composite is a structural material composed of mixture of two or more materials which are mixed or bonded together. Fiber reinforced composite (FRP) consists of fibers as reinforcement material embedded in the matrix phase. The matrix holds the reinforcement fibers together to form the required shape of the composite material. The new material obtained will have superior properties than the individual constituent itself and is replacement for few conventional materials.

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Physico-Chemical Analysis of the Groundwater – A Case Study

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Abstract: *Groundwater samples collected from 12 different sampling stations were examined for various water quality variables namely, pH, TDS (Total Dissolved Solids), Temperature, EC (Electrical Conductivity), Chloride, Bicarbonate, Total Hardness (TH), Sodium, Potassium, Sulphate and Fluoride employing the standard methods of APHA (1998). The final experimental results were compared with the WHO variable standards (1993) and BIS variable standards (1998). The EC values of all the samples were above the permissible limits, 58% of samples exhibited TDS and TH values above the permissible limits. 16% of samples displayed calcium values above the permissible limit, 41% of the samples had Magnesium values above the permissible limit of WHO (1993). 25% of samples had Chloride values above the permissible limit of WHO (1993). Only a single sample displayed sulphate value above the permissible limit of WHO (1993). All the values are tabulated in table-1.*

Key Words: Water Quality variables; APHA; Talk; Hobli

I. INTRODUCTION

Water pollution is a rising serious concern in todays' scenario. Throughout the country with the swift upsurge in population, the demand for fresh water has also shown a linear increase. The groundwater today is witnessing two faced water crisis. On one hand, the existing aquifers are fast depleting due to its over exploitation through massive digging of bore wells (especially in metropolitan cities), encroaching of small aquifer recharge zones by expanding concrete colonies, secondly the existing groundwater is polluted by anthropogenic activities. An alarming situation of Bengaluru metropolis is mentioned by [1] wherein the groundwater table has largely depleted, many aquifer recharge zones have dried up, some have been encroached as a consequence of rapid urbanization. A few have them have been polluted with domestic wastes. Similar situations were observed by[2], [3] and [4].

Anthropogenic activities like excessive industrialization and irrigation pollutes the groundwater [5]. The dumping of industrial wastes and effluents deep in the ground may come in contact with the groundwater thereby polluting it. Increased use of chemical fertilizers, pesticides in agricultural fields may seep into the water table over a period of time may be along with rain water thereby causing groundwater pollution[6]. The current study area consists of both small scale industries and agricultural fields. Hence the current investigation deals with the assessment of groundwater quality for few water quality variables keeping in view the possible pollution by the above mentioned industrial and agricultural sectors.

II. METHODOLOGY

Groundwater were sampled from twelve stations in Hutridurga Hobli, Kunigal taluk, Tumkur district for various physicochemical parameters mentioned above. Variables namely pH, EC and TDS were estimated on the field, using portable water analyzer. Remaining variables such as Chloride, and Total Hardness were estimated using titrimetric analysis. Sulphate was estimated by Turbidimetry using spectrophotometer Elico in the laboratory of Atria Institute of Technology, Bengaluru. AR-grade

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Spatial Distribution of Fluoride in Groundwater

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ABSTRACT:*Groundwater samples were collected from thirteen sampling stations in Kolar city, Karnataka, India in June 2015. Water quality variables such as pH, Total Dissolved Solids (TDS) and Electrical Conductivity (EC), Total hardness (TH), Bicarbonate, Calcium, Magnesium and Fluoride were estimated using the standard guidelines of APHA (1998). From the analysis it was found that 15.4% of the samples were out of the range prescribed by WHO (1993), 92.3% of the samples had the TDS values exceeding the permissible limit of WHO (1993), 70% and 54% of the groundwater samples had Total Hardness (TH) and Bicarbonate values exceeding the permissible limits of WHO (1993), 38.4%, 902.3% and 54% of the groundwater samples have shown the Calcium, Magnesium and Fluoride values to be above the permissible limits of WHO (1993). The correlation study has shown that the variables Fluoride and pH have shown insignificant correlation between themselves and with all the other water quality variables. All the results obtained are discussed in detail in the paper.*

KEYWORDS: Groundwater; APHA (1998); Kolar City; Fluoride; Correlation.

INTRODUCTION:

In today's scenario we are witnessing a two dimensional water crisis. On one hand the rate of Aquifer depletion has exceeded the rate of Aquifer recharge due to increase in fresh water demand, which is in turn a function of the elevated population. On the other hand the existing fresh water in the active sources are subjected to Geogenic and Anthropogenic pollution which is paving way for the further worsening of the situation. This paper analysis the groundwater pollution in Kolar city for its pollution with respect to Fluoride along with other water quality variables due to Geogenic causes.

The problems caused due to elevated concentration of fluoride in water is not new to India. The first problem related to Fluoride is India was reported as early as 1937 in Andrapradesh[1], later on 17 states were reported with endemic fluorosis in 1999[2]. Karnataka state also falls into this category where it has witnessed fluoride related problems mainly towards its eastern belt. A Physicochemical study of groundwater was carried out by [3] and [4] in Kolar and Chintamani taluks wherein higher concentration of fluoride were witnessed.

The most common minerals below through which fluoride enters into the groundwater are apatite, rock phosphate, topaz and fluorite [5]. Fluoride intake through water can be beneficial or detrimental to health depending on its concentration in water [6]. Consumption of water with Fluoride concentration about 1.5 ppm results in Dental and Skeletal fluorosis. Dental fluorosis includes discoloured, blackened, mottled or yellowish teeth, skeletal fluorosis includes stiffness of joints and calcifying of bones [7]. Both these types of 'Fluorosis' are irreversible and no effective treatment is known at the acute stages. A number of people suffering from dental fluorosis and bed-ridden through skeletal fluorosis was observed during the field work. Hence, it is high time that the concerned authorities in power should look into this situation with great concern and do the needful for the benefit of the people of Kolar city.

MATERIALS AND METHODS:

Groundwater samples from thirteen sampling stations were collected from Kolar city in pre-cleaned polythene containers of 2L capacity. Water quality variables namely pH, TDS and EC were

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Effect of textile mill waste water on growth of Maize (Zeamays.l)

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ABSTRACT

The present investigation was carried out to assay the effects of effluents on the seedling growth &plant growth of Maize (Zea mays. L). For that purpose textile effluent were chosen. Concentrations used for the effluents were 0, 25, 50, 75 & 100%.Minimum relative toxicity percentage was in 25% concentration and increases gradually as the concentration increases. Textile effluent has more relative toxicity. A number of seeds also decreases with the increase in concentration. Irrigation with high TDS (Total Dissolved Solids) resulted in a decrease in optimal crop production.

Keywords— *Hgcl2, Sterilized distilled water, Seeds, Sterilized Petri dishes, Germination %, Root length, Shoot lengths, Relative Toxicity (%R.T.) The degree of inhibition over control*

1. INTRODUCTION

Maize is grown on more than 240 million hectares, larger than for any other crop. World trade in Maize is greater than for all other crops Compared to paddy in 2009, world production of Maize was 682 million tons, making it the second most produced cereal after Soya (817 million tons). Maize normally needs 110 and 130 days between planting and harvest, depending upon climate, seed type, and soil conditions. Pollen formation from the mother cell and the stages between a thesis and maturity are susceptible to high temperatures, and this adverse effect is made worse by water stress.

The two biggest Maize producers are China and Russia, followed currently by India then the USA. Amongst global resources, water is emerging as perhaps the most critical but misused natural resources. With certain limitations, one has to turn to non-conventional resources to meet the irrigation water demand. Among others, one of the most important irrigation6 as well as nutrient resources is industrial wastewater, which consists of about 95% water and there set as organic and inorganic nutrients. At higher pollution levels, the root system is extremely lost and at maturity, plants yield are much-reduced 5-7. Wastewater from industries also destroys our productive land by adding chemical compounds to these soils. Delayed germination and earlier leaf senescence are the two most important parameters which correspond to the final yield loss at the end of the season. Physico-chemical characteristics and fertilizing efficiency of dairy effluent is highly alkaline in nature and contains large amounts of suspended and dissolved solids resulting in high BOD (3892 mg/l) and COD (9682 mg/l) effluent has deleterious effects on agriculture and ecosystem when they are directly disposed off. Seed germination is a critical stage that ensures reproduction and controls the dynamics of plant populations, so it is a critical test of probable crop productivity. An attempt has been made to understand the effect of Textile mill effluent on seedling & plant growth in Maize.

2. MATERIALS AND METHODS

The study was carried out by systematic collection of Textile effluent (untreated) in 2 liters of polyethylene bottles. The samples were collected from the inlets of Textile industry (Andhra Pradesh) the collected samples were analyzed for pH, BOD, COD, TDS, SS, oil, and grease, calcium, magnesium, iron, manganese, copper, etc. The effluent was collected and stored in a clean polythene bottle that had been pre-washed with 10% nitric acid and thoroughly rinsed with de-ionized water and then standard methods were used for the analysis of effluents. The effluents were stored at 4^0C during storage period so as to avoid any change in its characteristics. Standard methods were used for analyzing water and wastewater.

2.1 Petridish Experiment procedure

For the germination experiments, certified healthy and equally sized seeds of Maize *(Zeamays* L.) sterilized with 0.1% HgCl2. After repeated washings with sterilized distilled water, seeds were soaked in the same water for 4hrs. Then 10 sterilized seeds

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Paper Production from Flower: Recycling of Flower Waste

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Abstract

This proposal provides an alternative approach for solid waste management. Solid waste is usually landfilled or incinerated, the volume of solid waste that can be recycled is found to be minimal. This approach will focus on reducing the solid floral waste. India is a country where religion and festivals are part of our lives; we usually worship by providing offerings mostly flowers, coconut, and fruits. Flowers are been widely used to decorate sacred places, wedding halls, temples and used for various auspicious occasions. Tons of floral waste is discarded every day in open spaces after the flowers are dried and used up. Floral waste discarded in open spaces which lead to several airborne disease, waterborne disease and contaminates the surrounding area. Production of paper from floral waste would eradicate deforestation, rates of global warming can be controlled and loss of habitat for wild animals can be minimized, thereby conserving the wild animals. Disposal of floral waste is of a great concern and production of paper from floral waste provides an approach for reducing the volume of floral waste. Utilization of floral waste for production would generate revenue for the temples and marriage halls. Paper obtained from floral waste is eco-friendly, cost-effective and biodegradable.

Keywords: *Deforestation, flowers, floral waste, paper production, paper pulp*

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INTRODUCTION

Deforestation

Deforestation is cutting down of trees due to growing population, urbanization and industrialization. Trees are usually cut down for timbers and for paper production. Deforestation has a major impact on the environment, deforestation leads to global warming, and increased levels of air pollution. Trees are important because they release oxygen, they absorb carbon dioxide which controls the CO_2 levels, and trees prevent soil erosion. Trees help in bringing rain, thereby reducing the temperature of the earth. Cutting down of trees lead to soil erosion, decreased rainfall, thereby varying the climatic conditions. Deforestation leads to flood due to the melting of glaciers.

Flower Waste

Solid waste is usually landfilled or incinerated, the volume of solid waste that can be recycled is found to be minimal. This approach will focus on reducing the solid floral waste. India is a country where religion and festivals are part of our lives; we usually worship by providing offerings mostly flowers, coconut, and fruits [1, 2]. Flowers are been widely used to decorate sacred places, wedding halls, temples and used for various auspicious occasions. Tons of floral waste is discarded everyday in open spaces after the flowers are dried and used up. Floral waste discarded in open spaces which lead to several airborne disease, waterborne disease and contaminates the surrounding area. Production of paper from floral waste would eradicate deforestation, rates of global warming can be controlled and loss of habitat for wild animals can be minimized, thereby conserving the wild animals. Disposal of floral waste is of a great concern and production of paper from floral waste provides an approach for reducing the

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Development and Implementation of VLSI Reconfigurable Architecture for Gabor Filter in Medical Imaging Application

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ABSTRACT

The Gabor filter is a very effective tool in visual search approaches and multimedia applications. This filter provides high resolution in time-frequency domains and thus finds use in object recognition, character recognition and pattern recognition applications. Medical Image analysis using image processing algorithms is one of the best ways of diagnosing diseases inside human body. The Gabor wavelets resemble the visual cortex cell operation of mammalian brains and hence are best suited for biological image analysis. A Tonsillitis detection system is proposed here using Gabor filtering approach. This system detects the presence of Tonsillitis from the tonsils images. A suitable VLSI architecture for the implementation of the Gabor filter was modeled in Verilog using Xilinx tool and simulated using the tonsils test images. The proposed system was successful in detecting the presence of Tonsillitis from the diseased tonsils image. The complete system was then synthesized and implemented on FPGA Artix 7. The design was capable of operating at a maximum frequency of 394.563 MHz.

Keywords— Tonsilitis, Gabor, Medical Image Analysis, FPGA architecture

I. INTRODUCTION

The study of medical image has contributed an important role to biomedical science that supports histo-pathological examination and diagnosing the diseases and disorder factors in human body. A high resolution medical image provides a multi-orientation observation to diagnose several types of health issues. The processing of biomedical images requires more concrete texture and background that represents clear view of internal organs and view of tissues. The Digital medical images obtained from different modalities are often affected by some unwanted factors such as noise, lower resolution, blurriness and geometric deformation. There are various techniques to mitigate such types of unwanted features such as Image smoothing, Image registration, image segmentation. The image smoothing process enhances the images by decreasing noise without affecting original information. The image registration techniques involves the process of aligning the resolution of images and the image segmentation process involves different-different process such as filtering, smoothing, classification and segmentation which helps to generate proper structural visual view from the unstructured image.

A Gabor filter is designed to enhance the biomedical image by segmentation process in which wavelet transform is used to perform multi-resolution time frequency analysis by selecting different kernel resolutions and this makes wavelets an effective tool for performing modification on image such as compression, object recognition, edge detection, filter design and etc. A Gabor filter is used in various image processing applications such as i) Texture analysis- In this Gabor filter is treated as multi-channel filtering approach that is used to identify patterns within a specific orientation and defined frequency range [1], ii) Object recognition- A Gabor filter is used to detect object from the aerial images based on the frequency and the standard deviation. In this aerial images are passed from filter and then specific information is extracted from filtered images for object classification [2]. iii) In medical image processing- For identifying the cancerous cells from Mammogram images a 2-D Gabor filters is used for extracting the space- time based texture features from the mammogram images[3], A bank of Gabor filters is used in medical image segmentation for complex image analysis[4].

In this paper a Gabor filter is designed and used is medical image processing for tonsillitis detection. The following are the key features of proposed work.

- To design and develop of Gabor filter for bio-medical applications based on FPGA.
- Designing a Gabor filter that includes mainly preprocessing module, CORDIC architecture, filtering module and convolution module.

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An Electrocardiograph based Arrythmia Detection System

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Abstract— **Cardiac disorders turn out to be a serious disease if not diagnosed and treated at the earliest. Arrhythmia is a cardiac disorder that exists as a result of irregular heart beat conditions. There are several variants in this type of disorder which can be only diagnosed only when patient is under an intensive care conditions and also the patient with such disorder do not experience and physical symptoms. Such diseases turn out to be deadly if not treated early. A detection system is thus required which is capable of detecting these arrhythmias in real time and aid in the diagnosis. An FPGA based arrhythmia detection system is designed and implemented here which can detect second degree AV block type of arrhythmia. The designed system was simulated and tested with ECG signal from MIT-BH database and the results revealed that a robust arrhythmia detection system was implemented.**

Keywords— Cardiac, Arrytmia, diagnosis, FPGA .

I. INTRODUCTION

Cardiac disorders is one of the major cause of suffering and death today. Early diagnosis of such disorders leads to a timely treatment and recover from such disorders which may turn deadly if ignored. The current diagnosis of heart diseases depend on visual analysis of Electrocardiograph (ECG) signals.

The acquisition of these ECG signals is achieved using ECG device which uses two to three electrodes connected to different human body parts. These electrodes measure the heart's electrical activity as a function of time. These ECG signals depict an anomaly for a patient suffering from any heart disease. Hence the ECG signals are used for diagnosing the healthy status of the heart.[1]

ECG signals are divided into four important electrical events each representing the phases of a cardiac cycle. The four events are 'P' wave, 'QRS' complex. 'ST' segment and 'T' segment as shown in figure 1 [2].

As each segment in the ECG signal corresponds to a particular physiological state, the analysis of thee segments may be used in diagnosis cardiac disorders. The diagnosis may be detection of presence/absence of heartbeat, calculating the average heart rate, classifying articular or ventricular abnormal beats and so on.

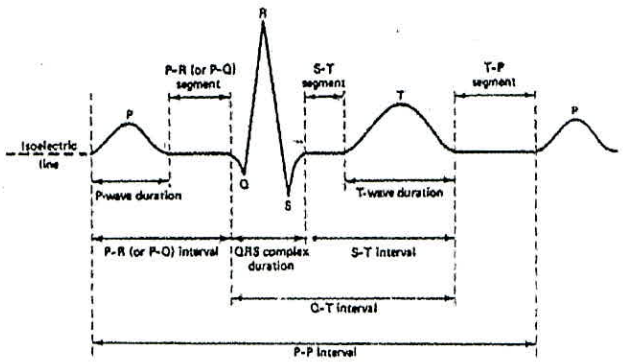

Fig.1. ECG signal

A heart rhythm may be estimated by analyzing the R-R distance in the ECG signal. A normal sinus rhythm will have a consistent R-R interval and within the normal P-R interval range of 0.12-0.20 seconds [3]. Arrhythmia is a condition of a patient whose heart beat rhythm is not being normal or he is suffering from abnormal heart rate. Several arrhythmiatic condition are found to exist such as Sinus Bradycardia, Sinus Tachycardia, Atrial flutter, Atrial Fibrillation, Super Ventricular Tachycardia, First degree AV block, second degree block and third-degree block. The second-degree blocks are a form of arrhythmia where the QRS pulses are found to be dropped in a repeating cycle of every 3rd or 4th P wave of the ECG signal.

This paper presents the detection of the arrhythmia particularly second-degree AV block type where the heart beat is dropped for one or two repeating cycles of the P wave. A FPGA based detection system is proposed to find the presence of such drops in the ECG signal. The heart beats are detected from ECG signal by detecting the QRS complex through suitable filtering and thresholding approaches. The dropped heart beats are then identified as a confirmation of presence of arrhythmia condition.

The organization of paper is followed as: Section II describes the ECG signal processing concepts. Section III describes a general arrhythmia detection procedure. Section

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Design of Systolic Architecture Using Evolutionary Computation

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ABSTRACT

This work presents a new concept for finding the optimal values for the entire three fundamental design vectors namely: scheduling, projection and processor so that not only architecture design could be feasible along with that maximum hardware utilizing efficiency could be achieved. This Approach also having the focus to minimize the total delay involved with systolic architecture design. Evolutionary programming has applied to find the optimal solution. Presented work and result will provide facility to designer without any involvement to find out best suited architecture for a particular application. The Proposed method having capability to find the large number of optimal vectors for any algorithm which can be implemented in systolic architecture. The increasing demands of speed and performance in modern signal and image processing applications necessitate a revolutionary super –computing technology. The proposed method is coded in MATLAB editor and simulation environment.

Keywords: Scheduling; Projection; Systolic Array

1. INTRODUCTION

The essential goal of developing new computer architectures and efficient use of existing modern systems is to run larger and more complicated applications faster over time. The continued demand for increased computing power led in the late 1980's to the development of high parallel scalable multiprocessing systems. Parallel computing is a form of computation which many calculations are carried out simultaneously, operating on the principle that large problems can often be divided into smaller ones, which are then solved concurrently ("in parallel")[1]. The most effective way to improve the computer performance in terms of computational speed is to use parallel processing architectures, which employ multiple processors to perform a computation task. When multiple processors working together, an appropriate architecture is very important to achieve the maximum performance in a cost- effective manner. Systolic arrays are ideally qualified for computationally intensive applications with inherent massive parallelism because they capitalize on regular, modular, rhythmic, synchronous, concurrent processes that require intensive, repetitive computation. There is a necessity of an essential tool which maps all the DSP algorithms or high level computations in to hardware architecture which maximizes the hardware utilization efficiency [2]. Systolic Architecture is a general methodology for mapping high-level computations into hardware structures.

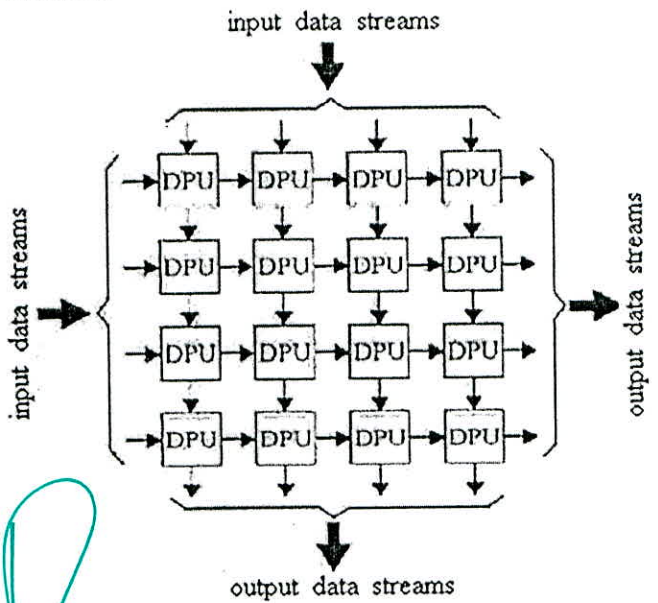

Fig. 1 General model of systolic array

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SECURED APPROACH FOR AUTHENTICATION OF MESSAGES IN WIRELESS SENSOR NETWORKS

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ABSTRACT: *Sensor networks are often deployed in unattended environments, thus leaving these networks vulnerable to false data injection attacks in which an adversary injects false data into the network with the goal of deceiving the base station or depleting the resources of the relaying nodes. Standard authentication mechanisms cannot prevent this attack if the adversary has compromised one or a small number of sensor nodes. Message authentication is one of the prominent techniques to mitigate unauthorized and malicious access from being forwarded in wireless sensor networks (WSNs). In this paper, an efficient and robust authentication approach is introduced that is designed based on Elliptic curve cryptography.*

Keywords: **Hop-by-hop authentication, symmetric-key cryptosystem, public-key cryptosystem, source privacy**

1. INTRODUCTION

Message authentication is defined as the way of detecting at the receiver side wheather the message sent by the sender has been modified or not while travelling across transmission medium. Message authentication protects the integrity of the message. The special characteristics of Wireless sensor is the absence of infrastructure. And they also have limited bandwidth, energy constraints, and low computational capabilities. Inspite all these limitations wireless sensor networks have wide range of applications in military, medical field etc.

Since the node is deployed in a hostile environment the security becomes the major constraint in WSN. The WSN can be easily hacked by an attacker and he can gather all the private information which is present. In many cases it is sufficient to secure data transfer between the sensor nodes and the base station. In particular, the base station must be able to ensure that the received message was sent by specific sensor node and not modified while transferring. Many WSN applications needs strong and light weight authentication schemes to secure data from unauthorised users. To overcome all security issue many different scheme that had been discover. Some schemes detects the compromised node , detects the injected false message in the network or giving special authorization to the sender or receiver, Encryption of decryption is the most often used scheme for providing the security. Message authentication prevents the unofficial and corrupted message in WSN. It is a short piece of information used to authenticate a message and to provide integrity and authenticity to the message. Symmetric key cryptosystems or public-key cryptosystems are the various schemes that are proposed to provide authenticity and integrity of the message. These schemes have limitations such as high computational and communication overhead, lack of scalability, node compromise attacks. Many data gathering protocols are proposed in order to gather data from various nodes in a secure manner and there are various merits and demerits in each of them [2]. To implement Data gathering technique at the Base station authors have used iSense Modular Wireless Sensor Hardware and Software System of Coalesenses product [3].

2. PROBLEM STATEMENT

Purpose of the project is to provide intermediate node authentication without the threshold limitation, and to perform better than the symmetric-key based schemes. The distributed nature of algorithm makes the scheme suitable for decentralized networks.

Important purposes are as follows:

- To develop a source anonymous message authentication code [5] (SAMAC) on elliptic curves that can provide unconditional source anonymity.
- To offer an efficient intermediate node authentication mechanism for WSNs without the threshold limitation.
- To the devise network implementation criteria on source node privacy protection in WSNs.

3. PROPOSED SYSTEM:

The proposed work presents the new scheme of authentication scheme in WSN, though conventional cryptographic scheme used in WSN are not that efficient but the proposed work use multi-hop authentication

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Survey on Migration from Cloud Computing to Edge Computing in IoT

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Abstract— Massive growth in the field of IoT produces lots of data, To store and process the data cloud technology is adapted. To bring the feature of cloud closer to the consumer device edge computing is developed which provide many advantage over the cloud computing. This paper focuses on comparison between cloud computing, edge computing and one of the variant of edge computing that is fog computing.

Key words: Cloudlet, Edge Computing, Fog Computing, Mobile Edge Computing

I. INTRODUCTION

Cloud computing is the practice of using network of remote server hosted on the Internet to store, manage and process the data instead of using local data centers. Because of pay as you go, on demand, self-service and resource pooling nature of cloud computing has become the best way to maintain computer resources for many types of applications. Cloud computing is one of the popular technology that provide service to Internet Of Things(IOT).IOT means an ecosystem of connected physical objects that are accessible through the Internet. IOT generates huge amount of data, to maintain this vast data cloud technology is used. Cloud is based on the idea of allowing users to perform computing tasks using services provided over the internet.

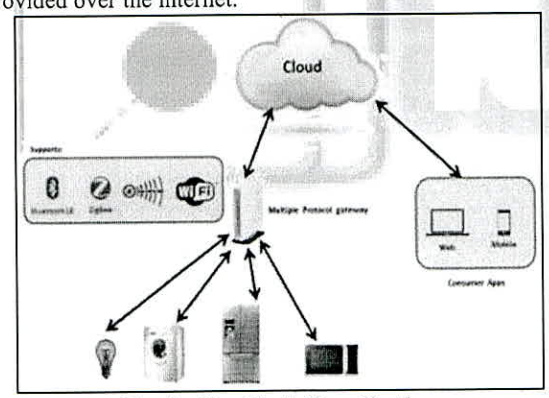

Fig. 1: Cloud in IoT application

Resources pooling and resource scalability are two main services of cloud to IOT. IOT devices can access the resources anywhere and anytime from the resource pool. User can readily scale the services to their needs.

But there are some issues we need to consider while using cloud computing in IOT, cloud is centralized unit since it is far apart from the IOT devices time required to send data produced by IOT devices is considerably more.

Some IOT applications might require very short response time and some might produce a large quantity of data which could be a heavy load for network.

For example in military applications some critical information from IOT must be transferred to processing unit with in a fraction of second but if we use cloud then transmission itself may take some amount of time. One more main issue is, all data produced by IOT is not needed to be stored in cloud for example in production industry so many sensors are used just to monitor whether the machines are working or not. So all data produced by these devises need not be send to centralized cloud because it require much of network bandwidth.

To overcome from these issues Edge Computing was developed.

II. EDGE COMPUTING

Edge computing allows computation to be performed at the edge of the network. Edge computing was developed by CISCO. Edge means it is any computing and network resources along the path between data sources and cloud data center. In edge computing we process the data at the place where it is produced. One of the main advantages of edge computing over cloud computing is, in edge computing the edge has certain computation recourses and this provides a chance to offload part of the workload from cloud.

One more advantage of edge computing is edge of the multiple stakeholders in geographically distributed position can be connected it is called as collaborative edge. These collaborative edges allow different stakeholders to cooperate and share the data.

The edge layer between the end devices and the cloud are implemented in different ways that depends on devices which acts as the intermediate edge nodes and protocols used by edge layer.

This implementation is mainly categorized into

1) Mobile edge computing
2) Cloudlet computing
3) Fog computing

In Mobile edge computing, computational and storage capabilities to the edge of network will be within the radio access network. The main idea behind mobile edge computing is that we can reduce the congestion in network by processing the applications closer to the cellular customer.

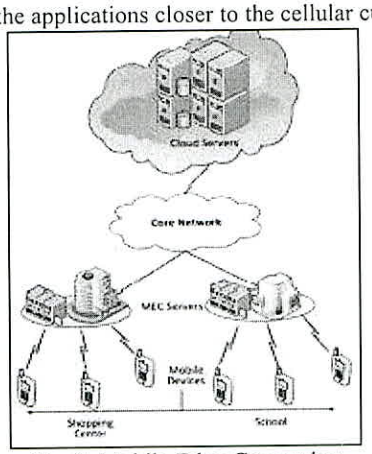

Fig. 2: Mobile Edge Computing

Cloudlet computing is a trusted cluster of computer, well connected to the network with resource available to the nearby mobile devices. Cloudlet is a mobility-enhanced small-scale cloud datacenter that is located at the edge of the

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Finding Active Influential User in Multiple Online Social Network

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ABSTRACT: People are very much dependant on Online Social Network for various purposes such as movie review, finding experts, finding opinions about any movies,places or products. Influence Maximization is the problem of finding a small set of influential users in the online social network so that their influence in the social network is maximized. Now-a-days, people are found in more than one social network such as Facebook, Twitter, Linkedln etc. So, finding influential user in multiple online social network is very much important. Rather than just finding influential user in multiple online social network, finding active influential user would be much more beneficial. The proposed method outperforms the previous methods of finding influential user.

KEYWORDS: Online Social Network, Influence Maximization, Fuzzy K-means algorithm, Active User

I. INTRODUCTION

Social network can be analysed with the help of graphs using a technique called as Social Network Analysis. It is represented as a graph where nodes represents individuals and edges represents interactions or relations between them. The various applications of Social Network Analysis are Data Mining, Behavioural analysis, Link Prediction, modelling of network and also in Recommender systems. It is also used in business applications such as analysis of customer behaviour and marketing and analysis of customer interaction.

One of the applications of Social Network Analysis is in Viral Marketing. There are three types of marketing i.e., Direct Marketing, Mass Marketing and Viral Marketing. Direct Marketing refers to marketing to each and every individual. Mass Marketing refers to marketing to more number of people. Viral Marketing refers to "word-of-mouth" marketing i.e., it uses its customer to market the product. Customer will influence his friends for buying a product and if he gets convinced, he buys a product and starts influencing his friends and so on.

In many markets, customers are strongly influenced by the opinions of their friends. Viral marketing takes advantage of this to promote a product by marketing it primarily to those with the strongest influence in the market. Viral marketing uses the customers in the market to promote a product. This way of marketing is very much beneficial than direct marketing and mass marketing. Further people trust and act on recommendations from friends and they further influence their friends. This is referred to as influence propagation [2]. For example, influence propagation can help decide which sports to watch, which item to purchase and so on. Hence, influence propagation has become an important mechanism for viral marketing. This further motivates the researchers to carry out studies on different aspects of the influence propagation problem. Influence Maximization problem is a problem of finding a small set of nodes that maximizes the spread of influence.

The processing time of older model increases exponentially as network size increases. Now-a-days users are found in multiple online social networks rather than one. User found in more than on network is referred as crossing users. These crossing users are very much important in propagating information in multiple online social networks. In the previous methods proposed, only influential users were taken into account, but in the proposed method the "active" influential user are considered. Active users can be decided based on various factors such as number of posts, likes, views and shares. Fuzzy k-means algorithm is being used to solve Influence Maximization Problem i.e., to find

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A Survey Paper on Influence Maximization in Online Social Network

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Abstract:
People are becoming more interested in online social network and they depend on the social network for many purposes such as finding opinions of other people about any product, movie etc. Influence Maximization is the problem of finding a small set of influential users in the online social network so that their influence in the social network is maximized. There are many diffusion models like Linear Threshold Model and Independent Cascade Model that are used to find the maximum influential user in online social network. This paper presents a survey on these two models and extensions to these models.

Keywords: Influence Maximization, Multiple Online Social Networks.

I. INTRODUCTION

The advent of Online Social Network (OSN) has been one of the most exciting events in this decade. Many popular OSN such as Facebook, Twitter, LinkedIn and Flickr have become increasingly popular. These networks are extremely rich in content and linkage data which can be analyzed. The linkage data is essentially the graph structure of social network and the communication between nodes, whereas the content data contains the text, images and other multimedia data in social network. The richness of this network provides opportunities for data analysis in context of Online Social Network. There are several factors due to which the OSN has gained importance by researchers[1].

Some of the factors are availability of social data that are vast, distributed, noisy and dynamic. There are some research issues with respect to mining the social network sites using data mining techniques.

One of the issues is Influence Propagation. In many markets, customers are strongly influenced by the opinions of their friends. *Viral marketing* takes advantage of this to promote a product by marketing it primarily to those with the strongest influence in the market. Further people trust and act on recommendations from friends and their further influence their friends. This is referred to as *influence propagation*. Influence propagation has become an important mechanism for viral marketing.

This further motivates the researchers to carry out extensive studies on various aspects of the influence propagation problem. *Influence Maximization problem* is a problem of finding a small set of nodes that maximizes the spread of influence. Influence Maximization problem was first studied by Domingo's and Richardson[2] and proposed first algorithm for influence propagation.

Then, Kempe et al.[3] gave two fundamental propagation models, named Independent Cascade (IC) Model and Linear Threshold (LT) Model. Many other researchers extended this basic propagation models in terms of scalability and efficiency.

But most of the works focussed on a single online social network whereas users now often are found in more than one social network. Dung T. Nguyen et. Al [10] proposed an algorithm to handle this problem.

II. RELATED WORK

Probabilistic Model

Domingo's and Richardson [2] gave the first algorithm to deal with influence propagation problem. They built probabilistic models of influence for mining the data on *knowledge-sharing websites*. Knowledge-sharing sites are the sites where customer review products and advise each other about the products. Customer's have two types of values:

intrinsic value and *network value*. Intrinsic values of a customer is his values as a customer based on the products he is likely to purchase and the network value of a customer is high when he is expected to have a very positive influence on other's probabilities of purchasing the product. A customer with high network values is the one who is worth of marketing.

It concluded that by building the *probabilistic models* and applying those models to the knowledge sharing websites, solved the influence propagation problem and their method is scalable to large networks. But, the method mined a network from single source and not from multiple sources.

The model was built based on Epinions data. The model was first tested with respect to Boolean Marketing. Experimental result showed that viral marketing resulted in profit increase over direct marketing and no marketing. The model which was introduced was linear model and it had tremendous speed over a non-linear model.

Then, the model was tested against Continuous Marketing, where viral marketing was advantageous over direct marketing. It was also showed that even with less network knowledge, viral marketing methods was better than direct marketing. The table shows the profit results for Boolean Marketing and Continuous Marketing scenario for various

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Experimental investigation on dairy scum biodiesel on CI DI Engine Performance and pollutant Characteristics at different injection pressures

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Abstract - The aim of the present investigation is to extract the biodiesel from dairy scum oil and to evaluate the performance and emission parameters with standard diesel fuel. Dairy scum oil is treated with an adequate measure of CH3OH which required and quantity of sodium hydroxide as a catalyst which is accessible in bio-chemical laboratories. Transesterification process was adopted to produce biodiesel under an optimized reaction temperature of 60 ^{0}C , the reaction time of 85 minutes, the quantity of methanol to oil ratio (1:3), the concentration of sodium hydroxide (0.6% v/v). Experimental investigation were conducted in CI DI engine to check the performance and pollutant characteristics of methyl esters of dairy scum oil by varying the injection pressures as 160 bar, 180 bar, and 200 bar. The essential performance parameters such as specific fuel consumption, BTE and emission parameters such as CO, CO_2, HC, NOx are found out and contrasted the results of biodiesel with the regular diesel fuel. The dairy scum biodiesel can be used as an alternative fuel and the properties obtained were within the ASTM standards.

Keywords: ***Biodiesel, Dairy scum oil, Diesel engine , Emission, Performance, Transesterification.***

I. INTRODUCTION

The trends in global energy consumption surveys depict that a main chunk of overall energy consumed is obtained from combustion of fossil fuels. Predominantly among fossil fuels, liquid petroleum-based fuels contribute significantly due to their distinct physico-chemical and combustion properties. But, the major concern here is liquid fuel reserves are limited and may exhaust any time, and their economic utilization is the fact bothering all researchers [1, 2]. Biodiesel is a renewable fuel obtained from animal fat or vegetable oil through a complex chemical process and can be employed as any direct substitute, extender or as an improver to fossil diesel fuel in CI engines [3]. The important factor is that biodiesel fuel could be directly used in existing automobile engines with a minute or no hardware modifications in engine design. These biodiesels are produced through a chemical reaction of animal fat or vegetable oils with methanol/ethanol in the occurrence of a catalytic agent to make glycerol as a main byproduct [4-8]. Biodiesel chemical name is methyl or ethyl ester. Sivakumar et al. [9] used dairy scum oil with an alkali-catalyzed transesterification process to produce biodiesel of waste dairy scum oil by using gas chromatography test and obtained maximum biodiesel yield of 96.7% by using 6:1 molar ratio, KOH of 1.2% wt at a stirring speed of 350 rpm, 30minutes of reaction time and a reaction temperature of 75 ^{0}C.The measured physicochemical properties are within the ASTM standards.Banapurmath et al. [10] BTE for methyl esters of pongamia oil, sesame oil jatropha oil, and conventional diesel fuel was 29.51%, 30.4% and 29% and 31.25%.Emissions for HC and CO were more than that of traditional diesel fuel. Canakci et al. [11] by using the methyl esters of canola oil and waste palm oil, the brake power lowered by 4% to 5%, BSFC increased by 9% to 10%. Emissions such as THC 17% to 26% depressed, CO2 reduced by 5% to 8%, smoke opacity reduced by fifty-six to sixty-three percentage, NOx increased by eleven to twenty-two percentage over conventional diesel fuel. Buyukkaya et al. [12] concluded that by using rapeseed biodiesel blends there was a reduction in peak pressure by 55 bar, maximum HRR reduction by 14%, IDT (ignition delay time) found to be a

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A New Approach for Evaluation of Volume Integrals by Haar Wavelet Method

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Abstract

This paper presents, Numerical integration rule based on Haar wavelets method are proposed to find volume integrals of various region such as cuboids, tetrahedron, cone, cylinder, ellipsoid, sphere, etc., volume integral region are transformed to standard integrals by linear and non linear transformation method, the advantage of this method gives the efficiency and simple applicability, performances of this method is illustrated with numerical examples.

Keywords: Numerical Integration, Haar wavelet method, Volume

1. Introduction

Analytical / numerical integration of functions over three dimensional regions or finding volume of various region often arises in chemical engineering, electromagnetic, field theory, fluid mechanics, biomechanics, bioinformatics. etc. mathematical modeling and computer simulation are applicable for biological system in the form of partial differential equation are to be solved by finite element method, to extract the stiffness matrix in the form of integral equations. In particular they are used for problems arriving in calculation of volume, moment of inertia, center of mass, volume of potholes and other geometric properties of solids. Numerical integration of triple integrals over various region are carryout by many authors, cuboids [Shivaram, 2014, Sarada and Nagaraja, 2015, Fengying Zhou, et.al.2017], tetrahedral region [Rathod et.al. 2005, 2007, 2010,Shivaram, 2013, Mamtha and Venkatesh, 2015, Fengying Zhou, et.al.2017], cone , cylinder, ellipsoid, paraboloid [Sarada and Nagaraja, 2015, Fengying Zhou, et.al.2017], Spherical region [Shivaram, 2013, Sarada and Nagaraja, 2015, Fengying Zhou, et.al.2017], numerical integration of multiple integrals by using Haar wavelet and hybrid functions are discussed in [Siraj ul Islam et.al., 2010, 2012, Imran Aziz, et.al. 2011], In This paper, we apply the wavelet based integration technique of Haar wavelet method over various region, this method is more accurate and easy to implement for variety of problems arising in science and engineering, the necessary computer program has been developed in MAPLE

The paper is organized as follows. In Section 2. mathematical preliminaries required for understanding the derivation, In Section 3. by using transformation method to convert the volume integral into standard integrals, In Section 4. We compare the numerical results with exact value.

2. Mathematical Preliminaries

2.1 Haar Wavelets method

The explicit form of the function $H_{jk}(x)$ is defined as

$$H_{jk}(x) = \begin{cases} 1, & if\ x \in [a_{jk}, \frac{a_{jk}+b_{jk}}{2}) \\ -1, & if\ x \in [\frac{a_{jk}+b_{jk}}{2}, b_{jk}) \\ 0, & otherwise \end{cases} \quad (1)$$

Where $j \geq 0$, $k = 0,1,2,---,2^j - 1$

$a_{jk} = \frac{k}{2^j}$ and $b_{jk} = \frac{k+1}{2^j}$

Using the orthogonal basis of $L^2([0,1))$ the Haar wavelet function $H_{jk}(x)$ can be expressed by Haar series function $f(x)$ of infinite terms as

$$\int_a^b f(x)\,dx = \frac{(b-a)}{2^{n+1}} \sum_{i=1}^{2^{n+1}} f\left(a + \frac{(b-a)(2i-1)}{2^{n+2}}\right) = \frac{(b-a)}{2M} \sum_{i=1}^{2M} f\left(a + \frac{(b-a)(i-0.5)}{2M}\right)$$

Where $M = 2^n$

For triple integral

$$\int_{a_1}^{a_2}\int_{a_3}^{a_4}\int_{a_5}^{a_6} f(x_1, x_2, x_3)\,dx_1 dx_2 dx_3 = ,$$

$$\frac{(a_2-a_1)(a_4-a_3)(a_6-a_5)}{8M^3} \sum_{i_1=1}^{2M}\sum_{i_2=1}^{2M}\sum_{i_3=1}^{2M} f(A, B, C) \quad (2)$$

where $A = a_1 + \frac{(a_2-a_1)(i_1-0.5)}{2M}$, $B = a_3 + \frac{(a_4-a_3)(i_2-0.5)}{2M}$, $C = a_5 + \frac{(a_6-a_5)(i_3-0.5)}{2M}$

we shall be using these formula to evaluate the volume integral by Haar wavelet method

2.2. Volume Integral over xyz – plane

In this section is devoted to the numerical integration of arbitrary function over sphere, cylinder, cuboids, cone, ellipsoid,tetrahedral region is of the form

Region $R = \{(x,y,z) | a \leq x \leq b, f_1(x) \leq y \leq f_2(x), g_1(x,y) \leq z \leq g_2(x,y)\}$ having linear or non linear faces are plotted in figure.1

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Research paper

A simple and efficient wavelet approach for evaluating surface integral over curved domain

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Abstract

This paper presents, a simple and efficient wavelet approach for computing the surface integrals over irregular or curved dom ain, the limit of the integrals are nonlinear function are transformed to standard two square by using finite element basis function, Haar wavelet based integration technique is applied to evaluation of surface integral over curved domain, the computational efficiency of the method is illustrated with several numerical examples.

Keywords: *Numerical Integration; Hear Wavelet Method; Curved Domain*

1. Introduction

Numerical integration appears in many fields of science and engineering, to finding surface area, volume, length, momentum, mass, stiffness matrix, mass matrix, body force vector etc., In recent years wavelet bases integration approach is morepopular in the field of numerical approximation of surface and volume integral. From the literature review we may realize that a lot of works have been done in this area in terms of quadrature rule of numerical integration, A number of polynomial based Gauss Legendre quadrature rule, product of polynomial and logarithmic based Generalized Gaussian quadrature methodover various region have been discussed, such as triangle region [1-2], quadrilateral region [3], parabolic region [4], square region [5], circle [6], etc., numerical integration of arbitrary function over convex and non-convex region are evaluated numerically by cubic spline element method [7], convex and non convex region is divided into 4-node, 8-node quadrilateral elements are approximated Numerically in [8-9], very limited work is attempted in curved domain, recently numerical integration of arbitrary function over parabolic edges by Generalized Gaussian Where and Using the orthogonal basis of the Haar wavelet function can be expressed by Haar series function of infinite terms as Where For double integraldivided into 4-node, 8-node quadrilateral elements are approximated numerically in [8,9], very limited work is attempted in curved domain, recently numerical integration ofarbitrary function over parabolic edges by Generalized Gaussian quadrature rule are carryout by [10], In this paper, we use Haar wavelet method to approximate the surface integral over curved domain or irregular domain.

2. Mathematical preliminaries

2.1. Hear Wavelet method

The explicit form of the function is defined as

$$H_{jk}(x)=\begin{cases}1, & if \quad x\in[a_{jk},\dfrac{a_{jk}+b_{jk}}{2})\\ -1, & if \quad x\in[\dfrac{a_{jk}+b_{jk}}{2},b_{jk})\\ 0, & otherwise\end{cases} \tag{1}$$

Where

$$j\geq 0, \qquad k=0,1,2,---,2^{j}-1$$

$$a_{jk}=\frac{k}{2^{j}} \quad and \quad b_{jk}=\frac{k+1}{2^{j}}$$

Using the orthogonal basis of $L^2([0,1))$ the Haar wavelet function $H_{jk}(x)$ can be expressed by Haar series function f(x) of infinite terms as

$$\int_a^b f(x)dx=\frac{(b-a)}{2^{n+1}}\sum_{i=1}^{2^{n+1}} f(a+\frac{(b-a)(2i-1)}{2^{n+1}})$$

$$=\frac{(b-a)}{2M}\sum_{i=1}^{2M} f(a+\frac{(b-a)(i-0.5)}{2M})$$

Where $M=2^n$

For double integral

$$\int_{a_1}^{a_2}\int_{a_3}^{a_4} f(x_1,x_2)dx_1dx_2=\frac{(a_2-a_1)(a_4-a_3)}{4M^2}\sum_{i_1=1}^{2M}\sum_{i_2=1}^{2M} f(A,B) \tag{2}$$

Where

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Design Implementation and Analysis of non linear system based power quality using LabVIEW.

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Abstract:

In the present scenario the increasing existence of nonlinear loads and the increasing number of distributed generation power systems in electrical grids change the characteristics of voltage and current waveforms, which differ from pure sinusoidal wave. Poor power qualities affect functioning of utilities, different industrial units, productions, customer services and other system performance and operating costs. Monitoring of power quality is essential to maintain proper functioning of utilities, customer services and equipment's. The target here is to design measuring systems and display the system parameters under distorted system conditions. Harmonics are measured and displayed using LabVIEW. The voltage and current are sensed using sensors for various loads, which are then interfaced with the PC using DAQ (Data Acquisition) card and displayed using LabVIEW. The Hardware implementation includes setting up of test systems such as diode bridge rectifier and thyristor-based converter with various loads.

Key word: DAQ, LabVIEW, Power qualities, Harmonics.

Introduction

The aim of the power system has always been to supply electrical energy to customers. Earlier the consumers of electrical energy were mere acceptors. Interruptions and other voltage disturbances were part of the deal. But today electric power is viewed as a product with certain characteristics which can be measured, predicted, guaranteed, improved etc. Moreover, it has become an integral part of our life. Modern world is heavily dependent on the constant and reliably availability of electrical power supply. In the recent years, users of electric power have detected an increasing number of drawbacks caused by electric power quality variations. These variations already existed on the electrical system but only recently they are causing serious problems. This is due to the increased sensitivity of equipment's and devices used by customers. This end user equipment's are more interconnected in networks and industrial processes, that the impact of a problem with any piece of equipment is much more severe.

Now the quality of this power supply is becoming more important due to increasing sensitivity of the equipment's and devices used by the customers. Also, power quality of power systems affects all connected electrical and electronic equipment's and is a measure of deviations in voltage, current, frequency, temperature, force, and torque of particular supply systems and their components.

Sustainable Energy is the provision of energy such that it meets the needs of the future without compromising the ability of future generations to meet their own needs. It is required to have more efficient means of converting and utilizing these energies. This will depend on the quality of power supplied and the impact of end user equipment's on that power

Power quality monitoring can help to identify the cause of power system disturbances and even help to identify problem conditions before they cause interruptions or disturbances. Hence to improve power quality with adequate solutions, it is necessary to know what kinds of disturbances occurred.

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Design & Development of Optimum Load Shedding with Voltage Stability Indicators in Power System

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***Abstract*:- Optimal load shedding strategy for power systems with optimum location and quantity of load to be shed is presented. The problem of load shedding for avoiding the existence of voltage instability in power systems is taken as a remedial action during emergency state in transmission An and distribution sector. Optimum location of loads to be shed is found together with their optimum required quantity. The optimum load shedding in power strategies with voltage stability indicators is a simple new method is developed to determine the optimum location and the optimum quantity of load to be shed in order to prevent the system voltage from going to the unstable. This method is based on indicators of risk of voltage instability. It can be implemented for large power system to estimate voltage instability. Successive load flow runs are required to accomplish this method. The proposed method can be used for real time applications in power systems. The computation speed of these indicators is fast compared to other methods.**

Keywords— Load shedding; voltage stability; labview; voltage indicators;

I. INTRODUCTION

Electrical load shedding is a method of reducing the demand on the electricity generation and achieved by switching off some loads or energy supply to some geographical areas. This is usually a last measure by the utilities, and often implemented to prevent overloading the generating systems and eventual collapse of the entire power system.

Load shedding is one of the last things that a utility company should look at. It leads to frustrated customers and loss of revenue for the consumers as production drops. In addition, it may cause equipment damage.

Electricity companies should ensure that they have enough capacity to meet normal and peak demands. This can be achieved by planning for future electricity demand and progressively upgrading the generating equipment, maintain existing systems, reducing transmission losses and increasing efficiency in the entire system.

Power companies are required to supply sufficient energy to meet installed capacity. However, the demand may become inconsistent during peak periods. Whenever the power generated is insufficient to support the load, the electrical supply and distribution system becomes unbalanced and unstable.

If not controlled, the system can collapse and cause a total blackout. In such a situation, it may take hours or days to restore back the power. The utility monitors their systems and compare the load against the supply. If the difference between the two gets very narrow, some of the sections are disconnected so as to prevent the system from becoming unstable.

II. VOLTAGE STABIITY

Voltage stability is the ability of a power system to maintain steady acceptable voltages at all buses in the system under normal operating conditions and after being subjected to a disturbance.

Severe and increasing strain has been observed in the power system in recent years due to incongruence between the generation and transmission infrastructure. Environmental issues, change in energy portfolio and deregulated energy markets are some of the prime factors. The kind of stress developed in the system has caused concerns for voltage instability. Voltage stability refers to the ability of a power system to maintain steady voltages at all buses in the system after being subjected to a disturbance from a given initial operating condition.

III. FLOW DIAGRAM

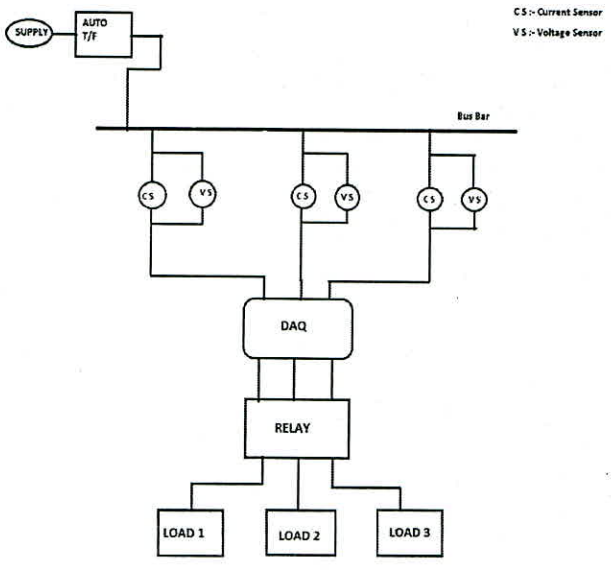

Fig. 1. Flow diagram.

CS-current sensor

VS-voltage sensor

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