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Human Skin Texture Analysis Using GLCM

S. SREE HARI RAJU[1], Dr. P. VENKATESWARLU[2]
[1]Asst. Prof, Dept. of CSE, Nagole Institute of Technology & Science, Hyderabad (India)
[2]Professor, Dept. of CSE, Nagole Institute of Technology & Science, Hyderabad (India)

Abstract: Various types of skin diseases are affecting human life like skin dryness, fungus, and allergic symptoms. The objective of this paper is to analyze the skin disease using texture analysis of skin image and by comparing the test image to a defined images or reference images. When image processing is concerned in the skin analysis, it is important to quantitatively evaluate such differences using texture features. The GLCM (Gray Level Co-occurrence Matrix) functions distinguish the texture of an image by calculate how often pairs of pixel with specific values and in a specified spatial association occur in an image, create a GLCM, and then extracting statistical procedures from this matrix.

Keywords: Digital Image Processing, Gray level co-occurrence matrix, Skin Texture Analysis, Wavelet decomposition Matrix.

I. Introduction

Texture analysis is one of the feature in image processing used to analyze the images that captured by the imaging devices on human skin. Normally human skin texture having different types like smooth, dryness which is happened based on individual human food habits, living environment, genetic and etc. The skin texture varied depending on their age as well. The major properties of skin are rough, smooth, random and regular. The following are some of common skin diseases,

a) Allergic Skin Disorders – Allergic conditions such as Atopic Dermatitis and Contact Dermatitis

- ***Atopic Dermatitis*** is a chronic skin condition that usually begins in infancy or early childhood and is often associated with food allergy, allergic rhinitis and asthma.
- When certain substances come into contact with your skin, they may cause a rash called ***contact dermatitis.***

b) Viral Skin Disease - Disorders caused by viruses such as shingles and varicella

- ***Shingles*** causes uncomfortable and painful symptoms due to inflammation of the sensory nerves
- ***Chickenpox (varicella),*** a viral illness characterized by a very itchy red rash, is one of the most common infectious diseases of childhood.

c) Bacterial Skin Diseases – A bacterial infection is a proliferation of a harmful strain of bacteria on or inside the body. It caused by bacterial infections such as cellulitis and folliculitis

- ***Cellulitis*** causes a painful, red infection that is usually warm to the touch.
- ***Folliculitis*** is an infection of the hair follicles that causes red, swollen bumps that look like pimples.

d) Fungal Skin Diseases – Fungal skin infections are caused by different types of fungi and can be a common culprit of itchy skin. Disorders such as ringworm, and yeast infections

- ***Ringworm*** appears as a red, circular, flat sore that is sometimes accompanied by scaly skin.
- ***Yeast infections*** of the skin are called cutaneous candidiasis and are caused by yeast-like fungi called candida.

a) Allergic Skin Disorders

b) Viral Skin Disease

Performance Enhancement of MIMO System with varying the number of Transmitting and Receiving antennas

NITHIN KUMAR [a], B. LAXMAN [b], A. VAANI [c],

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract-

This paper current limit and execution of different reception apparatuses for remote correspondence frameworks. Numerous radio wires structures are classified into single-input various yields (SIMO), different sources of info single yield (MISO), and numerous data sources numerous yields (MIMO) frameworks. Expecting that the channel is obscure at beneficiary, articulations for the limit are given for each structure. The impact of utilize dissimilar reaction apparatuses on the limit of remote correspondence frameworks by utilizing Matlab code. Our outcomes demonstrate that expanding the quantity of transmitting and accepting radio wires for a remote MIMO channel improves the channel limit that can be acquired. Since mixed media application requires higher information rate which can be conceivable by MIMO (8x8) framework, in this paper Channel limit of the (8x8) MIMO is evaluated and contrasted and channel known and obscure. It has been demonstrated the reliance of MIMO channel limit on channel information. Future remote correspondence frameworks play out a leap forward in framework execution, by utilizing radio wire clusters at the two sides of correspondence connect.

1. Introduction

During the previous decade, Wireless Communications and particularly portable correspondence frameworks have emerged drastically. The radio correspondence frameworks must meet the necessities of developing number of clients and no less interest for new administrations. New computerized innovations are currently being created to decide the fifth era of versatile correspondence frameworks for guaranteeing high ghastly effectiveness and broad group of administrations. In this situation, correspondence frameworks utilizing reception apparatus demonstrate at transmitter and beneficiary are capable of providing rapid transmission with a base nature of administration guaranteed. The exceptional research on MIMO

Review article Honey Mediated Green Synthesis of Nanoparticles: The New Age of Secure Nanotechnology

U SAARIKA[1], C VIJAY[2], V PHANEENDRA[3], S SANTOSH[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

With the advent of nanotechnology, many related industries rapidly developed over the recent past. Generally, top-down and bottom-up approaches are the two major processes used to synthesize nanoparticles; most of these require high temperatures, vacuum conditions, and harsh/toxic chemicals. As a consequence, adverse effects impacted organisms including humans. Some synthesis methods are expensive and time-consuming. As a corollary, the concept of "green nanotechnology" emerged with the green synthesis of nanoparticles commencing a new epoch in nanotechnology. This involves the synthesis of nanomaterial from microorganisms, macroorganisms, and other biological materials. Honey is documented as the world's oldest food source with exceptional medical, chemical, physical, and pharmaceutical values. Honey mediated green synthesis is a relatively novel concept used during the past few years to synthesize gold, silver, carbon, platinum, and palladium nanoparticles. Honey acts as both a stabilizing and a reducing agent and importantly functions as a precursor in nanoparticle synthesis. This method usually requires room temperature and does not produce toxic byproducts. In conclusion, honey mediated green synthesis of nanoparticles provides a simple, cost effective, biocompatible, reproducible, rapid, and safe method. The special activity of honey functionalized nanoparticles may provide valuable end products with numerous applications in diverse fields.

1. Introduction

Over the past decade, nanomaterials emerged as promising commodities in many fields including cosmetics, healthcare, biomedical, food and feed, drug-gene delivery, environment, health, mechanics, optics, chemical industries,

GREEN BIOSYNTHESIS OF SILVER NANOPARTICLES USING GLYCYRRHIZA GLABRA L. REMOVE AND EXAMINATIONS OF THEIR SELECTIVE ANTIMICROBIAL ACTIVITY

C VIJAY[1], U SAARIKA[2], S SANTOSH REDDY[3], SWAPNASINGIREDDY[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana.

ABSTRACT

Nanotechnology is new discipline with huge applications including medicine and pharmacology industries. Although several methods and reducing agents have been employed to synthesize silver nanoparticles, reactive chemicals promote toxicity and nondesired effects on the human and biological systems. The objective of this work was to synthesize silver nanoparticles from Glycyrrhiza glabra and Amphipterygium adstringens extracts and determine their bactericidal and antimycotic activities against Enterococcus faecalis and Candida albicans growth, respectively. 1 and 10 mM silver nitrate were mixed with an extract of Glycyrrhiza glabra and Amphipterygium adstringens. Green silver nanoparticles (AgNPs) were characterized by TEM, VisNIR, FTIR, fluorescence, DLS, TGA, and X-ray diffraction (XRD) analysis. Bactericidal and antimycotic activities of AgNPs were determined by Kirby and Bauer method and cell viability MTT assays. AgNPs showed a spherical shape and average size of 9 nm if prepared with Glycyrrhiza glabra extract and 3 nm if prepared with Amphipterygium adstringens extract. AgNPs inhibited the bacterial and fungal growth as was expected, without a significant cytotoxic effect on human epithelial cells. Altogether, these results strongly suggest that AgNPs could be an interesting option to control oral biofilms.

1. INTRODUCTION

Nanotechnology is a relative new discipline with huge applications in many areas including medicine and pharmacology industries. The increasing development of multidrugresistant strains among pathogen microbes has become one of the most important problems in medicine worldwide. Great advances in nanotechnology have

1,3-Dysulfonic Acid imidazolium trifluoroacetate most efficient and A dual-functional catalyst for the pseudo-five-component reaction of Phenylhydrazine with ethyl acetoacetate and arylaldehydes

V PHANEENDRA[1], S SANTOSH REDDY[2], C VIJAY[3], SWAPNASINGIREDDY[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

Ionic liquid 1,3-disulfonic acid imidazolium trifluoroacetate ([Dsim] [TFA]) ethyl acetoacetate (2 eq) and arylaldehydes (1 eq) in ethanol (reflux conditions). In this reaction, 4,4 ′ - (arylmethylene) bis (3 - methyl - 1 - phenyl - 1H - pyrazole - 5 - ol) was obtained at high yields and low reaction times. The high efficiency of [dsim] [TFA] can be attributed to dual-functionality (consisting of three acidic and one basic sites). An acceptable and attractive approach is proposed based on the dual-action of the catalyst.

1. INTRODUCTION

Heterocycles, especially nitrogen-containing ones, are among the fundamental components of many drugs and biological compounds. For instance, pyrazolecontaining heterocycles {e.g. 4,4′-(arylmethylene)-bis(3- methyl-1-phenyl-1H-pyrazol-5-ol)s} represent a numerous biological and medicinal properties, such as antinociceptive , antiviral , analgesic , antimicrobial , antimalarial , anti-inflammatory , antitumor and antifungal activities. One of the best and practical procedures for production of 4,4′-(arylmethylene)-bis(3- methyl-1-phenyl-1H-pyrazol-5-ol)s is the one-pot pseudo five-component condensation of phenylhydrazine (2 eq) with ethyl acetoacetate (2 eq) and arylaldehydes (1 eq); for progressing this reaction, some catalysts have been employed . Nevertheless, some drawbacks are accompanied with many of the reported methods, e.g. application of toxic organic solvents as reaction media, harsh conditions, moderate yield, long reaction time and application of additional energy source (ultrasonic or microwave irradiation). So, discovery of catalysts to overcome the mentioned problems is still in demand. It is noteworthy that we have previously applied pseudo three-component reaction of 1-phenyl-3-methylpyrazol-5- one (2 eq) with

Reduce Energy Consumption in Query Processing Using High-Level Planning Information

B NARESH [1], B SURESH [2], P. MALLIKA [3], P SIREESHA [4],
Dept of CSE,
Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract--Web search companies distribute their infrastructures and operations across several, geographically distant data centers. This distributed architecture facilitates high performance query processing, which is fundamental for the success of a Web search engine. At the same time, data centers require an huge amount of electricity to operate their computing resources. In this extended abstract, we briefly discuss our recent works for improving the energy efficiency of query processing systems. Firstly, we introduce a novel query forwarding algorithm which exploits green energy sources to reduce the electricity expenditure and carbon footprint of Web search engines. Then, we propose to delegate the CPU power management from a server' operative system directly to the query processing application, to reduce the energy consumption of a search engine's servers. Finally, we introduce PESOS, a scheduling algorithm which manages the CPU power consumption on a per-query basis while considering query latency constraints

Objective

Our Objective or aim of this to propose the Predictive Energy Saving Online Scheduling Algorithm (PESOS) to select the most appropriate CPU frequency to process a query on a per-core basis. PESOS aim at process queries by their deadlines, and leverage high - level scheduling information to reduce the CPU energy consumption of a query processing node. PESOS base its decision on query efficiency predictors, estimating the processing volume and processing time of a query.

1. Introduction

Today, Web search is a frequent action in the everyday life of many people. To perform it on a large scale, Web companies need energy-hungry data center, which raise environmental and economical challenges. For these reasons, Green Information Retrieval promotes energy and energy-cost awareness in contemporary Web search engines. In this document, we propose to further the research on Green Information Retrieval, which is still at its early stage. Moreover, we illustrate our first results in evaluating and improving the energy efficiency of search servers.

Assessment of Spectral Efficiency for coverage region in Non-Orthogonal Multiple Access

P. ANILKUMAR [1], M. SARITHAREDDY [2], Y PRASAD [3]

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

Developing technology within the path of 5G wi-fi networks, mainly non-orthogonal more than one get entry to (NOMA) and cognitive radio (CR), will provide greater green utilization of wi-fi spectrum within the future. In this newsletter, we check out the mixing of NOMA with CR right proper proper into a holistic device, particularly cognitive NOMA community, for introduced clever spectrum sharing. Format mind of cognitive NOMA networks are perfectly aligned to capability requirements of 5G wi-fi networks, in conjunction with immoderate spectrum overall performance, big connectivity, low latency, and higher equity. Three precise cognitive NOMA architectures are provided, together with underlay NOMA networks, overlay NOMA networks, and CR-inspired NOMA networks. To address inter- and intra-network interference which in massive aspect degrade the overall common overall performance of cognitive NOMA networks, cooperative relaying strategies are proposed. For every cognitive NOMA form, our proposed cooperative relaying approach shows its ability to noticeably decrease outage opportunities. Furthermore, we talk open annoying situations and destiny research commands on implementation of cognitive NOMA networks.

Keywords:Non orthogonal multiple access, 5G mobile communication, uplink, downlink, spectral efficiency

1. INTRODUCTION

Several a couple of get admission to techniques were evolved over generations, e.G., time department more than one get proper of get right of entry to to (TDMA) in first technology (1G), frequency divisional multiple get proper of get proper of access to to (FDMA) in second technology (2G), and code department a couple of get proper of

DETAILED RESEARCH ON CONSTRUCTION OF A TROTURE USING WHITE ROADS

SHAIK SHABBEER PASHA[1], SRUTHIRAMAVATH[2], SRINIVASVADTHYA [3], KUMAR ADIMALLA SRAVAN[4]

Civil Dept, Nagole Institute of Technology and Science, Hyderabad, Telangana.

ABSTRACT:-

Transportation is major factor in the world. In that bituminous pavements playing a prominent role in the world. The increasing truck weights and tyre pressures on pavements in recent years have pushed the demand on the performance of our pavements to a higher level. Many asphalt pavements have experienced rutting while many others have experienced longitudinal cracking. One of the possible solutions to the problem is the use of white topping (WT), which is a cement concrete layer placed over an existing asphalt pavement.

Concrete overlays have been used to rehabilitate bituminous pavements. White topping is stronger than asphalt overlay, and thus more resistant to rutting and surface initiated cracking. Consequently white topping pose economical and technical benefits. However, they need to be effectively evaluated for feasibility and proper application of techniques, suitable for India, so that their use can provide the maximum benefits to the road users in particular and Indian economy at large.

Ultra –thin white topping is one of the types of white topping in which a thin layer of concrete varying from 50 to 100 mm thick with fibres is placed over a prepared surface of distressed pavement. The factors affecting the white topping are: (a) thickness, (b) bonding, (c) joint spacing, and (d) deflections. Ultra-Thin White topping is an emerging and innovative technology for asphalt pavement rehabilitation in India.

I INTRODUCTION

Road traffic is increasing steadily over the years. This is an international phenomenon. An international forecast predicts that such increase will continue in future. Even in the case of the developed countries, there is a shortage of funds required for new infrastructure projects, both for constructing them and more significantly towards their maintenance and repairs. The increasing truck weights and tyre pressures on our pavements in recent years have pushed

An Adaptive Control Strategy for Low Voltage Ride Through Capability Enhancement of Grid-Connected Photovoltaic Power Plants

R PANDU[1], M RAMESH[2], T GAYATHRI[3]

Dept of EEE,

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

This paper presents a novel application of adaptive ve control strategy for low voltage ride through capability enhancement of grid connected PV power plants. Through DC-DC boost converter the PV arrays are connected to the point of common coupling (PCC), a DC-link capacitor, a grid side inverter, and a three-phase step up transformer. The DC-DC converter is used for a MPPT operation based on the fractional open circuit voltage method. The grid-side inverter is utilized to control the DC-link voltage and terminal voltage at the PCC through a vector control scheme. The adaptive proportional-integral (PI) controller is used to control the power electronic circuits due to its very fast convergence. With the proposed adaptive-controlled PV power plants, the LVRT capability of such system can be improved. The adaptive control strategy is extensively verified by the simulation results, which are carried out using MATLAB/SIMULINK software.

1. INTRODUCTION

Nowadays Photovoltaic (PV) system will be one of the most promising renewable energy systems. The costs of the installed PV systems are continuously decreasing worldwide because of falling component average selling prices [1]. Based on the statistics of the PV power plants 2014 industry guide report, the global PV system installations reached 136.7 GW at the end of 2013 and the cumulative market growth reaches 36%. Large integration with the electric grid leads many problems arise and need to solve like low voltage ride through (LVRT) capability enhancement of such systems. With the high level of penetration of the PV power plants in the electric grids, maintaining the grid stability and reliability represents a greater challenge to the network operators. Recently, the utilities have released medium voltage grid codes to the PV systems that impose on these systems to contribute to and have a role in the grid support during grid faults. Several methods have been used to study, analyze,

MODELLING AND SIMULATION OF A V12 ENGINE BY USING DIFFERENT MATERIALS

R HARIKRISHNA [1], P SINDHU [2], S BHARATH [3], VAMSHILATHA [4]

Dept of Mech

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT

A V12 engine often just called V12 is an internal combustion engine with 12 cylinders. The engine has six cylinders on each side called banks. The two banks form "V" shaped angle. In most engines, the two banks are at 60° angle to each other. All twelve pistons turn common crankshaft. It can be powered by different types of fuels, including gasoline, diesel and natural gas. A V12 engine does not need balance shafts. A V12 angled at 45°, 60°, 120°, or 180° from each other has even firing and is smoother than straight-6. This provides smooth running engine for luxury car. In racing car, the engine can be made much lighter. This makes engine more responsive and smoother. In large heavy-duty engine, V12 can run slower and prolonging engine life.

The main objective project is how to develop prototype of V 12 engine assembly using CAD tool SOLIDWORKS. These Engine assembly consists major components they are Piston, Connecting Rod Assembly, Crank Shaft, Cylinder head, Cam Shaft, Valves, crank case, oil tank and spark plug with required dimensions. The components which are developed in SOLIDWORKS are also analyzed in it using simulation tool. The thermal analysis of piston, crank shaft, cam shaft and valve is performed for 800k thermal loading and the results of temperature distribution of the components are shown. Finally the thermal analysis results of the components are compared and the best suited material is selected.

INTRODUCTION We almost take our Internal Combustion Engines for granted don't we? All we do is buy our vehicles, hop in and drive around. There is, however, a history of development to know about. The compact, well-toned, powerful and surprisingly quiet engine that seems to be purr under your vehicle's hood just wasn't the tame beast it seems to be now. It was

SYNTHESIS OF NAPHTHOPYRANOPYRIMIDINES UTILIZING FORMIC ACID AS AN EFFECTIVE DRIVER UNDER SOLVENT-FREE PROBLEMS

U SAARIKA[1], V PHANEENDRA[2], SANTOSH[3], C VIJAY[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

An environmentally friendly, one-pot, three-component synthesis of 8,10-dimethyl-12-aryl-12H-naphtho [1′,2′:5,6] pyrano[2,3-d] pyrimidine-9,11-diones was achieved via coupling aromatic of aldehydes, β-naphthol and 6-amino-1,3-dimethyl uracil in the presence of formic acid as a catalyst under solvent-free conditions at 90 °C. This method has several advantages, such as efficiency, good yield, short reaction time, cleaner reaction profiles, ease of product isolation, operational simplicity and inexpensive, effective and catalyst.

1. Introduction

Naphthopyranopyrimidines represent an important class of organic compounds with diverse biological activities such as analgesic, fungicidal antitumor, hypolipidemic, molluscicidal and antifungal. These compounds indicate promising physiological, anticonvulsant behaviour and hypotensive effect.

Recently, the biological activity of these molecules has beenreported (Fig. 1) as antagonists for neuropeptide S receptor (NPSR) that displays the role of a novel drug targets for the treatment of sleep, anxiety, and addiction disorders.

Because of the pharmacological and biological importance of N- and O-heterocycles as drug compounds, some synthetic approaches including multi-component strategies have been developed for the synthesis of naphthopyranopyrimidine derivatives .

The pollution of nature is a serious problem in the design of chemical reactions. “Green chemistry” encourages chemists to modify the chemical processes until decrease generation and consumption of dangerous substances in chemical reactions.

REACTION OF POLY (PROPYLENE IMINE) DENDRIMER WITH CARBOXYLATED AMINES

S SANTOSH REDDY[1], SWAPNASINGIREDDY[2], C VIJAY KUMAR[3]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana.

ABSTRACT

In this research, new derivatives of poly (propylene imine) dendrimer were synthesized using propylamine and ethylenediamine. First, amines reacted with methyl acrylate via aza-Micheal addition, then their products were treated with poly (propylene imine) dendrimer (PPI). The products were identified by FT-IR, 1H NMR and 13C NMR methods. Morphology and size of particles were evaluated by scanning electron microscopy.

Keywords: Propylamine, Ethylenediamine, Aza-Micheal addition reaction, Poly (propylene imine) dendrimer.

1. INTRODUCTION Dendrimers are group of macromolecules that are made for purposeful and scheduled drug delivery. Dendrimers are spherical ramose units containing polymer branches with different sizes. The have single particle size distribution and monodisperse spherical symmetry. These compounds can attach many materials to their own surface and can carry them due to their multiple agent groups at on the surface. This feature can be used to connect targeted macromolecules (e.g., substrates of a variety of cell receptors). Other applicatins of dendrimer's drug delivery are controlled drug delivery to eyes, drug delivery through clonal, etc. Nano dendrimers are also used for angiography, vascular examination or examination of various tissues. Some of the most widely used and oldest known dendrimers are polypropylene imine (PPI) dendrimers which were synthesized and introduced for the first time by Vogtle. In addition, the water-soluble PPI dendrimer is colorless and transparent. Some unique features of dendrimerous structures are their regular and ramose structure, active multi-functional end-groups and empty spaces between branches. These empty spaces provide possibility of acceptance of guest molecules and encapsulation of particles at

Multicomponent Solvent-Free Synthesis, Antimicrobial and Antifungal Evaluation of Novel N-Amino Benzylthiolates

S SANTOSH[1], V PHANEENDRA[2]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract;

N-amino benzylthiolates were synthesized via multicomponent reaction of malononitrile, isothiocyanates and benzyl halides under conventional and solvent-free conditions. Various electron-donating and -withdrawing substitutes within both isothiocyanates and benzyl halides were used to demonstrate the efficiency of new methodology. A broad spectrum of antibacterial and antifungal activities was observed especially within benzyl halides containing electron-withdrawing aryl substituents.

1. INTRODUCTION

Aminothiolates are organic sulfides containing amino substituents that have been applied as starting materials in chemical reactions. Both amino and sulphide functional groups are part of chemical structure of many biomolecules such as axitinib, ceftaroline fosamil, captodiame and ticagrelor. Axitinib is a targeted drug in the treatment of pancreatic and thyroid cancers and ceftaroline fosamil is a cephalosporin antibiotic against acute skin infections.

Captodiame has been recommended as an antihistamine agent to prevent benzodiazepine withdrawal syndrome. While ticagrelor is a preventory drug in heart attack in patients with acute coronary syndrome [8].

N-Amino alkylthiolates are useful synthons in organic synthesis. They showed significant antibacterial and antioxidant properties as well as nuclease activity toward the cleavage of genomic DNA [9]. Heterocycles such as thiazole, isothiazole and pyrazole derivatives were incorporated with them, synthesis usually includes formation of thiolate salt, followed by S-alkylation and final cyclization.

N-Amino thiolate salts were prepared in situ using reaction of active methylene compounds and alkyl or aryl isothiocyanates in the presence of bases such as KOH, K_2CO_3, NaOEt, Li_2CO_3, NaH, n-BuLi and NEt_3. A variety of organic solvents including N,Ndimethylformamide, tetrahydrofuran, toluene, ethanol and mineral oil have been applied

Solvent-Free Synthesis and Antimicrobial Potential of Some (2E)-4-methoxyphenyl Chalcones

C VIJAY KUMAR[1], U SAARIKA[2], V PHANEENDRA[3]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT

Nine 4-methoxyphenyl anions were synthesized by microwave-assisted cross-aldol extraction and substituted benzaldehyde in the presence of FeCI3 bentonite catalyst under microwave irradiation. These anions are characterized by melting points, microanalysis and spectroscopic data. The antimicrobial potential of these anions was tested by the Bauer-Kirby disk diffusion method. Most of the 4-methoxyphenyl anions show antimicrobial efficacy against their microorganisms. Keywords: Alternative Styryl 4-Methoxyphenyl Ketones, FeCl3 Bentonite Catalyst, Biological Activities.

1. INTRODUCTION

Chalcone possess carbonyl as well as C=C parts in their structure and are called as enones or α, β-unsaturated carbonyl compounds. Chalcones have been isolated from artificially and natural process. Chalcones are key intermediates for carbon building blocks. These analogs compounds possess numerous characters by which they find many applications in different fields such as drugs. Large number of synthetic routes available for synthesis of α, β-unsaturated carbonyl compounds, the best route is the Crossed-Aldol condensation of equimolar quantities carbonyl substrates with substituted benzaldehydes in base catalysts. Alcoholic base catalysts were utilized for carryout the Claisen– Schmidt and Aldol reaction and they produced better yields of a α, β-unsaturated carbonyl compounds. At present large number of catalysts were employed for the synthesis of enones such as anhydrous zinc chloride clay minerals ground chemistry catalysts-grinding the carbonyl compounds with base , aqueous basic solution in cooling , bamboo based sulphonic acids , barium hydroxide , anhydrous sodium bicarbonate, fly-ash: Water, microwave irradiation and sulphated titania. Kamalakkannan and his coworkers reported the synthesis and evaluation of biological activities of (E)-3-phenyl-1-(3,4,5-trimethoxyphenyl) enones. Recently, the study of green synthetic route and antimicrobial activities of 3-chloro-4-nitrophenyl and phenanthrene enones was reported by Usha et al., The review of literature reflected the little information about the

IOT BASED AUTOMATIC MANHOLE COVER CONTROLLING MECHANISM FOR SMART CITIES

K. NITHIN KUMAR [1], B. LAXMAN [2], A. VAANI [3], S. CHANDRASEKHAR [4]

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract: The main objective of the thesis is to analyze the damages caused in our region due to floods. This natural disaster has caused many people to suffer damage to their homes and losing their belongings. There exist encouragements for researching preliminary solutions in this kind of disaster to mitigate and help in rescue operations. A variety of options there is for creating systems capable of warning vulnerable populations about an imminent threat of floods. It is important to understand deficiencies in methods and processes for measuring water level in rivers. However, the above brings deficiency in the measurement process because the data may not have been accurately captured and brought to where this information could be too late for help or planning a rescue strategy. The fact that the data collection of levels of water bodies is executed by a person and it carries dangers and delays in the dissemination of information. One of these risks is endangering the person who comes to take action, as torrential rains access to the measuring points are extremely complicated, and in cases of possible flooding these delays are crucial to salvaging belongings and especially the lives of people living in areas at risk. Because of the expensive cost of gauges to measure water level and the importance of developing warning systems for measuring levels in rivers that contribute to safeguard lives of citizens who inhabit regions in danger of flooding, we present a water level sensor based on water conductivity. Along with floods we are going to alert the people about earthquake.

A new solution is provided for the traditional sensor data acquisitions. Performance of the proposed system is verified and good effects are achieved in practical application of IoT to water environment monitoring.

1. INTRODUCTION

MAGNETOELECTRIC EFFECTS IN FERROMAGNETIC/PIEZOELECTRIC MULTILAYER COMPOSITES

V PHANEENDRA[1], U SAARIKA[2], C VIJAY[3]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT

The observation of strong magnetoelectric effects is reported in thick film bilayers and multilayers of ferrite-lead titanate zirconate (PZT) and lanthanum nanganite-PZT. The ferrites used in our studies included pure and zinc substituted cobalt-, nickel- and lithium ferrites. Samples were prepared by sintering 10-40 μm thick films obtained by tape-casting. Measurements of ME voltage coefficients at 10-1000 Hz indicated a giant ME effect in nickel ferrite-PZT, but a relatively weak coupling in other ferrite-PZT and manganite-PZT systems. Multilayers prepared by hot pressing was found to show a higher ME coefficient than sintered samples. Evidence was found for enhancement in ME coefficients when Zn was substituted in ferrites. The Zn-assisted increase was attributed to low anisotropy and high permeability that resulted in favorable magneto-mechanical coupling in the composites. We analyzed the data in terms of our recent comprehensive theory that takes into account actual interface conditions by introducing an interface coupling parameter. Theoretical longitudinal and transverse ME voltage coefficients for unclamped and clamped samples are in general agreement with data. From the analysis we inferred excellent interface coupling for nickel zinc ferrite-PZT and weak coupling for other layered systems.

1. INTRODUCTION

This work is concerned with the fabrication of novel ferromagnetic-ferroelectric thick film multilayers and studies on the nature of magnetoelectric interactions. In such two-phase composites, the magnetoelectric (ME) coupling is mediated by mechanical stress. An applied ac magnetic field produces dynamic deformation in ferromagnets due to magnetostriction and results in an induced

Matrix Converter Based Active Distribution Transformer

G SRINIVAS [1], T GAYATRI [2], B MAHENDER [3], K RAMAKRISHNA [4]

Dept of EEE,

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT—

A new system/topology based on power electronic transformer is proposed in this project. Proposed Power Electronic Transformer shall install in electric traction substation and regulates voltage to train of that section crossing to it. Proposed power electronic transformer has several advantages over solid-state transformer presently in use in traction substatoions.PET consists High-frequency transformer with three phase matrix converter to step-up frequency on its primary and another three phase matrix convert to step-down frequency on its secondary sides respectively. PET involves advantages say Reduced size and volume transformer , Reduced cost and copper savings, Reduced losses.etc. Three phase Matrix converter is employed on both primary and secondary side transformer. Its control is accomplished by Space vector modulation technique at both primary and secondary side PET. Matrix converter having several advantages of Direct AC-AC conversion without intermediate stage conversion, Bi-directional power flow capability, Controllable output voltage and frequency has been verified.

I.INTRODUCTION

The basic layout project has been depicted in fig 1.Which describes proposed power electric transformer for electric traction system. It includes High frequency transformer with power electronic device Matrix converter at both its primary and secondary sides with input and output filters constituted as power electronic transformer. Matrix converter connected at both the input and output side high frequency transformer is controlled by space vector modulation technique.This project has been motivated by several electrification railway systems .Few locomotives use solid state 50hz step down transformer which is bulkier and requires considerable space which reduces its performance and voltage fluctuations.As frequency of operation transformer in the electric traction substation is low say 50hz ,

General synthesis and characterization of cobalt ferrite Nanoparticles by Thermal Treatment Method

U SAARIKA[1], S SANTOSH REDDY[2], S SANTOSH REDDY[3], SWAPNASINGIREDDY[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

Crystalline, magnetic, cobalt ferrite nanoparticles were synthesized from an aqueous solution containing metal nitrates and polyvinyl pyrrolidone (PVP) as a capping agent by a thermal treatment followed by calcination at various temperatures from 673 to 923 K. The structural characteristics of the calcined samples were determined by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), and transmission electron microscopy (TEM). A completed crystallization occurred at 823 and 923 K, as shown by the absence of organic absorption bands in the FT-IR spectrum. Magnetization measurements were obtained at room temperature by using a vibrating sample magnetometer (VSM), which showed that the calcined samples exhibited typical magnetic behaviors.

1. Introduction

The spinel ferrite structure with the formula of MFe_2O_4 (M = Co, Ni, Zn, or other metals) can be described as a cubic, closely packed arrangement of oxygen atoms, and M_2^+ and Fe_3^+ ions can occupy either tetrahedral (A) or octahedral (B) sites. Spinel ferrite nanoparticles have attracted much attention because of their electronic, magnetic, and catalytic properties, all of which are different from those of their bulk counterparts. Among spinel ferrites, cobalt ferrite ($CoFe_2O_4$) has an inverse spinel structure in which, in the ideal state, all Co_2^+ ions are in B sites, and Fe_3^+ ions are equally distributed between A and B sites. Cobalt ferrite has been widely studied due to its high electromagnetic performance, excellent chemical stability, mechanical hardness, high coercivity, and moderate saturation magnetization, which make it a good candidate for the electronic components used in computers, recording devices, and magnetic cards. These properties are dependent on chemical composition and microstructural characteristics, which can be controlled in the fabrication and synthesis processes. In order to acquire materials with the desired physical and chemical properties, the

Control of Small Wind Turbine in the High Wind Speed Region

M PRAVEENA[1], K SANJU[2], A VIJAYA KUMAR[3],M RAMESH[4]

Dept of EEE,

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract:

This paper proposes a control strategy for small wind turbines operating in the high wind speed region. This control also used to store the excess energy obtained from the generator due to the high wind speed and uses it in the future when there is a scarcity of required wind speed. The simulation results and the experimental results of the proposed method is explained below. Keywords: The components needed for the controlling are permanent magnet synchronous generator, rectifier, boost converter, H-bridge inverter.

1. Introduction

Why wind energy is needed? Wind energy is the one of the renewable energy available in mass volume. Compared to the solar energy which can be obtained only during the day, wind energy is available at any time and at anywhere. The conversion of wind energy into electrical energy is easier than converting the solar energy in to the electrical energy. Now a day's wind turbines are used in many areas for the production of electrical energy. At first there were only the wind turbines which rotates only on the fixed wind speed, but now a day's variable speed wind turbines are used which rotates on variable speed conditions. This control method is provided for the variable speed wind turbines.

Problems faced in small wind turbines: The problems faced by the small wind turbines is their capability to withstand the high wind. When the wind speed is higher than the expected speed. The braking of the turbine is not possible. There were several control methods which contributed for controlling the small wind turbine, but most methods faced the problem of being cost effective. At last, the new control strategy is developed which is cost effective. This control method consists of permanent magnet synchronous generator (PMSG) which is connected to the wind turbine and the other side is connected to the rectifier in order to convert ac to dc. The output from the rectifier is taken to the boost coverter where it is boosted according to the

Spatial Multiplexing MIMO-OFDM Systems over frequency selective channel

N. ANJAIAH [1], P JYOTHI [2],B. LAXMAN [3], Y PRASAD [4]

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract: Pilot symbols are huge utilized in countless functions and standards. In ordinary approaches, Pilot symbols are multiplexed among facts stream, supported companion special pattern, on each and every transmitter antenna. Initial estimate channel is obtained by means of pilot assisted Least rectangular (LS) channel estimation the use of frequency domain approach. Recovered symbols are accustomed to decorate the channel estimate through time area approach. The overall performance proposed specialist is incontestable using gadget simulations that are distributed below totally extraordinary channel conditions.

Keywords - Least rectangular (LS) channel estimation, channel estimate

1. INTRODUCTION

MMO structures that use a couple of antennas at transmit and obtain ends are able to deliver excessive statistics rates, reliable and robust performance and high spectral potency. These gains but are workable if the channel state information (CSI) is offered at the receiver end. OFDM will be combined with MIMO with the aid of doing the OFDM operations particularly IFFT/FFT and Cyclic Prefix (CP) at each and every transmit and receive antennas. MIMO strategies that are incontestable for single service (SC) modulation below frequency flat attenuation channel prerequisites will be applied to OFDM. The MIMO-OFDM systems therefore shaped operate the operations on every carrier of OFDM image singly [1]. This makes MIMO -OFDM, the important good approach of using MIMO in wi-fi situation.

Spatial Diversity MIMO-OFDM machine transmits coded data symbols on definitely one of kind subcarriers of OFDM symbol. The coded symbols will be overlaid on definitely one of a form subcarriers both in time area or frequency domain. Consequently, we have space frequency block coded (SFBC) MIMO-OFDM machine or

Review on Electronic Notice Board

P.ANILKUMAR [1], M.SARITHAREDDY [2], Y PRASAD [3]

Dept of ECE,

Nagole Institute of Technology & Science, Hyderabad, Telangana.

Abstract –

This paper describes the various technologies and features included in the Wireless Electronic Notice Board by examining various research done over time. Presenting the message and advertising is an important part of today's world. Many technologies such as Bluetooth, GSM and Wi-Fi module are gaining popularity. Wireless is a popular technology that allows an electronic device to transmit and display data wirelessly. This paper provides a brief overview of the devices used and displayed on the electronic notice board, such as the LCD display, the LED display, and the User Authenticated System.

1. INTRODUCTION

The notice board is a necessary thing in any organization or public Utilities such as bus stations, railway stations and schools Shopping centers etc. But pasting different notices for the day. A difficult process. What a special person needs to take The care of these traditional notice boards. Notices too It takes time to circulate so they are unable to arrive on time People. The traditional notice board is flat solid object is placed in strategic positions any notices and articles are kept. In professional college Notices come from the campus and various officials Reminders, alerts, results and appointments. All of these Notices are placed on the same notice boards, some the old notices will not be fired and the board will arrive on time Covered with many notices and important messages Recognized.

Cities in India are becoming smart and display boards at each square the LEDs are placed for advertising and there are many for other purposes. But still these technologies have not been adopted in most

ENSURING A CLOUD DATA AREA USING A BASTION DIAGRAM

P MALLIKA [1], CH. NARSIMHA [2]
Dept of CSE,
Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT:

The vast majority of the associations now-a-days use cloud advances, with the expansion in the utilization of cloud innovations there can be a security and protection issue of getting to individual and private data over the Internet. The ongoing and proceeding with information breaks feature the requirement for progressively secure distributed storage frameworks. While it is commonly concurred that encryption is important, cloud suppliers frequently play out the encryption and keep up the private keys rather than the information proprietors. That is, the cloud can peruse any information it wanted, giving no security to its clients. The capacity of private keys and scrambled information by the cloud supplier is additionally tricky in the event of information rupture. Subsequently, specialists have effectively been investigating answers for secure capacity on private and open mists where private keys stay in the hands of information proprietors. This plan is entirely solid and simple to execute likewise versatile, that implies we can without much of a stretch include and expel reports in the corpus. Rolling out some little improvements to the plan we can bring down the capacity cost at an exceptionally minimal effort and we can safeguard the cloud suppliers with factual learning.

Keywords: SW services, social networking.

1. INTRODUCTION

A large portion of the associations now-a-days use cloud advances, with the expansion in the utilization of cloud advances there can be a security and protection issue of getting to individual and private data over the Internet. The ongoing and proceeding with information breaks feature the requirement for increasingly secure distributed storage frameworks. While it is commonly concurred that encryption is important, cloud suppliers frequently play out the encryption and keep

Efficient power saver for street lights using LDR, RTC, LEDs light with solar power

S.C. VENKATESWARLU[1], V. SAIKIRAN[2], F. ANJUM[3], P MADHAVARAO[4]

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad , Telangana.

Abstract

In this huge population world power is becoming as essential as human life. So we cannot stop using power but we do not have sufficient power sources to be used. So we have to reduce the wastage of power usage. In this project we consider present street lights controlling system because most of the power is wasted in this present process. This project aims at saving the electrical power upto maximum extent using sensors and real time clock. In this competitive world, human cannot spare his time to perform his daily activities manually without any fail.The most important thing he forgets is to switch off the room lights wherever not required. With this, even the power will be wasted up to some extent. This can be seen more effectively in the case of street lights and commercial sign boards. This project gives the best solution for electrical power wastage. Also the manual operation is completely eliminated. This project provides different on and off timings to operate the lights. The user can once program these timings according to his requirements and these timings will be stored in RTC itself and cannot be erased unless the user wishes to change it again.There are systems already available in the market with an intention to save the energy in the case of street lights. But these systems may be equipped with LDR or RTC to operate the street lights. If the project is implemented using LDR, the street lights will be switched on even during the midnights (at the time when the

Traffic on the roads is almost nil) and thus the energy is wasted by maintaining the lights ON even when not required. If the project uses RTC as the key component to operate the lights, the seasonal variations cannot be taken into account and the task of operating the lights at exactly required timings is not achieved completely. Keeping these technical issues in mind, this project has been designed to overcome the limitations of the older systems and save the energy upto the maximum extent.This system switches on the lights only at preprogrammed timings. As the DS1307 Real Time Clock chip with battery back-up is used, there will be no disturbances for the programmed on/off timings even in power failures. The project also works perfectly according to the seasonal weather conditions.The project uses LDR to read the intensity of the sunlight. The microcontroller takes the decision according to the sensor output. Thus, the microcontroller operated the lights by considering both RTC and LDR output.

INTRODUCTION

A Hybrid Model for Predicting Data in Real Wireless Sensor Networks

B NARESH [1], B. SURESH [2], P SRUTHI [3], P MALLIKA [4]

Dept of CSE,

Nagole Institute of Technology & Science, Hyderabad, Telangana

Abstract

Information expectation is proposed in remote sensor systems (WSNs) to broaden the framework lifetime by empowering the sink to decide the information examined, inside some precision limits, with just insignificant correspondence from source hubs. A few hypothetical investigations unmistakably show the huge capability of this methodology, ready to smother by far most of information reports at the source hubs. By and by, the methods utilized are moderately perplexing, and their achievability on asset rare WSN gadgets is frequently not determined. All the more by and large, the writing needs reports from genuine arrangements, evaluating the general framework wide lifetime upgrades controlled by the transaction of information forecast with the hidden system. These two angles, attainability and framework wide gains, are key in deciding the functional value of information expectation in genuine world WSN applications. In this paper, we portray Derivative-Based Prediction (DBP), a novel information expectation method a lot less complex than those found in the writing. Assessment with genuine informational collections from different WSN arrangements demonstrates that DBP frequently performs superior to the challenge, with information concealment rates up to 99% and great forecast precision. Nonetheless, explores different avenues regarding a genuine WSN in a street passage demonstrate that, when the system stack is thought about, DBP just significantly increases lifetime—a noteworthy outcome essentially, yet a long ways from the information concealment rates above. To completely accomplish the vitality investment funds empowered by information forecast, the information and system layers must be together upgraded. In our testbed tests, a basic tuning of the MAC and steering stack, considering the activity of DBP, yields a noteworthy seven-crease lifetime improvement w.r.t. the standard intermittent revealing.

1 INTRODUCTION

Station names with distance indicator in railways

P JYOTHI[1], U SARIKA[2], Y PRASAD[3], A. VAANI[4]

Dept of ECE

Nagole Institute of Technology & Science, Hyderabad, Telangana.

Abstract

With the title itself, one can understand that this project is exclusively used to give the information of the forthcoming station to the passengers in the train. Most of the passengers do not bother about the stations arriving until their destination station arrives. There may also be chances like they miss their destination and has to get down at some other station and go back to reach their destination. To get rid of this kind of problems, we have designed a project Automatic Station Indication System.Apart from indicating the upcoming station the distance of the next station from the present position is also calculated and displayed on the LCD. In this we are taking the longitude and latitude values of all the stations initially and calculate the distance with the longitude and latitude of the present position of the train which can be received from the GPS unit

I.INTRODUCTION

Mumbai local trains are the primary mode of transport for hundreds and thousands of people who travel for as many as five hours every day to and from work. Boarding a train in Mumbai is one of the wars everyone has to face after waking up in the morning. There are all kind of train schedules, Time Table etc. but it is very difficult to maintain the schedule. Many problems occur in monsoon. We have heavy rainfall in Mumbai as a result water logging, floods and errors occur during monsoon season. Due to which Trains are not able to run as per schedule. Sometimes trains have to be cancelled to get the system on schedule. The inconvenience has to be barred by the commuters. Their time is wasted; they cannot reach to their destination on time. The idea is to get that data of passenger information display from the control room. Decode the data from its coded form used by the indicator displays. Create a local server with the database of all stations. Create an Application to communicate with the server to get the real time data, which will be displayed, in the application. Display important announcements in the application. It will be an autonomous system, which will work 24 x 7 to help the authorities have a direct communication between commuters and them.

II.LITERATURE SURVEY

Earlier train movement information was sent manually from station to control office. It didn't provide much assistance for taking decision to control the train. If any unusual event took place the system would come to a halt.

Information to the Assistant Station Master (ASM) was also not available for ensuring correct displays and announcements. To match high volume traffic of suburban section,

was necessary to provide 'ON LINE' information of train movements to the

Isolation of Bioactive Secondary Metabolites from An Endophytic Fungus Ocimum Basilicum

S SANTOSH[1], SWAPNASINGIREDDY[2], U SAARIKA[3]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT:

Twenty three endophytic fungi from leaf, stem and root of 0cimum basilicum (Tulshi) were isolated and purified. One of the fungi (2L-5) isolated from the leaves was fermented in a large scale and extracted with ethylacetate. The fungal extract was found to be active against two bacteria, Bacillus cereus and Staphylococcus aureus .From the ethyl acetate extract two steroids, ergo sterol and cerevisterol were isolated. Structures of the compounds were elucidated by high-resolution 1- and 2-D NMR spectroscopy

INTRODUCTION

Fungi are plant-like organisms that lack chlorophyll. An endophytic fungi is a fungal microorganism, which spends the whole or part of its life cycle colonizing inter and /or intra-cellularly inside the healthy tissues of the host plants, typically causing no apparent symptoms of diseases. In recent years, there has been evidence that the production of secondary metabolites by an endophyte is not random, but seems to be correlated with his ecological niche. Thus, the microorganisms from ecological habitats have not been thoroughly investigated. The metabolic interactions of endophytes with its host may favor the synthesis of biologically active secondary metabolites. Therefore, in the present study endophytic fungus of Ocimumbasilicumhas been selected for chemical and biological studies due to its medicinal importance.

MATERIALS AND METHODS

For column chromatographic separation silica gel G-60 (230-400 mesh, particle size 0.04-0.063 mm, Ar.7734, ASTM, Merck) was used as stationary phase. IR spectra were recorded by making KBr pellets using

Effective metal-free photochemical borylation of aryl halides in serial and continuous flow conditions

SWAPNASINGIREDDY[1], C VIJAY KUMAR[2], V PHANEENDRA[3], U SAARIKA[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telanagana

Abstract;

A rapid, chemoselective and metal-free C–B bond-forming reaction of aryl iodides and bromides in aqueous solution at low temperatures was discovered. This reaction is amenable to batch and continuous-flow conditions and shows exceptional functional group tolerance and broad substrate scope regarding both the aryl halide and the borylating reagent component. Initial mechanistic experiments indicated a photolytically generated aryl radical as the key intermediate.

1. Introduction

Arylboronic acids or esters have found broad applications in chemical, medicinal and materials sciences. In synthetic organic chemistry, in particular, they are versatile synthons for the formation of carbon-carbon or carbon-heteroatom bonds. 1 The conventional methods to generate aryl boron compounds involved reactions of aryl metallic intermediates with trialkyl borates, followed by transesterification or hydrolysis. These reactions suffer some major drawbacks such as limited functional group tolerance as well as rigorous anhydrous conditions (Scheme 1a). 2 In the past decades, transition metal-catalysed borylation reactions using palladium, nickel, copper and zinc have emerged as highly useful methods for conversion of a C-X bond to a C-B bond (Scheme 1b). 3 More recently, direct C-H borylation methods based on transition-metal catalysts have also been developed.4 In order to reduce the costs and the heavy metal residues in the final products, several transition metal-free methods toward C-B bond formation have been developed. Ito and co workers discovered an alkali alkoxide mediated borylation of aryl halides with a silyl borane as the unique borylating reagent (Scheme 1c).5, Zhang and co workers reported that aryl iodides could be borylated with 4.0 equivalents of bis(pinacolato)diborane in refluxing methanol using 2.0 equivalents of Ce_2CO_3 as the promoter. The reaction time ranged

The use of yttrium iron garnet as a powerful and recyclable nanocatalyst for solvent-free single-stream synthesis of octahydroquinazoline derivatives conditions

V PHANEENDRA[1], S SANTOSH REDDY[2], C VIJAY[3], SWAPNASINGIREDDY[4]

Dept of H & S

Nagole Institute of Technology & Science, Hyderabad, Telangana

ABSTRACT

For the first time, we report the application of super paramagnetic nanoparticles of ytterbium iron garnet (YIG) as a new recyclable and highly efficient heterogeneous magnetic catalyst for the one-pot synthesis of octahydroquinazoline derivatives via Bijinellycyclcondensation reaction under solvent free conditions. Our method shows advantages such as lack of organic solvents, high yields of products, recyclability and operational simplicity

INTRODUCTION

Multi-component reactions (MCRs) are masterpieces of synthetic efficiency and reaction design and are of increasing importance in various research fields such as combinatorial chemistry, drug discovery programs, natural product synthesis, polymer chemistry and medicinal chemistry due to their high atom economy, bond forming efficiency low environmental impact, ease of execution and broad spectrum of applications . Octahydroquinazoline derivatives are considered as an important class of azaheterocycles. The growing interest for their synthesis is mainly due to their broad spectrum of therapeutic and pharmacological properties such as anticancer, antidepressant, ant proliferative activity, anticonvulsant and anti-inflammatory . Search for more potent and effective methodology has led to various reaction conditions in which numerous catalysts such as bronsted and lewis acids, heterogeneous catalysts, biocatalysts and organ catalysts have been used .

The traditional protocol for the preparation of octahydroquinazoline compounds was reported by bijinelly (1893), which involves the one-pot condensation of a ketose, an aromatic aldehyde and

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This article describes a Buck and Boost Grid-Connected PV Inverter that maximizes power output from two PV arrays under unfavorable climatic circumstances.

[1] Dr. K.Suneeta Professor, [2]Mr. N.Laxman Assistant Professor

Abstract:

For maximum power extraction from two serially linked subarrays, a single phase grid-connected transformerless photovoltaic (PV) inverter, which may work in either buck or boost mode and can extract the maximum power concurrently from both subarrays, is presented in this study. When employing an inverter that can function in buck or boost mode depending on the application, it is much less limiting to use a minimum number of serially linked solar PV modules to construct a subarray. Because of this, when each subarray is exposed to a new set of environmental factors, the power yield from each subarray grows. For the leakage current associated with PV arrays to stay within a given range of values, the topological configuration of the inverter and its control technique must be such that high-frequency components are not present in the common mode voltage. On top of that, a high level of productivity is maintained during the whole working range. In order to determine whether or not a project is feasible, a detailed study of the system is carried out, leading to the creation of a mathematical model of the system. A 1.5 kW laboratory prototype is needed to show the design's correctness via extensive testing.

Index Terms—Buck and Boost based photovoltaic (PV) inverter, grid connection, maximum power point (MPP), mismatched environmental condition, series connected module, single phase, transformer less.

INTRODUCTION

For solar-electric (PV) array design, one of the most critical issues is making sure that individual PV modules function at their optimum capacity even when exposed to varying external circumstances because of variances in insulation level and/or operating temperature. The output of a solar-electric array is significantly reduced when the operational parameters of the modules are incompatible. Solving the issue of MECs (mismatched environmental conditions) gets more difficult as the number of PV modules in a solar PV array increases. To meet the voltage requirements of an inverter in a grid-connected transformer-less (GCT) PV system, a high number of series-linked modules are necessary. A GCT PV system requires a certain number of series-linked modules, as shown in Figure 1. The MEC substantially reduces the power output of a GCT PV system, such as a single phase GCT (SPGCT) inverter based system produced from H-bridges or a neutral point clamp (NPC) inverter based system. As a result of the MEC in a PV system, a variety of solutions have been proposed in the literature. Each of these strategies is thoroughly examined in this paper, which provides a detailed description.

Tracking a PV array's global maximum power point (MPP) using MPPT, a complex algorithm, may maximise the amount of energy harvested during MEC by locating the array's MPP. It is possible to maximise the quantity of power harvested during MEC by choosing the right connection between PV modules or by monitoring the global maximum power point (MPP) of the PV array. In the case of low-power SPGCT PV systems, these techniques are ineffective. For SPGCT solar systems, altering the electrical connections of solar panels to reconfigure them as an array is unsuccessful because of the significant increase in components and escalation in complexity. PV modules in an array have been individually regulated, either via the use of a power electronic equalisation system or by connecting a direct current to direct current converter, in order to capture the maximum power possible from each PV module during MEC. There are many components required for systems that employ a power electronic equaliser, which adds to the expense and complexity of operation. PV modules are all operated at their maximum power point (MPP), and the generation control circuit (GCC) of the system manages the difference in power across

[3]Mr. B.Sreenu Assistant Professor
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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Heat Exchanger for Exhaust Gas Heat Recovery in a Gas-Based Power Plant: CFD Analysis

[1]*BANTU SAILESH*

ABSTRACT

Energy is one of the most important components of economic growth. But day by day the existing energy resources are depleting at alarming rate. Hence it is necessary to introduce alternate techniques to conserve the energy effectively. With this an attempt has been made to introduce a ceramic heat exchanger with different cross sections.Early Heat Exchangers provide the foundation for numerous applications in process intensification subjected to un satisfactory mass distribution , thermal stresses arising from uneven heating and cooling etc. In order to overcome the difficulties mentioned above, Ceramic materials have been introduced in place of existing materials. Since ceramic materials offer many benefits including high temperature capacity and corrosion resistance. Special and specific design of the heat exchanger surfaces in ceramic heat exchanger surfaces provide equal distribution of inlet flows.

In this project Ceramic heat exchanger of varying tubes were simulated by computational fluid dynamics method(CFD).The multi shaped structure was imported in to fluent 18.2 versions as a physical model. A ceramic monolith heat exchanger is designed to find out the performance and effectivenessof heat transfer. The numerical computation was performed throughout the domain including fluid region in exhaust gas side, ceramic core and fluid region in air side. The entire computation was carried out by using different cross sections viz., Rectangular, Elliptical and Cylindrical duct with air and exhaust in cross flow direction. After comparison of theoretical and numerical computation it is observed that the estimated heat transfer rate in numerical analysis is 15% more than the theoretical analysis

INTRODUCTION

Now a day's energy is more consuming .There is limited supply of energy due to the deficiency of fossil fuels and they are one of major important factors which produce energy. Oil, natural gas and so many resources are there which the factors of energy are. In present days energy is consuming more in transportation. At current rates of production oil reserves will expire soon. However, an even more important factor is that as production rates start to decline, the limited supply of fossil fuels will become increasingly problematic.

A second more important factor is to develop energy efficient vehicles relates to emissions of greenhouse gases. The combustion of fossil fuels generates CO_2 emissions, which absorb re-radiated heat from the earth's surface and thereby contribute to global warming. This greenhouse effect alters natural marine and carbon cycles, reducing the environment's capacity for CO_2storage. The largest share of the globe's CO_2 emissions (45 %) originated from fossil fuels burned for energy generation. Overall CO_2 emissions have increased by 80% since 1970 (and those from the transportation sector have increased by more than 100 %), contributing to an average atmospheric temperature

[2]*CHERIPALLY NAGAMANI*
[3]*CHERIPALLY NAGAMANI*
[4]*CHINTA SEKHAR*
Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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A CPW-BASED FED KOCH FRACTAL ANTENNA SLOT WI-MAX APPLICATION WITH A COMPACT DESIGN

Dr.THOTA SRAVANTI, M.Tech , Ph.D, Associate Professor, sravanti815@gmail.com

Abstract

The double large band CPW-took care of adjusted Koch fractal space recieving wire proposed in this article is sensible for WLAN and Wi-MAX errands. The running repeat of a three-sided opening radio wire is obscured here using the Koch new conveyance system, achieving flexible recieving wire tests the impedance and radiation instances of the proposed radio wire, showing that an invigorated Koch fractal space recieving wire has an impedance information transmission of 2.38 to 3.95 5 GHz and 4.95 5-6.05 GHz cautious 2.four/5.2/5.eight GHz WLAN gatherings and the 2.five GHz WLA. In the whole working band, the recieving wire composed radiation incorporation has an increment of more than 2.0 dBi. The disclosures are found and connected with accurate people from their own families.

CPW-dealt with opening radio wires, printed fractal space recieving wires, wide-band recieving wires, and WLAN recieving wires are cases of document terms.

1. INTRODUCTION

The fundamental for low-profile, lightweight, and insignificant cost broadband radio wires has extended actually as short distance far away frameworks relationship, for instance, far away district, has gotten more norm (WLAN). WLANs are planned to work in the 2.4 GHz (2.4-2.48 GHz) and 5 GHz repeat social affairs (5.15-5.35 GHzand 5.725-5.825 GHz in the United States and 5.15-5.35 GHzand 5.47-5.725 GHz in Europe). Wi-MAX (Worldwide Interoperability for Microwave Access) is a quick deployable, inconsequential cost broadband far off structures affiliation standard that works in the 2.5-2.69/3.4-3.69/5.25-5.85 GHz get-togethers. Since these standards may be used in different relationship at the same time, a singular radio wire that covers the two social affairs is required. A co-planar waveguide (CPW) feed is better sensible for lightweight distant constructions affiliation applications because to its portions, for instance, uni-planar turn of events, fast assembling, and circuit joining. Specific opening evaluations like square shape, rectangular, three-sided, trapezoidal, underhanded, contorted, and others have been seen in literature[2]-[11] in blend in with either a rectangular, fork-like, or round tuning stub, invigorated for wide-band working. Using a multipleresonance-production overseeing instrument, information move cutoff may be extended. Then, by changing the opening between the tuning stub and the including field, the impedance progress beginning with one reverberating mode then onto coming up next is restricted, achieving wide band improvement. Since the most lessened resonation of a wide opening recieving wire is obliged by the opening boundary[9]-[11], the space filling pondered the Koch

NENAVATH DASHARATH ,M.Tech ,Associate Professor , ndasharath86@gmail.com
P.SHANKAR, M.Tech ,Assistant Professor, shankardvk48@gmail.com
POLU BALKUMAR REDDY, M.Tech , Assistant Professor, balureddy5586@gmail.com
Department:ECE,
NagoleUniverisity Engineering and Technology Hyderabad.

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HEAVY WEIGHT LIFT MACHINES DESIGN

[1]*Dr. NAGA SIVA PRASAD*

ABSTRACT; ***Efforts to generate any form of work have been steadily reducing as technology has advanced. Implementing improved designs may reduce the amount of work necessary to get the intended result in an efficient and cost-effective manner. A human cannot lift weights over a specific limit; in these instances, a jack is required. It gets easier to use when it is powered by a motor. In order to put this concept into action, we created a motorised jack switch system that allows us to simply raise and lower the jack using the on/off switch. Worker strain is reduced by this. The motorised screw jack was developed primarily to alleviate the strain placed on humans when hoisting loads. The project is more cost-effective and efficient to run than other alternatives.mechanical device used to raise huge weights and exert considerable force jacks, screwjacks, and jackscrews Screw thread lifts heavy machinery using a mechanical jack. Hydraulic power is used to operate a hydraulic jack. Lifting automobiles to do maintenance is a frequent use for a variety of jacks, the most common of which being car, floor, and garage jacks. It is common for jacks to be evaluated for their lifting capabilities (for example, 1.5 tonnes or 3 tons). There are industrial jacks that can handle loads of numerous tonnes.In this article, we'll look at how to build a tiny hydraulic jack that moves vertically using hydraulic force. The hydraulic jack in our system is cleverly developed and capable of lifting huge weights despite its small size. The device comprises of a lightweight yet sturdy lifting jack mechanism. A syringe is used to power this device, which is designed to raise the maximum weight for its size. With this device, you'll find a bed on top of the mechanism where you may lay the automobile or weight you want hoisted.***

INTRODUCTION

An automotive jack is a device used to raise all or part of a vehicle into the air in order to facilitate vehicle maintenances or breakdown repairs. The use of jack is not new. It has developed to its present sophisticated state over many years. There are two main types of automotive jacks: Hydraulic and screw jacks. These two categories also have many subcategories of jacks. A screw jack is a type of jack which is operated by turning a lead screw. In this jack, a small force applied in the horizontal plane is used to raise or lower large load [1, 2]. Of the screw-type mechanisms, there are scissor jacks, common in newer cars, and bumper jacks, common in older cars [3, 4]. Hydraulic jacks have the shape of a bottle, or built into a trolley (the floor jack), friction jack and racketing jack [1].The hydraulic jack has all the advantages of producing tons of closer controlled torque-free power for minimum effort by the operator. The hydraulic jack is ideally suitable for repair work because it could be operated in any plane and controlled from outside the car. A large percentage of work will require the use of hydraulic jack for lifting, pulling, pushing and alignment. It is not only used in automobile industries for repairs but warehousing establishments, storage establishments, distributors, service stations and couriers also use hydraulic jacks for a range of high pressure and

[2]*RAVINDRANATH TAGORE K*
[3]*P NAVEEN REDDY*
[4]*R HARI KRISHNA*
Department of Mechanical Engineering,
Nagole University Engineering and Technology Hyderabad

Applications of entropy in water and environmental engineering

PAWAR VIMAL KISHORE [1], M.PRIYAMVADHA [2],
Department of CIVIL Engineering,
Nagole Institute of Technology & Science,
Mail ID: vimal.618@gmail.com, priyam.sri.157@gmail.com
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

INTRODUCTION

The second rule of thermodynamics gave rise to entropy theory, which was later extended to include information theory and therefore became a useful tool for studying complex systems and the issues they raise. There are several uses of entropy within the earth, environmental, and geographical sciences. Environmental and water engineering applications of entropy theory are the subject of this special issue. Entropy is defined as the amount of information gleaned from the measurement of a random variable in terms of the uncertainty it introduces. Entropy was defined by Baran et al. [1] as an invariant measure function and expanded the assessment of uncertainty. To assist address information-related issues in hydrologic monitoring issues, they said that entropy was not a measure for absolute information, but rather a measure of the information's variance. Following a study by Singh [2], there are three types of entropy applications: (1) statistical or empirical, (2) physical, and (3) a combination of the first two. It is necessary to maximise entropy in the first group, which includes probability estimation and entropy maximisation as well as frequency analysis, parameter estimation, network evaluation and design, spatial analysis and inverse spatial analysis, flow forecasting, and complexity analysis and clustering. Modeling rainfall-runoff, infiltrating soil moisture, distributing velocity, and calculating flow duration are all examples of the second category. According to Zhang et al., the entropy parameter generated from entropy-based flow duration curves is connected to drainage area, influenced by reservoir operation, and perhaps climatic change. Water distribution system dependability, for example, falls into the third category, which is a hybrid of the first two. Singh et alreview .'s paper on the Tsallis entropy [4] has several instances of this. Many of the research in this special issue fall into the first category, which is widespread in the field of hydrology. For flood frequency analysis, the generalised gamma and beta distributions, as well as the four-parameter exponential gamma distribution, were constructed using the principle of maximal entropy (POME) in [5–7]. Using the Bayesian method, Chen et al. demonstrated that entropy-based generalised distributions may be utilised to analyse severe rainfall. It was evaluated by Keum and co-authors [9] that there are several ways in which entropy might be used in the design of a water monitoring network. The rainfall network created by Yeh et al. [10] demonstrated how radar and entropy may be used to improve it. According to Santonastaso et al. [11], who studied the tradeoff between network cost and resilience, flow entropy may serve as a proxy for dependability and a measure of network redundancy. An integrated optimization model for agricultural land use based on crop adaptability, population density, and agricultural land use data was developed using entropy [12]. Entropy was utilised to calculate the weights of assessing indicators in a fuzzy system, similar to optimization [13,14], and may be used to combine rainfall predictions [15]. Entropy formulations utilised in this special issue include the Shannon, Tsallis, Rényi, Burg, Kolmogorov, Kapur, configurational, and relative entropies, which may be calculated in time, space, or frequency domains. The Poyang Lake's streamflow and water level complexity were studied using the sample entropy [16]. It was used to create a water resources vulnerability framework [17]. The spatial scaling and complexity features of Amazonian radar rainfall fields were studied using the generalised space q-entropy [18]. There is a correlation between turbulence's unpredictability and the Kolmogorov complexity [19]. A variety of entropy metrics were used by Cheng et al. [20] to explore the geographical and temporal variability of precipitation. These measurements included intensity entropy, apportionment and marginal entropy. Entropy may be employed in spectrum analysis because of its frequency or spectral power domain definition. It may be used for time series analysis, forecasting, and describing stochastic or periodic patterns [21]. Entropy can be employed in this fashion. The marginal and joint entropies may be used to calculate mutual information, which is a measure of the degree of mutual reliance between two variables. Linear and non-linear relationships, such as those between plant

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Comparison of the Effectiveness of Steel and MacroPolymeric Fibers in Reducing Concrete Drying Shrinkage Cracks

UPPULA LINGAIAH[1],KUMAR MUTYALA MANOJ[2],VINTA VARALAKSHMI[3]
yuvanlingaiah@gmail.com[1],mmk.rockstar@gmail.com[2],vara.avn@gmail.com[3]
Department of Civil Engineering,
Nagole Institute of Technology & Science
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505

Abstract

When concrete element is exposed to the environment, it undergoes volumetric contraction due to the drying shrinkage, which when restrained can lead to cracking. Crack width is controlled by the ability of fibers in transmission of stress across the crack opening. In this study the effect of Macro polymeric fibers in controlling drying shrinkage cracking of concrete was investigated and compared with that of steel fibers. The results of restrained ring tests show that at low and medium rate of utilization (0.25 and 0.5%) the effect of macro synthetic fibers are similar to steel fibers. However, at a higher dosage of 1%, steel fibers clearly outperform the polymeric fibers. The shape of macro polymeric fibers (multi-strand or singlestrand) was not found to significantly affect their performance

Index Terms—concrete, drying shrinkage, macro polymeric fiber, steel fiber, restrained ring

INTRODUCTION

Concrete is the most widely used material in civil engineering due to its numerous technical and economical benefits however, concrete also has shortcomings which have to be considered in its application. Upon exposure to environment, it undergoes volumetric contraction due to the drying shrinkage, which when restrained can lead to cracking [1, 2, 3]. Drying shrinkage cracking control is an important factor for concrete structures such as slab on the ground. Concrete slabs include industrial floors, pavement and so on [4, 5, 6, 7]. Contraction joints have to be provided spacing of, which depends on concrete shrinkage, slab thickness and ground restraint degree. With the use of reinforcement such as steel mesh, the spacing of joints can be increased [6, 8]. By development of fiber concrete technology, it is now possible to replace the mesh with the fibers and achieve benefits such as avoiding mesh placement operations and increased construction speed. This has attracted the designers and particularly contractors to consider the use of fibers. Giving that the different kind of fibers such as steel fibers, micro polymeric fibers and recently macropolymeric fibers are available, the comparison of the performance of various fibers in different dosages has been considered by many researchers. Micro polymeric fibers usually have a length less than 25 mm and the diameter is in the range of 20 to 100μm. Regarding the control of drying shrinkage cracking previous investigations indicate that considering the limitation of the maximum useable amount of micro polymeric fibers which is approximately 0.25%, these fibers could not be expected to function comparable to steel mesh [9, 10]. In the case of steel fibers, it has been determined that these fibers function effectively in delaying the cracking time as well as reducing crack opening. However, these effects depend on the fiber content [10, 11, 12]. A previous research shows that at dosage of 0.25 and 1 percent (by volume), steel fiber can reduce the width of the cracks caused by drying shrinkage to 0.25 mm and 0.1 mm, respectively compared to the 1 mm width of the crack in the control mix [13]. Macro polymeric fibers are more recent developments compared to micro polymeric and steel fibers. These fibers have a length of approximately 30 to 60 mm and according to standard ASTM C1116 [14] macro fibers diameter are more than 0.3 mm. The larger dimension of macro polymeric fibers allows them to be used in greater volume compared to micro fibers. Some companies that produce these fibers claim that macro polymeric fibers to be very effective in reducing shrinkage cracking. Some investigations however indicate a weaker performance of these fibers in comparison of steel fibers in equal amount of consumption [15]. Voigt et al observed that at low dosage (approximately 0.25), there is no significant difference between steel and polymeric fibers for delaying of cracking time. Comparing the performance of these fibers at higher levels of consumption however showed better performance of the steel fibers [10]. Recent research by Yousefieh, Joshaghani, Hajibandeh and Shekarchi which was limited to a maximum of 0.2% uses of macro polymeric fibers as expected showed little effect in postponing of drying shrinkage cracking time [16]. A

Diesel engine combustion CFD studies

[1]*POLAMURI RAMA MOHAN REDDY*
Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

Diesel engine R&D is increasingly using multi-dimensional Computational Fluid Dynamics (CFD) (CFD). To improve the design and development of diesel engines, multi-dimensional CFD has been used. Before doing actual testing, CFD tools can accurately forecast and analyse difficult-to-measure elements of complex processes, such as the cylinder process of diesel combustion, temperature & pressure contours, emissions, and so on. GAMBIT 2.4.6 and ANSYS 14.5 were utilised to model and mesh the 2D geometry for our combustion investigation.

Modeling of CO2 emissions, CFD, and the k-a model of diesel combustible combustion.

INTRODUCTION

Internal combustion engines must be designed to minimise fuel use and maximise efficiency. Creating and testing prototypes was the most common method. Although the practise has been around for a long time, there are certain drawbacks. Because a prototype was built for one reason, it couldn't be used for another. CFD simulations may be able to tackle this problem [1]. Computational fluid dynamics has improved diesel engine fuel combustion (CFD). Also used in the car sector for vehicle design and analysis, this is a frequently utilised tool for engine design and analysis. It is becoming increasingly common[2] to use multidimensional computational fluid dynamics (CFD) engine combustion models to anticipate gas flow patterns and fuel spray structure.

COMPUTATIONAL PROCEDURE

Fluent software (ANSYS 14.5 package) was used to build the compression ignition engine combustion simulation, and the programme automatically solved the numerous equations of the multi-dimensional model. Speed, injection specifics (injector type, flow rate) and bore/stroke/connecting rod length are the primary inputs. The simulation model's software forecasts a variety of parameters, including cylinder pressure, temperature, heat release rate, and emission. Fluent software created the graphs and other contours (temperature, pressure, etc.) as outputs to the application based on the specified inputs.

MODEL DEFINITION AND MESHING

An injector positioned in the centre of a 2D cylinder shape was also considered GAMBIT 2.4.6 was used to construct the mesh. The engine's geometry and specifications are listed afterwards. Mesh creation is critical to getting correct results. The FLUENT, ANSYS 14.5 software was used to construct a quadrilateral mesh consistently across the study region. There are 10804 nodes and 21403 faces in the total mesh geometry. Meshed geometry may be seen in Fig.1.

Connecting rod length	:140 mm
Bore	:80 mm
Crank radius	:55 mm
Crank shaft speed	:1500 rpm

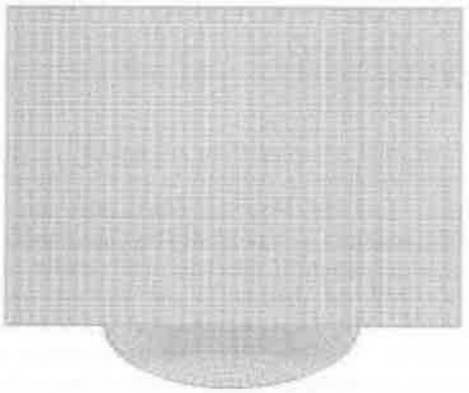

Fig.1 Meshed geometry of cylinder

GOVERNING EQUATIONS AND MODEL

In-cylinder diesel engines often use compressible turbulent flow as a combustion technique. High-pressure spraying adds complexity to the model by causing penetration and evaporation, as well as the involvement of several phases and components. The turbulence equation is one of the most basic equations determining the nature of a fluid's properties (k- model). CFD modelling is one of three

Channel Assignment Algorithm Inspired By the Minimum-Spanning-Tree

[1]NENAVATH DASHARATH ,M.Tech Associate Professor , ndasharath86@gmail.com
[2]LAXMAN BAVANDLAPALLY ,M.Tech Assistant Professor, lax406@gmail.com
[3]JOGU PRAVEEN, M.Tech Assistant Professor, jpraveen.pec@gmail.com
[4]CHEEKATYALA ANJAN KUMAR ,M.Tech Assistant Professor , anjankumarcheekatla@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

Abstract—Since so many 2.4 GHz devices are in use, the 802.11 standard's channel assignment in the 2.4 GHz band remains a hot topic. Because there are only three channels on this band that are not overlapping, users may experience significant levels of interference in congested areas. Using the Prim's method, a greedy technique for locating undirected graph's minimal spanning trees (MSTs) is investigated for channel assignment in this sort of network. Operational range is often restricted to a few tens of meters, which is normal for this kind of technology. Researchers are primarily concerned in finding out how accurate and helpful common RF modules may be when used at normal ISM frequencies.

INTRODUCTION

The 2.4 GHz band of the 802.11 standard is still plagued by the problem of interference. It is vital to ensure a dependable transmission in this band due to the usage of several versions of 802.11 (b, g, n, and ac). A large density of access points need more than the three non-overlapping channels that are currently available. Our ISPs may recommend three channels (1, 6, and 11) although clients may select others according to their own preferences because channel assignments are frequently random. Figure 1[24] depicts the typical channel distribution in a seven-room home. Xirrus Wi-Fi Inspector software [6] was used to count the number of APs in each space.

As many as 11 to 28 Access Points (APs) have been found in each room, with anything from zero to seventeen APs transmitting on the same channel. Number one, number six, and number eleven are the busiest channels in that order.

Using tools that a regular user may utilize in earlier research, we looked at two real networks and optimized channel selection in each one [7]. According to the findings, channel coordination in private networks is lacking, and further effort is needed to address this issue. Methods and software solutions are available to enhance channel allocation. In this section, we'll examine many options. For the average user, these strategies might be confusing and have short-lived impacts due to optimization being done from only one network perspective.

The Global Positioning System and the Glonass satellite constellation (with Galileo and Beidou in future). There is

MultibitFlip-Flops Are Implemented In an FPGA Using MESOCHRNOUS TECHNIQUE

NENAVATH DASHARATH, M.Tech Associate Professor ,ndasharath86@gmail.com
P.SHANKAR, M.Tech Assistant Professor, shankardvk48@gmail.com
MOHAMMED MUJEEBULLAH, M.Tech Assistant Professor,m.mujeebullah117@gmail.com
MADDI SOWJANYA, M.Tech Assistant Professor, jillela.sowjanya@gmail.com
Department:ECE
Nagole University Engineering and Technology Hyderabad

Abstract:

More relaxed clocking techniques such as mesochronous clocking replace completely sync clocking to enhance system composability and simplify timing closure. Under this regime, the modules on two ends of the mesokronous interface get the same clock signal, which works at the same clock frequency, but an unknown phase relationship might occur on the margins of the arrival clock signals. Clock synchronisation is required if data is sent across modules. In this short we introduce a unique mesochron first-input dual-clock first-output buffer (FIFO), which can manage clock synchronisation and temporary data storage, syncing data implicitly through explicit flow control synchronisation alone. Even if the transmitter and receiver are separated by a lengthy connection whereby delay cannot fit inside the intended operating frequency, the suggested system can function well. In such cases, the suggested mesochronous FIFO may be modified to accommodate delays with multi-cycle connections modularly and with little changes to the baseline design. The novel architecture is shown to produce a much-reduced cost implementation compared to prior state-of-the-art mesochronous FIFO architectures.

I. INTRODUCTION

The main development architecture in the field of rapid computer interfaces is Multiprocessor System-on-Chips (MPSoC). The evolution of new technologies has brought forth the necessity for MPSoC. However, the computer overhead and energy requirements have resulted in its optimization required for such a sophisticated design. The designers are dealing with this problem in two ways, by adapting the design to the application limit[1] and by scaling the operation to a restricted voltage / frequency operation[2,3]. Whereas adaptation is an optimum technique, the overall design is substantially high [4]. The design technique comprises monitoring the communications protocol and signal interface between different components [5] in the processor unit while optimising the overhead power and processing. The variety of the design units and the components utilised in this design are also a key restriction in the MPSoC optimization process[6]. The optimization restrictions also limit the operating frequency and system performance[7] in certain applications. This is why the design approach is described with an internal clock allocation updating process[8] and a FIFO-based technique for synchronisation across many units in sub unit activities. Here each core unit is linked to synchronise data exchange across various core units[9].Each of the IP core processor blocks employs a FIFO dual clock design. However, if all IP blocks are using a dual-clock FIFO design for one common purpose, the resource is more at risk than the provision, because the configuration of all IP interfaces must be conservative, as the speed and throughput of each IP core is different[10]. For example, the buffering of this synchronisation parameter should be modified for a worst-case scenario based on the comparison between source and receiver frequency [11]. Furthermore, the descriptive existence of frequency ratio information (such as the interconnection of a chip operates at a quicker rate than the interconnected IP units) together with performance restriction information can lead to twin high impact specializations[12]. Therefore, the FIFO dual clock design has a wide area and power conservation at last. Different uses are given in [12-17]. Since the designs do not employ clocks, the synchronisation process is difficult to accept between two clock variations[18]. The delay factor in the clock system is ignored while synchronising the various core units. This restricts the synchronisation in this way. Recent advancements show that the delay factor in MPSoC architecture is minimised. The lag due to resource allocation is not overcome at the time of the processing. Here each instruction process has a delay in processing the clock; clock delays must be

SINGLE-PHASE QUASI-SWITCHED-BOOST INVERTER PWM CONTROL STRATEGIES FAMILY

[1]Mr. N.Mahesh Assistant Professor, [2]Mr. Venkateswar Rao Assistant Professor
[3]Mr. P.Srikanth Assistant Professor
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

This paper proposed a novel family of PWM strategies for single-phase quasi-switched boost inverter (qSBI). By combining shoot-through mode in the inverter's switches and the turning-on state of an additional switch, the qSBI produced a high voltage gain without adding any passive components. Compared to the conventional PWM strategy for the same input and output voltage gain, the introduced PWM strategies for qSBI could reduce voltage stress across semiconductors and capacitor with the following additional merits: having smaller high-frequency inductor current and capacitor voltage ripples, using high modulation index with low shoot-through duty cycle, and having higher efficiency. Circuit analysis, operating theories, and simulation results of the single-phase qSBI with the introduced PWM5 strategy are shown. A 500-W laboratory prototype was constructed and the effectiveness of the introduced PWM strategy was validated. The qSBI with the proposed PWM strategies is suitable for applications where the required voltage gain lies between 2 and 3.

Index Terms— Quasi-Z-source inverter, PWM strategy, voltage gain, quasi-switched-boost inverter.

INTRODUCTION

In the design process of power inverter for renewable energy systems applications, the reliability, efficiency, and volume are major factors. The two-stage voltage source inverter (VSI) with a boost converter [1] is the conventional solution for renewable energy systems. To solve a shoot-through (ST) problem of VSIs where both upper and lower switches in the same branch of H-bridge circuit cannot switch on simultaneously, Z-source/quasi-Z-source inverters (ZS/qZSIs) have been proposed in [2]-[7]. Because ZS/qZSIs present a high reliability with ST immunity and buck-boost voltage ability, they are suitable for applications of the renewable energy sources. However, voltage gain in ZS/qZSIs is not high. It depends on the modulation index of H-bridge circuit. To get a desired boost voltage demand, a large ST duty cycle is utilized. As a result, the modulation index is small. When a low

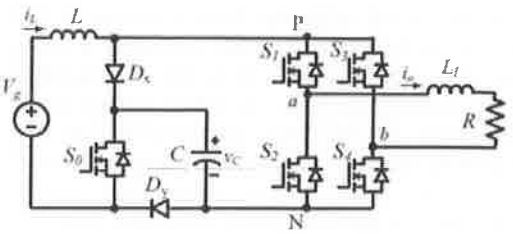

Fig. 1.1 Single-phase single-stage qSBI.

modulation index is used in ZS/qZSIs, total harmonic distortion (THD) value and voltage gain at the output are increased and decreased, respectively. The boost factor in the conventional qZSI is given as: (1)–= PN g / 1/ 1 2 , = 1 BV V D)(where D and VPN are ST duty cycle and DC-bus voltage across the H-bridge, respectively. For applications where the high voltage gain is required, the capacitor, inductor, transformer, and diode have been inserted into the power circuit of qZSIs, resulting in led switched-inductor qZSI [4], enhanced-boost ZSI [5], trans-ZSI [6], asymmetrical Γ-source inverter [7], and improved trans-ZSI [8]. Nevertheless, topologies of these qZSIs increase the cost, volume, and weight of the power circuit because a large number of passive elements are used [4]-[8]. To decrease the cost, weight, and volume of the power circuit, a family of quasi-switched-boost inverters (qSBIs) have been introduced [9]–[14]. These qSBIs uses one less LC pair with the same characteristics as qZSI. However, qSBI has the following merits over qZSI [11]: lower passive elements, smaller current stress on semiconductor devices, lower power loss, and higher efficiency. Fig. 1 presents a single-phase qSBI [9] using five switches (S0–S4), two diodes (Dx and Dy), one capacitor (C), one inductor (L), and an inductive load (R and Ll). The boost factor in qSBI is the same as that in qZSI as expressed in (1). Similar to qZSI, passive elements are also added to qSBI to increase the boost factor. For instance, switched-inductor qSBI with increasing cost and volume has been proposed in [13]. Transformer-based qSBI with a spike on DC-bus voltage due to leakage inductance in the transformer has also been introduced in [14] and [15]. Recently, different pulse width modulation

This study has investigated an effective and low-power architecture for fuzzy picture merging

[1]*BURRI NARENDER REDDY, M.Tech Assistant Professor, narendarburri@gmail.com*
[2]*P.SHANKAR, M.Tech Assistant Professor, shankardvk48@gmail.com*
[3]*MOHAMMED MUJEEBULLAH, M.Tech Assistant Professor,m.mujeebullah117@gmail.com*
[4]*JOGU PRAVEEN, M.Tech Assistant Professor, jpraveen.pec@gmail.com*
Department: ECE
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

When it comes to image fusion, the wavelet transform is the most generally used method. It combines the information included in the source photos' information in the wavelet domain according to a set of fusion rules, and it is the most widely used method. It is, however, difficult to develop a fair fusion rule because of the uncertainty in the contributions of the source images to the fused image.The capacity to include as much information as possible into the fused image becomes the most difficult problem. ThisWhen developing an image fusion algorithm in this study, the wavelet transform and fuzzy reasoning were applied to aid in the process. In this case, the corners are rounded.The source photographs are identified via the application of a set of fuzzy criteria that are applied to each image. This paper describes in detail the hardware architecture used for fuzzy-based photo fusion.is put forth as a possible solution. Using the recommended hardware design, resource usage may be reduced, making it especially well suited for low-end computer systems.applications that need a large amount of power There are just two line memory buffers in the design, and they each have a limited amount of computing capability.It minimises complexity, resulting in cheaper hardware costs, and it is suited for a broad variety of real-time applications, including gaming and medical applications. TheIt is estimated that the hardware design will use 4179 gates and will demand a total of 203.27 milliwatts of power.

Keywords: Fuzzy Reasoning, Fuzzy Rules, Image Fusion, Low Power.

1. INTRODUCTION

Images are fused together using image fusion, which is a way of integrating multimodal images that makes use of image processing technologies to do this. Its particular purpose is the integration of a variety of data sources that are complimentary to one another.to gather information in order to increase the quantity of information visible in thephotographically improving the overall quality of the images while also boosting their reliabilityinterpretation. This leads to the production of more accurate data.an increase in the usefulness Furthermore, it has been asserted that fused is a kind of fusion.Data allows for steady operational performance, for example, by permitting the use of a database.improved self-assurance, reduced doubt, and improved performanceImproved classification and reliability are two benefits of this enhancement. Image fusion is a method that combines two or more images.a way for bringing disparate and unconnected pieces of information togetherthe provision of information that is complementary to the information currently accessibleIn order to increase the reliability of the source images as well as the overall quality of the photographs,in terms of the meaning of the phrase More accurate findings are obtained as a consequence of this process.The interpretation and use of informationA fusion process is nothing more than the bringing together of two or more components in single process.in order to create a composite image that contains the most crucial informationThe picture has more information than the individual photographs, and it is a synthesis of the images.When it comes to visual perception, the image outperforms the written word. We take use of theAn image fusion process is defined as a procedure in

Reasons for the construction project's delays in the Klang valley

SRIKNATH MIRYALA , SATISH BANDI KUMAR

Department of CIVIL Engineering,

Nagole Institute of Technology & Science,

Mail ID: m.srikanth@gmail.com, bandi.satish@gmail.com

Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

Abstract

Malaysia, for example, is a growing nation that relies heavily on the construction sector. In addition, highway development is critical because it serves as a conduit for people to go from one location to another. The construction business is plagued with delays, and it is difficult to prevent them in a building project. The cost and quality of a project are both affected when a project is delayed. There are several elements that might cause delays in a highway building project, and this research aims to discover which of these aspects are the most important to the overall project. Based on a pilot survey and questionnaire, data is obtained. The next step was to use the Relative Importance Index technique to rank and analyze the degree of relevance. According to the RII rating, the top five reasons were bad planning, weather, poor site management, poor site inspection, and buried utilities. Figures for both the highest and lowest factors were 0.851/0.671.

1.INTRODUCTION

In Malaysia, the building sector has a significant impact on the country's economic development [1],[2]. Project delays have been described as expensive, difficult, and hazardous [3–4]. Investigating a construction project's productivity rate is made easier when delay reasons are examined in the planning stages. Many research have been done on the reasons for building delays, which cover various styles of construction, different countries and a range of delay factors [3]. Because of this, investigating the reasons of delays in the building process is required in order to increase productivity in the construction industry. Because of this, this study aims to determine the factors that lead to delays in the Klang Valley area of Malaysia.

1.1 "DelayFactorsinRoadConstructionProject"

Timing is the most important factor in the success of a highway construction job. There have been several investigations on what causes building to be delayed. According to [4], a lack of good planning is to blame for the project's delays, notably in highway building, which involves a wide range of parties and departments. Among the 20 elements that influence highway building projects, design modifications were identified as the third most important [5]. In addition, the presence of subterranean utilities is a key contributor to project delays. Lines for power distributes, telecommunications, water and sewerage pipes, and natural gas pipelines are some of Malaysia's most important subterranean utilities.. Highway construction may run afoul of buried utilities. Typically, the permission and relocation procedure might take a lengthy period and result in a significant amount of time off work. Rework or additional work is one of the least attractive aspects of building projects [6].

A lack of materials was cited as the second most prevalent reason for building delays [7]. In highway building, the quality of the material is quite important. For example, if the asphalt does not reach the standard, it takes time for fresh asphalt from the quarry to arrive [8],[9],[10]. Because of the increased length of time required to fix problems caused by equipment and machinery breakdowns, proper management of these aspects is critical. Poor communication in the construction business is a major hurdle to attaining excellent cost and time performance, according to previous research done in India [11],[12]. Furthermore, it was discovered that a lack of skilled workers in Norway was a major contributor to the project's late start. Surabaya's weather was shown to be the most critical element in determining the success of a building project. Electrical machinery and equipment failed as a result of inclement weather conditions. According to reports, equipment damage caused a slew of delays and costs for the highway building effort.

In Palestine, it has been noted that poor building methods have become a significant problem in the construction project, which may cause it to take longer than originally anticipated to complete. Another important aspect is the lack of experience of the contractors, who may not be able to keep up with the project's development if they lack the necessary expertise. Poor site research is also regarded one of the most common causes of project failure in Indian highway construction. In the past, studies found that financial concerns were a major contributor to building delays. Infrastructure development

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A Modified NLM Model for Despeckling Ultrasound Images Considering Rapid Wavelet Fragmentation and Spit

[1]JOGU PRAVEEN, M.Tech Assistant Professor, jpraveen.pec@gmail.com

Abstract

Speckle noise, an intrinsic ultrasound property, makes it difficult for computer-aided diagnostic (CAD) systems to appropriately diagnose patients. Using a modified non-local means (NLM) filter, ultrasound pictures may be despeckled. In the proposed NLM model, feature vectors are generated from the input picture and clustered using the fuzzy c means (FCM) technique. Individual clusters of blocks can be matched using the rotationally invariant block matching (RIBM) approach rather than the complete image. No pixels are lost in the NLM process because of the intra-cluster block matching. Images compressed using the FFWT were examined for their compressive power in this study. Biorthogonal filter banks may be created by combining FFWT with Set Partitioning in Hierarchical Tree to investigate compression performance in terms of subjective quality metrics (SPIHT). Other topic quantity measurements, including as PSNR and MSE, were used to compare the results of this study.

1. INTRODUCTION

Since its inception, ultrasound has grown in importance as a diagnostic imaging tool in the fight against cancer. Clinical diagnosis may now be made with greater sensitivity and specificity thanks to a variety of computer-aided diagnostic (CAD) systems [2]. Ultrasound has a major drawback in terms of image quality because of speckle noise. Image quality and diagnostic accuracy are negatively impacted by the presence of speckle [3, 4]. An image denoising task's primary goal is to reduce speckle noise while preserving signal properties so that productivity and efficiency may be increased [5].

The construction of a despeckling algorithm necessitates an accurate description of speckle noise generation. Numerous statistical models have been devised to characterize speckle noise, but no widely accepted model exists. It has been shown that a generalized model of speckle noise [6] exists.

$$g(n,m)=f(n,m)u(n,m)+\xi(n,m) \quad (1)$$

[2]P.SHANKAR, M.Tech Assistant Professor, shankardvk48@gmail.com
[3]CHEEKATYALA ANJAN KUMAR ,M.Tech Assistant Professor , anjankumarcheekatla@gmail.com
[4]BURRI NARENDER REDDY, M.Tech Assistant Professor, narendarburri@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

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Study of Surface Roughness in C45 Steel Milling

[1]RAHUL PATIL ,[2]SK HUSSIAN BASHA
[3]CHINTA SEKHAR, [4]R HARI KRISHNA
Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

C45 steel is put through its paces with a research on face milling cutters in this article. The Box-Behnken approach was used to generate an experimental matrix for an experiment. Cutting speed, feed rate, and depth of cut were all altered in each trial. To assess the milling process, surface roughness has been used as a metric. Cutting parameters and their interactions on surface roughness have been studied experimentally and shown to have a significant impact. There have been two suggested regression models for surface roughness. The Johnson transformation is used in this case. Models for surface roughness prediction were utilised in conjunction with the experimental data. Johnson's transformation offers a better degree of accuracy than other data transformation methods. Surface Roughness, Johnson Transformation, P6M5 Insert, C45 Steel Milling

INTRODUCTION

It is widely accepted that milling is the most efficient way of cutting [1]. There are several criteria that may be used to assess the machining process while using the milling technique, much as with other cutting and machining procedures. As a result, the workpiece's surface roughness is often used as an indicator of milling quality. Because surface roughness directly influences the product's workability and durability, it's clear to see why this is important. On the other hand, measuring surface roughness is a straightforward process that may be used in a variety of manufacturing and research settings. In milling, adjusting the cutting parameters is the easiest way to evaluate surface roughness since the operator of the machine may readily change the cutting parameters. The cheap cost and superior machinability of C45 steel make it a popular choice in the industrial sector. A wide range of items, including shafts, forks, and gears, may be made from it. Because of its cheap cost, thermal resistance, and high hardness, P6M5 (the Russian standard) is often used to create cutting tools in mechanical processing. Turning, milling, and drilling bits are all made using this sort of cutting tool in the cast iron and steel industries, respectively. Milling C45 steel with a P6M5 cutting tool was used in this research to examine the effect of cutting parameters on surface roughness. Among the variables studied in this research include cutting speed, feed rate, and depth of cut, among others. Additionally, a surface roughness regression model has been presented. Additionally, the Johnson transformation approach has been used to enhance the accuracy of the regression model. A C45 steel milling test was conducted. The investigation made use of C45 steel samples. The steel sample has dimensions of 200 mm in length, 60 mm in width, and 20 mm in height. Machine 6H82 (Russian Federation) was utilised in this experiment. An electronic frequency changer, also known as a frequency converter, is attached to the machine's main shaft motor to allow it to be set to the required cutting speed. An alloy of grade P6M5 was employed in the experiment's cutting inserts. For mounting, they use two symmetrical cutting components installed on the face milling cutter's main frame. To mill the whole surface of the steel sample, a diameter of 80 millimetres is required for the tool body. Each cutting component is used just once to minimise the impact of tool wear on surface roughness. The Box-Benken approach was used to build an eighteen-item experimental matrix. Cutting speed, feed rate, and depth of cut will all be altered with each trial. Three levels of each cutting parameter were chosen. corresponding to the coding levels -1, 0, and 1. The values of these parameters were selected according to a published study [3] (Table 1). The experimental matrix is presented in

Table 1. Cutting parameters

Parameter	Unit	Code value	Symbol	Value at the level		
				-1	0	1
Cutting speed	m/min	x1	v	140	200	260
Feed rate9	mm/tooth	x2	f	0.1	0.2	0.3
Depth of cut	mm	x3	t	0.28	0.4	0.52

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An Improved Teaching-Learning-Based Optimization Set of Rules for Component Layout Optimization with the Differential Operator

[1]RAHUL PATIL
[2]SK HUSSIAN BASHA
[3]CHINTA SEKHAR
[4]R HARI KRISHNA
Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

Abstract:

TLBO is a differential operator-based technique to solving mechanical component optimization problems (training-learning based mainly optimization). This article goes into great detail on the origins and current state of TLBO. Like most other approaches to addressing an issue, you may use a large population of responses to arrive at the global solution. The TLBO features a strong differential operator to identify better solutions. To test the method's efficiency in addressing common optimization problems, an open coil helical spring is used initially, followed by a hollow shaft. affirmation was given. Simulation findings show that the suggested strategy outperforms current optimization techniques in terms of discovering better options (mechanical components).

INTRODUCTION

Conventional methods have to be used to reduce the capacity of a closed coil helical spring. Graphs were utilised to solve a set of constraints in a hollow shaft circumstance. Reddy and his colleagues used geometric programming to reduce the weight of a belt-pulley drive. Engineers often keep optimization in mind when designing mechanical systems since it is so important. A complicated objective function with numerous design variables and many restrictions is needed to optimise a whole mechanical system, on the other hand [4–6]. Instead of optimising the whole system, it's common practise to concentrate on optimising specific components or intermediary assemblies. Optimising centrifugal pumps without motors and seals is far simpler than doing it with pumps that have both a motor and a seal in place. Engineering calculations have typically used analytical or numerical methodologies to estimate the extremes of a function. Traditional optimization approaches may be useful in many cases, but they may fall short in increasingly complicated design circumstances. Typically, real-time optimization (design) issues include a large number of design variables that have a complex (nonconvex) and nonlinear effect on the objective function to be optimised.. We need an appropriate global or local maximum in order to achieve our desired function [7, 8]. In order to get the best possible outcome in any given situation, an optimization aim is needed. There should be no compromise on efficiency when it

comes to mechanical components. Machine components may be optimised to increase production rates and reduce material costs [9–12]. As a result, optimization strategies may be fully used.

output rates are maintained at a high level Several approaches for enhancing a project have been discussed in the literature. There are several ways to search for information, including direct and gradient approaches. Although the function value is sufficient for a simple direct search, gradient-based methods need the gradient information in order to establish the search's general direction and target location. In the following paragraphs, we'll discuss the drawbacks of traditional optimization approaches. Traditional procedures have been used for a long time to deal with these issues. Certain optimization issues may be better addressed using newer, more diverse ways if existing strategies have several constraints. In order to solve these issues, traditional approaches (such as gradient methods) are ineffective since they only identify local optimum values. This means mechanical engineers must continue to apply efficient and effective optimization techniques. Natural heuristic strategies have been more popular because of their superiority over deterministic optimization methods [13–16]. This evolutionary optimization approach, known as the genetic algorithm, is the most widely employed (GA). Complex problems with several variables and limitations might, nonetheless, have a near-optimal solution identified. The difficulty in identifying optimal values for factors like as population size, crossover frequency, and mutation frequency is an essential consideration to keep in mind.. The performance of the algorithm may be affected by adjusting its settings. Inertia, social and cognitive traits, and others are all used by PSO. Like ABC [17]'s stress on optimising the number of bees, this is comparable to ABC [17]. (workers, scouts, and bystanders). For HS to be effective it demands an abundance of improvisations and a high rate of harmony memory consideration. If you want your

A Robot Controlled By Hand Gestures

[1]JOGU PRAVEEN, M.Tech, Assistant Professor, jpraveen.pec@gmail.com
[2]MOHAMMED MUJEEBULLAH, M.Tech, Assistant Professor, m.mujeebullah117@gmail.com
[3]BURRI NARENDER REDDY, M.Tech, Assistant Professor, narendarburri@gmail.com
[4]POLU BALKUMAR REDDY,M.Tech , Assistant Professor, balureddy5586@gmail.com
Department : ECE
Nagole Univerisity Engineering and Technology Hyderabad

Abstract:

This project is developing a hand-gesture-based interface for directing a vehicle robot's navigation. Hand gestures are recorded on the screen using a three-axis accelerometer that measures acceleration. There are a few peculiarities to the situation: An RF module facilitates wireless communication between a microcontroller and an RF module. These signals are then categorised into one of six different control types, which are discussed in more detail below. An established path should be followed while operating an autonomous vehicle. After this, the microcontroller is activated. Identifying and classifying hand movements is accomplished via the use of a method called hand trajectory classification. According to the simulation's findings, With a 92.2 percent accuracy rate, the classifier was considered to be a success.

Keywords - Gesture Control, Accelerometer, Microcontroller.

I. OVERVIEW AND INTRODUCTION

Robots are playing an increasingly important part in automation across a wide range of industries, including construction, military, medical, and industrial.etc. Following the construction of certain fundamental robots, such as a line follower,We have created a robot, a computer-controlled robot, and other similar devices.this gesture-controlled robot with an accelerometer is controlled by aArduino Uno is a microcontroller board. We've employed hand gesture movements to propel the vehicle.An accelerometer is used by the robot.A gesture-controlled robot is one that is controlled by moving the hand in certain ways.alternative to any other means such as buttons or a joystick Here's an

example:To operate the robot, all that is required is a movement of the hand. AThe user's hand is placed on a transmitting device, which transmits data.features an RF transmitter as well as an accelerometer for transmitting a signalinstruction to the robot in order for it to carry out the needed functionIt involves going ahead, turning around and coming to a complete halt TheseThe hand gesture will be used to identify which activities are being performed.The accelerometer is the most important component in this case. AnAn accelerometer is a device that measures three-axis acceleration.with a range of +-3g Polysilicon is used in the construction of this gadget.measuring using a surface sensor and a signal processing circuitacceleration. The output of this gadget is in Analog and also has a digital component.inversely related to the rate of acceleration The gadget is used to measure theWhen gravity is slanted, the static acceleration of gravity produces a result inin terms of the letter 'g' .

II. BLOCK DIAGRAM

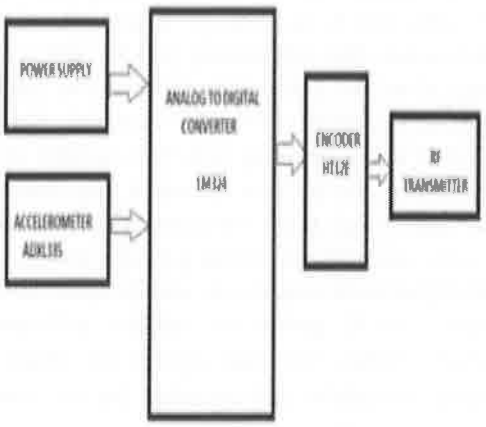

Fig 1. Transmitter Circuit

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Design strategies for roof trusses are contrasted. LSM and WSM

DEEPIKA SHIVAKOTI [1] KUMAR T K MANIKANTA SAINATH [2], KUMAR JELLA ANIL[3]
Department of CIVIL Engineering,
Nagole Institute of Technology & Science,
Mail ID: deepas.1810@gmail.com, Mail ID: tk.manikanta19m1@gmail.com,Mail ID: jella.nits@gmail.com
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

ABSTRACT

Using the term "single entity," we indicate a framework with just two forces. Members are subjected to tensile and compressive stresses as a result of external forces. Beams refer to the top and bottom of a truss, respectively. There are intervals between the webs that are called panelling. A well-rounded design framework incorporates safety, cost-effectiveness, and aesthetics into the overall design process. Howe roof trusses and channel section purlins are studied using limit state and working stress techniques. A comparison of shear force, bending moment, deflection and displacement is the subject of this investigation. The Indian Standard Codes IS 875-1975, IS 800-2007 (limit state approach), and IS 800-2007 are used to calculate specimen section characteristics (working stress method). The building is designed with a long-term support system in order to endure wind loads. These researchers are primarily interested in finding techniques that are low-cost and easy to maintain while yet being able to manage large weights. The best bending and load-bearing capacity may be achieved by using the limit state approach design.

They must be taken into consideration for their buckling strength, bending stiffness, and distortion stiffness.

INTRODUCTION

In the building business, panel points are used to connect two straight pieces of material together. The use of triangles to stabilise trusses is common, however this is not always the case. This is the only geometric form whose dimensions will never change since its sides are all of equal length. Four-sided figures need regular regulation of their angles and lengths in order to maintain their right shape. Trusses come in two varieties:

Thus, the pitched and common trusses have two separate triangle shapes. The most common usage of this material is for roofing. For example, trusses get their name from the web structure they have. The length, weight, and spacing of the chords and webs determine this.

There are parallel top and bottom strings, which is why it is known as a "parallel chord" kind of structure. This is a common building material for flooring.

the building is made of steel Purlins are classified as either horizontal or vertical. Structurally, purlins depend on the walls for their support. Without a crown plate, both purlins may be purchased. Rooftop "crown plates" are the term used by structural engineers and architects. Purlins of the later kind are what we see here. The purlin plate, primary purlins, and common purlins make up a purlin, on average. Purlins, channel and angle sections, and other roofing components are often used together. Cold-formed steel purlins play a vital role in Indian construction. When constructing a sloping roof with a lengthy span between the purlins, it is usual practise to employ "Z" sections. It is necessary to employ thick metal sheets to produce sectional steel sections for cold forming. Steel members are available in thicknesses ranging from 0.04 to 0.64 inches.millimetres. Cold forming improves both the At the time when a currency's value has reached its highest point of strength (1). Rolled stainless steel sheets are used to make cold-formed and light-gauge spools. Without the use of heat, these components are made from thin, uniformly sized metal sheets. Between 1 and 8 millimetres thick is typical for sheets.. When it comes to construction, purlins may be used to form anything from light supports to roof sheets to floor decking.

"Boots and Saddles"

Steel or wood may be used to build this truss, however wood is the preferred option. When it comes to architecture, who is in charge of it and how it's put together is of utmost importance. With a maximum length of 8 metres, the King Post Truss can accommodate a wide range of home sizes, particularly smaller ones.

Pratt Truss, a firm in the construction industry, makes use of it.

This is the most popular and least expensive kind of steel roof truss. Accordingly, when stress increases in the main strut, tension decreases in the diagonal strut. The typical length of this kind of building is 10 metres.

The King of the Post Trusses.

The Queen Post Trellis is a great option because to its adaptability and reliability. Because of its simple construction and 10-meter spread, it may be used by a wide range of organisations.

A Howe Truss is a particular kind of truss used in the construction business.

Structurally solid and visually appealing, the truss composed of steel and wood is an excellent choice. Steel tension sections keep the building stable and long-lasting despite the fact that the bulk of it is constructed of wood. The Howe Truss is well-known for its use in long-distance transportation. Because of this, a wide range of uses are conceivable.

One of the many alternatives available to you is a rooftop system.

Roof truss styles are depicted in these images, including a steel fan-truss design. The fink roof truss is constructed

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A Grid Connected Wind Energy System Control Scheme for Enhanced Power Quality

[1]*Mr. Venkateswar Rao Assistant Professor*
[2]*Mr. B.SreenuAssistant Professor*
[3]*Mr. B.Raju Assistant Professor*
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

Abstract

The quality of a grid's electricity may be affected by the addition of wind power. On the basis of measurements and criteria adhered to in accordance with International Electro-technical Commission standard IEC-61400 the wind turbine's performance and hence the quality of the electricity is determined. Measurements of active power, reactive power, voltage fluctuation, flicker, harmonics, and the electrical behaviour of switching operations are some of the ways the wind turbine has an impact on the grid system's quality of electricity. According to the research presented in this article, the addition of wind turbines to the grid has resulted in a decrease in electricity quality overall. STAT COMpensator (STATCOM) is coupled to a battery energy storage system (BESS) at a common connection point to minimise power quality concerns. During periods of variable wind power, the battery energy storage is incorporated into the actual power supply to maintain it. The grid-connected wind energy generating system's STATCOM control technique for improving power quality is simulated in the power system block set in MATLAB/SIMULINK. Reactive power demand from the load and the induction generator is used as the primary supply source in the proposed design because of its efficacy. The IEC-standard grid co-ordination regulation and the plan for improving power quality on the grid have been shown.

STATCOM control is a key term. Compensator for STATic measures of quality Matlab and SIMULINK are used.

INTRODUCTION

To ensure long-term prosperity and societal advancement, the company must be successful in all of its markets. All the changes in renewable energy resources, such as wind, biomass, hydro, co-wind speed, etc., are conveyed as fluctuations in generation in the fixedis required to satisfy the energy demand by using the speed wind turbine operation. Energy mechanical torque, electricity on the grid, and the conservation and utilisation of renewable sources are the key to voltage variations in a sustainable energy system. During the course of routine functioning. Wind turbines create a continuous, variable output of wind energy that must be integrated into the power grid in order to power. The turbulence, wind shear, and tower-shadow effects of [1] and [2] are the primary causes of these power fluctuations. Incorporating wind power into the current power control system. When it comes to the technical aspects of the network, there is a need to deal with these oscillations. The quality of the power supply may be considered in relation to wind power generating difficulties, such as voltage control, stability, and power. Customer-focused measures of voltage quality are critical components of the transmission and distribution networks. These measures, such as voltage quality, are adversely impacted by several types of transient phenomena. A distribution and transmission network, on the other hand, may be powered by wind. Distributed generation is disrupted by generator The network places a high value on power quality. Running a wind turbine using a simple way [2]. A rapid development of the induction generator in the utilisation of wind energy in direct connection to the grid has taken place during the last several years. The recent induction of There are intrinsic benefits of costing up to 2 MW and feeding into the distribution network to the individual units of big capacity generators. Induction generators, on the other hand, need active power in order to magnetise. Once wind speed and generator torque are known. Variations in wind, absorbed reactive power, and terminal voltage of an induction generator may have considerable effects on the voltage at which an induction generator generates active power. Batteries for wind energy generation systems are often needed to counteract the volatility of wind turbine output in the case of grid disruption. Commercial wind turbines may theoretically be controlled using a STATCOM-based control technique to improve electrical quality.. It is hoped that this suggested STATCOM control strategy for wind energy production linked to the grid would achieve the following goals.

The source has a power factor of unity.

A review of the literature on content storage in cloud environments and privacy preservation

[1]D Navya,Assistant Professor,
[2]Anishetty Shiva Rama Krishna,Associate Professor,
[3]Sarikonda Sree Hari Raju,Associate Professor
Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

Abstract: -Cloud storage is the means of exchanging over the internet different services. As a service customer, the storage may be used to store and transfer data remotely. Data management in the cloud has many advantages over local data storage. Without thinking about the need to check its accuracy, consumers should be allowed to access the data in cloud storage as though the knowledge were local. But providing data transparency is a problem. Cloud storage public audit functionality enables users to ask third-party auditor (TPA) to validate data honesty. This paper addresses numerous privacy-related problems as consumers store data in the cloud. We would examine the methods of supplying cloud service privacy and protection here. Safe cloud computing services may be introduced by delivering privacy-preserving public auditing using ring signature processes.

Keywords: -Cloud Computing, integrity, public auditing, privacy preserving.

I. INTRODUCTION

Cloud infrastructure is one of the fastest evolving innovations commonly embraced by many small IT companies as the cloud allows them to boost their industries as appropriate, without the need for a lot of money and time.

Cloud computing relates to the method of exchanging services over the internet, such as hardware, applications and production platforms. It provides On-Demand network access to dynamically configurable computing services in a pooled pool. All aspects in the as-a-service paradigm are supported by cloud infrastructure.

Storage as a Service is a business concept in which a big organization leases space to a smaller company or entity in their storage infrastructure. As per their use, the smaller business or individual consumers compensate for the storage room. The requirement for manual backup is totally minimized by utilizing cloud storage. It also lowers the expense of hardware, applications and personal repair expenditure [1]. Users may access data from anywhere, over the internet, at any time. They're more effective than computers for personal computing. So, the way the data is processed has been altered. Instead of being processed and managed by consumers, the data is either either consolidated or outsourced to cloud service companies. It introduces daunting security risks to the outsourced data of customers, in addition to these benefits.

It can be cheap and powerful to access from anywhere while the data is processed in the cloud, however the data can face several problems such as confidentiality, safety, and transparency due to attacks or failures. This can often contribute to an irretrievable failure of user details. The integrity of data in the cloud can be challenging for consumers to verify. So, they depend on the providers of cloud services. But cloud service providers cannot have full confidentiality, data accuracy [2] when processing massive volumes of information. They can also exploit the data of users which may place details at risk. Inside the cloud service, certain privacy and protection threats on customer data exist when they typically have full access to stored data and can steal the data to offer to external parties in order to obtain benefit. Users will not be conscious of their data misuse, because users may not be told about it by cloud service providers. In order to verify the quality and correctness of data, cloud service providers must allow users to inspect their data. User data auditing could also allow users to monitor and evaluate any actions that threaten the integrity of the data [3]. The audit should report on security violations, access to records, etc. Users have to choose the best stable cloud storage provider and encrypt data to protect data from others before saving it in the cloud.

II. SECURITY ISSUES IN CLOU COMPUTING

Cloud computing has number of security issues that are discussed below.

Privacy and security:

When user data is hosted in cloud storage, cloud service providers can ensure that access to user data is restricted exclusively to user authorization. This is important because unauthorized access by cloud staff to sensitive user data can lead to security issues for user data. It may create several protection issues because the same fundamental hardware is used to store data from the data of various entities. There could be a risk of identity disclosure and privacy loss. Any hardware attacks can impact data from different organizations.

A LAYERED SECURITY APPROACH FOR APPLICATION LAYER WITH AN INTRINSIC APPROACH

[1]D Navya,Assistant Professor,
[2]Sarikonda Sree Hari Raju,Associate Professor,
[3]Ashwini Nangunoori,Assistant Professor,
Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

Abstract *- Application Protection's present condition represents the reality that security has been an afterthought. The primary problem was the security of data in transit and storage, and cryptography successfully resolved this question. The challenges to systems have, however, grown beyond those addressable to the device itself through protocols and cryptography. This lack of cyber foresight has cost billions in missed sales and is now disrupting the infrastructure of information technology that the global economic engine is dependent on. The defense of an application against security attacks, Application Security, is a challenging challenge. To integrate the need for Software Safety, Application Security must now expand beyond conventional network and data security. A consistent and detailed view of the possible threats at each stage in the device or network must also guide the approach to Application Protection.*
Keywords-application security, threat models, software principles.

I. INTRODUCTION

Protecting an application from security risks is Application Security. This is a daunting challenge, since the program builder or corporate protection planner must have protections to any threat possible, while in order to survive, an intruder must only locate one flaw or point of attack. Past device security strategies have definitely been minimal; however modern technology has been introduced to overcome this difficult issue [1].

- Network Security, Data Security and Device Safety consist of Program Security:
- Network Protection typically tackles foreign threats against infrastructure inside a firewall that delivers a network-wide utility. Using firewalls, intrusion prevention devices and malware scanners, network security has historically been dealt with.
- The preservation of data used locally by an application or transferred between users and servers is Data Security. The key approach here is cryptography, since it is incredibly successful in preserving data during transmission and storage by maintaining its privacy and secrecy.
- Software Security is the protection from assaults on the software or resources offered by the software, thereby avoiding misuse of proprietary property and approved material and ensuring that the software continues to work as expected. These attacks usually involve reverse engineering, tampering, copying, and automatic types of attacks that can be launched by comparatively unsophisticated attackers around the network or on a desktop.

II. THREAT MODELS Network threat model

Network protection professionals have historically seen the hardware and the operating system as trustworthy. This is a Network Vulnerability Paradigm, where the intruder is distant and external. The application is attacked through network ports, so the first and most prevalent method of perimeter security was firewalls that filter external packets from the untrusted environment. The downloaded code still posed a hazard, so to guarantee the security of this code, code signing was invented. Other kinds of threats were malware and worms, so reactive protections such as virus scanners and intrusion detection systems [2] were added. The bugs that occur in application software enabling attacks such as viruses and worms, however, remain a top concern.

B. Model of Untrusted host hazard

At the other extreme of the hazard model continuum is Software Security. In this situation, the data and software must be secured from a legal yet possibly malicious attacker who has full access over the programming platform and may then use a broad variety of resources to find bugs and carry out an assault against the program, such as disassemblers, debuggers and emulators. This is considered the Hazard Paradigm of the Untrusted Host which is the field of copy security and material protection strategies for PC games.

The first perimeter-type defenses developed to secure data and software under the Untrusted Host Threat Paradigm were focused on cryptography. Dynamic memory tracing is an attack strategy that has culminated in reactive protections, such as anti-debug and self-modifying code, being introduced.

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SINGLE-PHASE QUASI-SWITCHED-BOOST INVERTER PWM CONTROL STRATEGIES FAMILY

[1]Mr. N.Mahesh Assistant Professor, [2]Mr. Venkateswar Rao Assistant Professor
[3]Mr. P.Srikanth Assistant Professor
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

This paper proposed a novel family of PWM strategies for single-phase quasi-switched boost inverter (qSBI). By combining shoot-through mode in the inverter's switches and the turning-on state of an additional switch, the qSBI produced a high voltage gain without adding any passive components. Compared to the conventional PWM strategy for the same input and output voltage gain, the introduced PWM strategies for qSBI could reduce voltage stress across semiconductors and capacitor with the following additional merits: having smaller high-frequency inductor current and capacitor voltage ripples, using high modulation index with low shoot-through duty cycle, and having higher efficiency. Circuit analysis, operating theories, and simulation results of the single-phase qSBI with the introduced PWM5 strategy are shown. A 500-W laboratory prototype was constructed and the effectiveness of the introduced PWM strategy was validated. The qSBI with the proposed PWM strategies is suitable for applications where the required voltage gain lies between 2 and 3.

Index Terms— Quasi-Z-source inverter, PWM strategy, voltage gain, quasi-switched-boost inverter.

INTRODUCTION

In the design process of power inverter for renewable energy systems applications, the reliability, efficiency, and volume are major factors. The two-stage voltage source inverter (VSI) with a boost converter [1] is the conventional solution for renewable energy systems. To solve a shoot-through (ST) problem of VSIs where both upper and lower switches in the same branch of H-bridge circuit cannot switch on simultaneously, Z-source/quasi-Z-source inverters (ZS/qZSIs) have been proposed in [2]-[7]. Because ZS/qZSIs present a high reliability with ST immunity and buck-boost voltage ability, they are suitable for applications of the renewable energy sources. However, voltage gain in ZS/qZSIs is not high. It depends on the modulation index of H-bridge circuit. To get a desired boost voltage demand, a large ST duty cycle is utilized. As a result, the modulation index is small. When a low

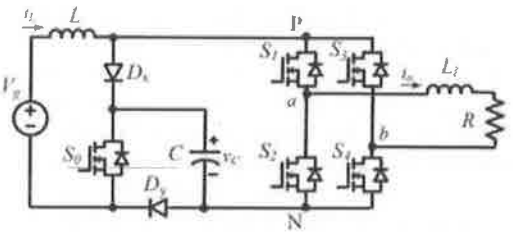

Fig. 1.1 Single-phase single-stage qSBI.

modulation index is used in ZS/qZSIs, total harmonic distortion (THD) value and voltage gain at the output are increased and decreased, respectively. The boost factor in the conventional qZSI is given as: (1)–= PN g / 1/ 1 2 , = 1 BV V D)(where D and VPN are ST duty cycle and DC-bus voltage across the H-bridge, respectively. For applications where the high voltage gain is required, the capacitor, inductor, transformer, and diode have been inserted into the power circuit of qZSIs, resulting in led switched-inductor qZSI [4], enhanced-boost ZSI [5], trans-ZSI [6], asymmetrical Γ-source inverter [7], and improved trans-ZSI [8]. Nevertheless, topologies of these qZSIs increase the cost, volume, and weight of the power circuit because a large number of passive elements are used [4]-[8]. To decrease the cost, weight, and volume of the power circuit, a family of quasi-switched-boost inverters (qSBIs) have been introduced [9]–[14]. These qSBIs uses one less LC pair with the same characteristics as qZSI. However, qSBI has the following merits over qZSI [11]: lower passive elements, smaller current stress on semiconductor devices, lower power loss, and higher efficiency. Fig. 1 presents a single-phase qSBI [9] using five switches (S0–S4), two diodes (Dx and Dy), one capacitor (C), one inductor (L), and an inductive load (R and Ll). The boost factor in qSBI is the same as that in qZSI as expressed in (1). Similar to qZSI, passive elements are also added to qSBI to increase the boost factor. For instance, switched-inductor qSBI with increasing cost and volume has been proposed in [13]. Transformer-based qSBI with a spike on DC-bus voltage due to leakage inductance in the transformer has also been introduced in [14] and [15]. Recently, different pulse width modulation

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MultibitFlip-Flops Are Implemented In an FPGA Using MESOCHRNOUS TECHNIQUE

NENAVATH DASHARATH, M.Tech Associate Professor ,ndasharath86@gmail.com
P.SHANKAR, M.Tech Assistant Professor, shankardvk48@gmail.com
MOHAMMED MUJEEBULLAH, M.Tech Assistant Professor,m.mujeebullah117@gmail.com
MADDI SOWJANYA, M.Tech Assistant Professor, illela.sowjanya@gmail.com
Department:ECE
Nagole University Engineering and Technology Hyderabad

Abstract:

More relaxed clocking techniques such as mesochronous clocking replace completely sync clocking to enhance system composability and simplify timing closure. Under this regime, the modules on two ends of the mesokronous interface get the same clock signal, which works at the same clock frequency, but an unknown phase relationship might occur on the margins of the arrival clock signals. Clock synchronisation is required if data is sent across modules. In this short we introduce a unique mesochron first-input dual-clock first-output buffer (FIFO), which can manage clock synchronisation and temporary data storage, syncing data implicitly through explicit flow control synchronisation alone. Even if the transmitter and receiver are separated by a lengthy connection whereby delay cannot fit inside the intended operating frequency, the suggested system can function well. In such cases, the suggested mesochronous FIFO may be modified to accommodate delays with multi-cycle connections modularly and with little changes to the baseline design. The novel architecture is shown to produce a much-reduced cost implementation compared to prior state-of-the-art mesochronous FIFO architectures.

I. INTRODUCTION

The main development architecture in the field of rapid computer interfaces is Multiprocessor System-on-Chips (MPSoC). The evolution of new technologies has brought forth the necessity for MPSoC. However, the computer overhead and energy requirements have resulted in its optimization required for such a sophisticated design. The designers are dealing with this problem in two ways, by adapting the design to the application limit[1] and by scaling the operation to a restricted voltage / frequency operation[2,3]. Whereas adaptation is an optimum technique, the overall design is substantially high [4]. The design technique comprises monitoring the communications protocol and signal interface between different components [5] in the processor unit while optimising the overhead power and processing. The variety of the design units and the components utilised in this design are also a key restriction in the MPSoC optimization process[6]. The optimization restrictions also limit the operating frequency and system performance[7] in certain applications. This is why the design approach is described with an internal clock allocation updating process[8] and a FIFO-based technique for synchronisation across many units in sub unit activities. Here each core unit is linked to synchronise data exchange across various core units[9].Each of the IP core processor blocks employs a FIFO dual clock design. However, if all IP blocks are using a dual-clock FIFO design for one common purpose, the resource is more at risk than the provision, because the configuration of all IP interfaces must be conservative, as the speed and throughput of each IP core is different[10]. For example, the buffering of this synchronisation parameter should be modified for a worst-case scenario based on the comparison between source and receiver frequency [11]. Furthermore, the descriptive existence of frequency ratio information (such as the interconnection of a chip operates at a quicker rate than the interconnected IP units) together with performance restriction information can lead to twin high impact specializations[12]. Therefore, the FIFO dual clock design has a wide area and power conservation at last. Different uses are given in [12-17]. Since the designs do not employ clocks, the synchronisation process is difficult to accept between two clock variations[18]. The delay factor in the clock system is ignored while synchronising the various core units. This restricts the synchronisation in this way. Recent advancements show that the delay factor in MPSoC architecture is minimised. The lag due to resource allocation is not overcome at the time

Channel Assignment Algorithm Inspired By the Minimum-Spanning-Tree

[1]NENAVATH DASHARATH ,M.Tech Associate Professor , ndasharath86@gmail.com
[2]LAXMAN BAVANDLAPALLY ,M.Tech Assistant Professor, lax406@gmail.com
[3]JOGU PRAVEEN, M.Tech Assistant Professor, jpraveen.pec@gmail.com
[4]CHEEKATYALA ANJAN KUMAR ,M.Tech Assistant Professor , anjankumarcheekatla@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

Abstract—Since so many 2.4 GHz devices are in use, the 802.11 standard's channel assignment in the 2.4 GHz band remains a hot topic. Because there are only three channels on this band that are not overlapping, users may experience significant levels of interference in congested areas. Using the Prim's method, a greedy technique for locating undirected graph's minimal spanning trees (MSTs) is investigated for channel assignment in this sort of network. Operational range is often restricted to a few tens of meters, which is normal for this kind of technology. Researchers are primarily concerned in finding out how accurate and helpful common RF modules may be when used at normal ISM frequencies.

INTRODUCTION

The 2.4 GHz band of the 802.11 standard is still plagued by the problem of interference. It is vital to ensure a dependable transmission in this band due to the usage of several versions of 802.11 (b, g, n, and ac). A large density of access points need more than the three non-overlapping channels that are currently available. Our ISPs may recommend three channels (1, 6, and 11) although clients may select others according to their own preferences because channel assignments are frequently random. Figure 1[24] depicts the typical channel distribution in a seven-room home. Xirrus Wi-Fi Inspector software [6] was used to count the number of APs in each space.

As many as 11 to 28 Access Points (APs) have been found in each room, with anything from zero to seventeen APs transmitting on the same channel. Number one, number six, and number eleven are the busiest channels in that order.

Using tools that a regular user may utilize in earlier research, we looked at two real networks and optimized channel selection in each one [7]. According to the findings, channel coordination in private networks is lacking, and further effort is needed to address this issue. Methods and software solutions are available to enhance channel allocation. In this section, we'll examine many options. For the average user, these strategies might be confusing and have short-lived impacts due to optimization being done from only one network perspective.

The Global Positioning System and the Glonass satellite constellation (with Galileo and Beidou in future). There is

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Experiments Using a Design-for-Manufacturing Approach to Process Parameters for Fused Deposition Modelling.

[1]POLAMURI RAMA MOHAN REDDY
[2]CHINTA SEKHAR[3]S K HUSSIAN BASHA[4]T DASTHAGIRI
Department of Mechanical Engineering,
NagoleUniverisity Engineering and Technology Hyderabad

Abstract

As a quick prototyping method for visualising and validating ideas, additive manufacturing (AM) first emerged. As AM technologies like Fused Deposition Modeling (FDM) have advanced in recent years, they are now moving from fast prototyping to rapid production applications. The issue of manufacturing usable components for end-users utilising FDM proved to be a difficult one. Building direction, extrusion temperature, layer height, infill pattern and more are just few of the many variables that determine the final design of a component. Quality and functionality are influenced by the FDM process parameters. Detailed knowledge of the effects of the FDM processing settings on the mechanical qualities, dimensional accuracy, and construction time of the finished product is also needed. When it comes to the mechanical qualities and repeatability of FDM components, an experimental research has been conducted to examine the impact of each processing parameter. 18 test samples were printed using different processing conditions. It was necessary to measure the measurements of these specimens and compare them to an accurate 3D CAD model to examine the repeatability and the resulting tolerances. To determine the mechanical parameters of each produced sample, the research described here used an ASTM D638 tensile test. A Finite Element Analysis (FEA) model is also included in the paper. Future studies on the combined impacts of processing parameters should include simulating their behaviour under mechanical stresses.

Introduction

There are many different types of advanced manufacturing technologies, and AM is the general word for all of them. By adding material rather of removing it as in subtractive manufacturing methods like milling, the layers are created. G-codes created from 3D CAD models regulate the addition or fusion of materials. Formed by heating a thermoplastic filament to a semi-liquid condition and extruding it via an extruding nozzle, FDM is one of the AM methods that manufactures components layer by layer. In most FDM systems, the filament has a circular cross section and a particular diameter. 1.75 mm and 3.0 mm are the most often utilised sizes. Many benefits occur because of the nature of the FDM process, such as the design flexibility to make complicated forms without the need to invest in dies and moulds, the capacity to generate interior features, which is unachievable using conventional manufacturing processes. Consolidated complicated pieces may reduce the number of assemblies produced using FDM. Reduced lead times and storage and shipping requirements, particularly in applications requiring high levels of customisation, are further benefits of FDM that may be realised across the supply chain [2]. Aside from these drawbacks (such as anisotropic mechanical characteristics, staircase effect at curved surfaces, poor surface quality, the necessity for supports for overhanging portions), FDM technique offers several advantages. Many academics are working to improve the quality of FDM components in order to address these issues. Many methods exist for enhancing the quality of additive manufacturing (AM) and fused deposition modelling (FDM) components, including chemical treatment (3–6), machining (7–8), heat treatment (9), and parameter optimization).

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Diesel engine combustion CFD studies

[1]POLAMURI RAMA MOHAN REDDY
[2]SK HUSSIAN BASHA
[3]R HARI KRISHNA
[4]T DASTHAGIRI
Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

ABSTRACT

Diesel engine R&D is increasingly using multi-dimensional Computational Fluid Dynamics (CFD) (CFD). To improve the design and development of diesel engines, multi-dimensional CFD has been used. Before doing actual testing, CFD tools can accurately forecast and analyse difficult-to-measure elements of complex processes, such as the cylinder process of diesel combustion, temperature & pressure contours, emissions, and so on. GAMBIT 2.4.6 and ANSYS 14.5 were utilised to model and mesh the 2D geometry for our combustion investigation.

Modeling of CO2 emissions, CFD, and the k-a model of diesel combustible combustion.

INTRODUCTION

Internal combustion engines must be designed to minimise fuel use and maximise efficiency. Creating and testing prototypes was the most common method. Although the practise has been around for a long time, there are certain drawbacks. Because a prototype was built for one reason, it couldn't be used for another. CFD simulations may be able to tackle this problem [1]. Computational fluid dynamics has improved diesel engine fuel combustion (CFD). Also used in the car sector for vehicle design and analysis, this is a frequently utilised tool for engine design and analysis. It is becoming increasingly common[2] to use multidimensional computational fluid dynamics (CFD) engine combustion models to anticipate gas flow patterns and fuel spray structure.

COMPUTATIONAL PROCEDURE

Fluent software (ANSYS 14.5 package) was used to build the compression ignition engine combustion simulation, and the programme automatically solved the numerous equations of the multi-dimensional model. Speed, injection specifics (injector type, flow rate) and bore/stroke/connecting rod length are the primary inputs. The simulation model's software forecasts a variety of parameters, including cylinder pressure, temperature, heat release rate, and emission. Fluent software created the graphs and other contours (temperature, pressure, etc.) as outputs to the application based on the specified inputs.

MODEL DEFINITION AND MESHING

An injector positioned in the centre of a 2D cylinder shape was also considered GAMBIT 2.4.6 was used to construct the mesh. The engine's geometry and specifications are listed afterwards. Mesh creation is critical to getting correct results. The FLUENT, ANSYS 14.5 software was used to construct a quadrilateral mesh consistently across the study region. There are 10804 nodes and 21403 faces in the total mesh geometry. Meshed geometry may be seen in Fig.1.

Connecting rod length	:140 mm
Bore	:80 mm
Crank radius	:55 mm
Crank shaft speed	:1500 rpm

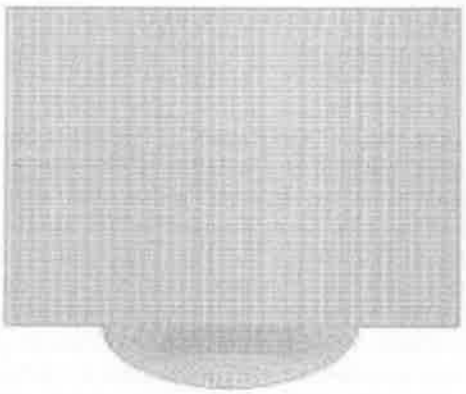

Fig.1 Meshed geometry of cylinder

GOVERNING EQUATIONS AND MODEL

In-cylinder diesel engines often use compressible turbulent flow as a combustion technique. High-pressure spraying adds complexity to the model by causing penetration and evaporation, as well as the involvement of several phases and components. The turbulence equation is one of the most basic

Primary School Robotics and STEM Education: A Pilot Study Using the H&S Electronic Systems Platform

G.Sampath Kumar[1],Ch Vijay Kumar[2],M.Suresh[3],J.Usha Sri[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

ABSTRACT

Teaching the basics of A.C.S. (Automated Control Systems) and programming through educational robotics applications is the focus of this study. The H&S Electronic Systems robotics package was employed in the STEM teaching method for this objective. Last, but not least, the interconnectedness of STEM (Science, Technology, Engineering, and Mathematics) is a priority (STEM). As a means of accomplishing these objectives while also encouraging students to take an active role in their education, educational robots may be a valuable resource. Students must work in groups to create, develop, and implement programmes to govern the behaviour of their robotic constructs, using worksheets that have been specifically prepared for the purpose of this assignment.. A final goal of this research is to examine and emphasise the positive effects of data analysis on students' education.

The following terms and concepts are often used in conjunction with educational robotics: STEM education, programming basics, and H&S electronic systems.

INTRODUCTION

robotics is the study of robots that can take the place of people in a variety of activities, including physical work and decision-making [1]. Even outside of Greece, educational institutions have been using robots since the late 1980s, both as a teaching topic and as an adjunct tool for teaching different ideas in fields such as mathematics, physics, engineering, and computer science.

Automation is also utilised to improve cognitive abilities such as problem solving, specific and abstract reasoning, critical thinking, and effective teamwork [3]. The programming and manufacturing of a robotic system are two separate processes. Learning to solve real-world issues in the classroom as well as in the real world is made easier when students learn how to use computational thinking and other cognitive processes to aid their learning [2, 4]. In order to come up with and answer an issue, a student is required to use logic, semantics, and sometimes even abstract thinking. Furthermore, the creation of the robot and its programming help to the student's socialising via the execution of the activities.

An effort was made in this research to employ instructional robots in primary school based on the STEM education theoretical framework. H & S Electronic Systems' Basic Robotic System platform's hardware and software environment was used to this end. As a result, a variety of group-based learning activities were developed to help instructors teach the foundational concepts and structures of programming and automatic control systems.

Educational Robotics and STEM Education

Educational Robotics

Students who have access to miniature robotic systems are tasked with putting them together and programming them to carry out a certain task for instructional reasons. Since educational robotics is founded on constructivism, particularly constructionism, from a pedagogical perspective [5, 6], it is considered a branch of classic constructivism. Thus, learners gain more effective knowledge as they actively participate in the design and production (manual and digital) of actual items that have significance to them in a more natural manner via the use of the learning environment.

The use of educational robots turns learning into a game that is more enjoyable, simpler, and more effective [7]. Individual activity and motivation may be positively influenced by the game-like feature of robotic structures in primary education [8].

Children are also given the opportunity to become scientists-inventors who find their own unique ideas and solutions, thereby increasing their sense of self-efficacy [9]. Students are more likely to pursue a career in science and technology if they are actively engaged in addressing real-world challenges.

As a result, students have the chance to establish a solid conceptual foundation for the reconstruction of their knowledge at a later time by engaging in circumstances that demand them to utilise and apply their knowledge from mathematics, science, technology, and engineering.

The use of educational robots encourages students to think creatively and imaginatively about what they will build and how they will accomplish their goals via the programming of their machines [11]. Construction of their robots is also a problem-solving

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UV-Near-Resonance Raman Scanning of 1,1-Bi-2-naphthol Solutions

Dhanunjaya Rao Kodali[1],Mohamad Jahangir Pasha[2],Doopati Pitchaiah[3],Manchala Ramesh[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

ABSTRACTS

Measurements of the normal and UV near-resonance Raman spectra of BN in basic solution were made and analysed, and the results were published. Ground state geometry, vibrational frequencies, off-resonance Raman intensities and depolarization ratios of 1,1-bi-2-naphtholate dianion were studied using density functional theory (DFT) computations (BN2-). The observed Raman bands were allocated in detail based on the estimated and experimental findings of i, I, and F. UV resonance Raman spectra showed a substantial increase in the 1612 cm-1 Raman band of BN compared to the conventional Raman spectrum. According to depolarization ratios for the 1366 and 1612 cm-1 bands, it is clear that both transitions polarizabilities contribute to the 1366 cm-1 band, whereas onlytransitions polarizabilities contribute to 1612.

Introduction

Chemists and biochemists depend heavily on chiral compounds. Because of their very stable chiral conformation, chiral 1,1-binaphthyl compounds have become more popular. Asymmetric organic synthesis and catalytic processes have previously used them extensively as chiral inducers. 1,2 1,1-bi-2-naphthol (BN) and its derivatives, which are optically active, are particularly important C2-symmetric molecules. 1,1-bi-2-naphthol is widely used as a starting point for the production of chiral binaphthyl compounds, on the other hand. It has been frequently employed as ligands for asymmetric metal complexes and has proven excellent performance in chiral recognition with this particular type of chemical. 3-6 Using chiral binaphthol-derived titanium complexes, Ishii et al. studied asymmetric catalysis of the Friedel-Crafts process with fluoral. 5aThe steric and electronic characteristics of the chiral BN ligands influence the result of a specific asymmetric transformation. It has been extensively researched using several spectroscopic approaches, including as electronic absorption, IR, and Raman spectroscopies, to determine its structure and characteristics. The VCD spectra of BN were measured by Setnicka and coworkers, who then used density functional theory (DFT) computations to assign the observed VCD bands. 7 Calculations based on DFT were used to investigate the mechanism of BN isomerization. 8 BN adsorbed on silver colloids was examined by Nogueira and coworkers for the first time using surface-enhanced Raman (SER) spectroscopy, and empirical assignments for the observed Raman bands were provided. 9 Due of its near-UV absorption, the UVRR spectrum of BN in diverse solutions is likely to be observed and may give information on both the ground and excited states. But to our knowledge, the resonance Raman (RR) spectra of BN have not yet been reported in the literature.While this is the case, new spectroscopic methods for probing molecule chirality, sum-frequency generation (SFG) of chiral solution, are now under development as novel spectroscopic tools10-18. These tools were reviewed by Belkin and Shen17a and Fischer and Hache17b. The chiral sum-frequency spectroscopy of electron transitions,12,15 the chiral sum-frequency spectroscopy of vibrational transitions, and the doubly resonant SFG (DR-SFG) have all been used to investigate R(S)-BN solutions as a prototype for chiral compounds. The new chiral electrooptic effect: SFG from optical active BN liquids in the presence of a dc electric field,16 as well as second-harm Many aspects of the sum-frequency vibrational spectroscopy (SFVS) studies of chiral BN solution are shared by resonance Raman spectra of BN solution. To begin, the Placzek invariants 1 for vibrational peaks in RR spectra show that the intensity of the chiral vibrational peaks in infrared-visible sum-frequency vibrational spectra from isotropic chiral liquids is proportional to the square of the corresponding antisymmetric Raman tensor element14. 20 Using direct resonance Raman spectroscopy, it is possible to investigate the relationship between the SFG and the antisymmetric Raman tensors. As a second example, substantial resonance enhancement, thorough mode assignment, and the ability to deduce vibronic coupling for the modes are all benefits of using RR spectroscopy for sumfrequencies in the vibrational spectrum.

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SOCIAL MODIFICATIONS OF INDIA'S FAMILY UNITS

J.Usha Sri[1],M.Suresh[2],Ch Vijay Kumar[3],G.Laxman[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

Abstract

The institution of marriage, like other social phenomena, is undergoing significant changes. Historically, monogamy has been widely accepted and practiced across all social strata. Some of the obvious changes taking place in the institution of marriage include the practice of getting children's approval before getting married, the decline in marital stability, and the increase in the avarice of the bridegroom's family. Numerous causes, including economic growth, the introduction of new technologies, rising levels of materialism in society, and legislative initiatives, have contributed to shifts in the marital landscape. Gay and lesbian relationships, cohabitation, and the "DINK Syndrome" are contemporary social phenomena that were unknown in classical Indian culture. The significance of marriage has not lessened, despite the emergence of new trends.

INTRODUCTION

Although varied methods of finding a life partner and marriage structures exist, marriage is a key social institution in every culture throughout the globe. That it legalized marriage between sexes for the sake of starting a family, having children, and caring for them is a major flaw of the system (Majumder, 1977). Because of its centrality in the formation of human capital resources and the authority bestowed upon it to shape the actions of individuals, families, and communities, marriage is the most fundamental and significant social institution (Sriram, 1993). It connects the past with the present and serves as a vital means of nurturing, connecting, and socializing(Desai, 1995).The only constant in life is change. Change is the one constant in this ever-shifting planet. Family and marriage are two social institutions that are feeling the effects of modernization. Both of these stalwart establishments have weathered the storms of millennia without a hitch. The institution of marriage in India has experienced substantial change, including but not limited to the age at which people marry, the prevalence of divorce, the shortening of wedding ceremonies, and the elimination of lavish wedding celebrations. a few adjustments areacceptable to most people but not to others because of their negative effects on society. The purpose of this essay is to investigate marriage as an institution and the factors contributing to the changing nature of marriage in India.

Methodology

The research and analyses are based entirely on secondary sources. The major objective of this study wasto highlight the modification of traditional marital practices in modern India. These findings are the resultof a great deal of investigation and are based on old Manu scripts, books, journals, printed material, and other works that have dealt with this topic.

How We Got Together and Why We're Not Together Anymore

The first known documentation of a wedding takes place in Mesopotamia around the year 2350 B.C. In all likelihood, our ancestors were part of a larger group known as a "primal horde" (Coontz, 2005). The primaeval horde did not practice monogamy; rather, both sexes mated with several partners. It was impossible for men to develop friendships, andPrehistoric moms and infants were well ahead in development compared to today's when both sexes are completely grown at delivery (Fisher, 2004).Some 5,000 years ago, when the plough was devised and utilized widely, along with draught animals, there was a shift in how people interacted with one another. Increased agricultural production led to the development of larger towns, which in turn made it possible to divide and specializelabor, leading to the rise of far more sophisticated civilizations. Marriage and family life are profoundly impacted by major socioeconomic shifts. In certain societies, especially in more urbanized agricultural nations, spouses are expected to share the financial burden of raising a family approximately equally.The most noticeable impact of industrialization on the family institution was the separation of work and

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Using Linear Programming Techniques to Address Fuzzy Linear Programming Problems

Ch.Vijay Kumar[1],M.Suresh[2],G.Laxman[3],J.Usha Sri[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

ABSTRACT

Engineering design is typically plagued with inaccuracies due to the complexity of many real-world engineering systems. Fuzzy linear programming issues play an important part in fuzzy modelling, which is able to express uncertainty in the real world. Dubois and Prade's LR fuzzy number is one of the most practical themes in recent research, with several useful and simple approximation arithmetic operators on it. Fuzzy vectors occur as a vector of triangular fuzzy integers in various vector calculations. To begin, we are looking for a nonnegative fuzzy vector x in this situation fuzzy numbers. Here, our main scope is finding some nonnegative fuzzy vector ~x in which maximizes the objective function ~ ~ z = c x so that ~ ~ A x = b , where A and ~b are a real matrix and a fuzzy vector respectively, and n c 1× is a real vector too.

Keywords: Fuzzy arithmetic, Fuzzy linear programming, Fuzzy number

1 Introduction

A wide range of fields have benefited from fuzzy set theory, including control theory, management science, mathematical modelling, and industrial applications. Tanaka et al. [6] initially suggested the idea of fuzzy linear programming (FLP) on a general-level. This was followed by a large number of writers considering different FLP difficulties and coming up with a variety of solutions. Fuzzy numbers may be compared using ranking functions [1,4,5]. In particular, these approaches are the most convenient. Many writers employ this approach by defining an analogous FLP issue and then using the optimum solution of that solution as the FLP solution. To solve the linear programming issue with fuzzy variables and its dual, fuzzy number linear programming problem directly, we used a generic linear ranking function in [4]. A linear programming issue using triangular fuzzy integers is the focus of this research. New methods for addressing FLP issues without ranking functions have been developed by our team. In addition, we provide an example to demonstrate our strategy.

2 Preliminary

In this section we review some necessary backgrounds of the fuzzy theory inwhich will be used in this paper. Below, we give definitions and notations takenfrom[2].

Fuzzy numbers

Definition2.1. A fuzzy number $\tilde{A}$ is a convex normalized fuzzy set on the real line R such that:

1) There exists at least one $x_0 \in R$ with $\mu_{\tilde{A}}(x_0)=1$.

2) $\mu_{\tilde{A}}(x)$ is piecewise continuous.

Let us assume that the membership function of any fuzzy number $\tilde{A}$ is as follows:

$$\mu_{\tilde{A}}(x)=\begin{cases} 1-\dfrac{m^A-x}{\alpha^A}, & m^A-\alpha^A \le x < m^A \\ 1-\dfrac{x-m^A}{\beta^A}, & m^A \le x \le m^A+\beta^A \\ 0, & otherwise \end{cases}$$

where m^A is the mean value of $\tilde{A}$ and α^A and β^A are left and right spreads, respectively and it is termed as **triangular fuzzy number**. We show any triangular fuzzy number by $\tilde{A}=(m^A,\alpha^A,\beta^A)$. Let $F(R)$ be the set of all triangular fuzzy numbers.

Definition2.2. A fuzzy number $\tilde{A}=\{(x,\mu_{\tilde{A}}(x)) \mid x \in R\}$ is nonnegative if and

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An Autonomous Vehicle Fault Detection and Diagnosis System Based on Hybrid Approaches

[1]B Usha,Assistant Professor,
[2]Swapna Kondiseeti,Assistant Professor,
[3]Firdose Fathima,Associate Professor,
Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M), Hyderabad,R.R.Dist.-501505.

Abstract*—An accurate fault detection and diagnosis system is of great importance for autonomous vehicles to prevent the potential hazardous situations. In this paper, we propose a fault detection and diagnosis system based on hybrid approaches. First, to detect the state faults of the autonomous vehicle, One-Class Support Vector Machine (SVM) method is adopted to train the boundary curve which separates the safe domain and unsafe domain. Meanwhile, a Kalman filter observer is designed based on the linear kinematic vehicle bicycle model to predict the current position of the vehicle, and after obtaining the residuals between prediction and measurement, Jarque-Bera test is applied to check the normality of the residuals probability distribution to monitor whether the trajectory deviates. Furthermore, we design a fuzzy system to distinguish the types of the detected faults based on a modified neutral network, in which a membership function layer is added after the input layer. With the strong self-learning ability of neutral network, the initial membership function of the fuzzy system is updated through black box test and can indicate the probability of each fault type. Experiments on the real autonomous vehicle platform 'Xinda' and performance comparison with other fault detectors validate the effectiveness of these methods and the usability of the fault detection and diagnosis system.

***IndexTerms*—fault detection and diagnosis for autonomous vehicles, One-Class SVM, residuals distribution inference, neutral network, black box test**

I. Introduction

Tracted public attentions since its potential to improve road traffic efficiency and road capacity [1],[2]. However, safety issue for autonomous vehicles is still one of the pain points that hinders the commercialization of self-driving. Thus, a fault detection and diagnosis (FDD) system is vital to an autonomous vehicle.

A fault is defined as an unpermitted deviation of at least one characteristic property or parameter of the system from the usual condition [3]. Faults can be classified as sensor faults, actuator faults, and component or process faults [4][5]. Sensor faults emphasize the faults that lie in the input module and actuator faults address the faults that lie in the output module. While, component or process faults refer to the faults that occur in other modules of the system or in the support devices of the whole system, for example, the power unit. For an autonomous vehicle, faults can be originated from sensors [6][7], like a sensor breakdown, or vehicle itself, like mechanical faults. When faults occur, abnormality can be reflected in various aspects such as the output of the system, measured signals or data collected from sensors, etc.

There are three tasks to the fault diagnosis, including fault detection, fault isolation, and fault identification. Fault detection is to check whether there is malfunction or fault in the system, fault isolation is to locate the faulty component and fault identification is to determine the type of the faults [4]. The concept of redundancy is the core for fault diagnosis to improve the reliability of the concerned system, either hardware redundancy or analytical redundancy. Hardware redundancy is to compare the data from duplicative devices, which is reliable and is necessary for key component but would be too costly and not practical to equip the whole system. While, analytical redundancy uses mathematical and statistical methods with some estimation techniques for fault detection, isolation and identification, which is the mainstream for fault diagnosis. Generally, these analytical techniques can be categorized as model-based approaches, signal-based approaches and knowledge-based approaches [4][8].

As early as 1976, Willsky presented the key concepts of analytical redundancy for model-based fault detection and diagnosis in [9], and model-based approaches can be further categorized as parity equations [10][11], parameter estimation methods [12], and observer-based methods with Luenberger observers [13] or Kalman filters [14]. In model-based methods, the model of the process or the system should be available. Based on the model, algorithms are deployed to monitor the consistency between the measured outputs of the practical system and the model-predicted outputs [4].

Signal-based methods utilize measured signals and these methods assume that faults in the process are reflected in the measured signals. By extracting the features from the measured signals, diagnostic decision is made based on the symptom (or pattern) analysis and prior knowledge on the symptoms of the healthy systems [4]. In [15], a structured and comprehensive overview of the research on anomaly detection is provided, which focuses on finding patterns from data that do not conform to expectation.

Since a priori known model or signal patterns are not always possible to be obtained, the knowledge-based fault diagnosis methods are developed. Knowledge-based methods, also known as data-driven methods, require a large volume of historic data to learn the features of a process or a system. Based on the learned features, consistency between the observed behavior of the operating system and the knowledge base is checked to judge whether faults occur [8]. In [16], comprehensive fault diagnostic methods were reviewed from the data-driven perspective and in [17], some techniques have

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This article describes a Buck and Boost Grid-Connected PV Inverter that maximizes power output from two PV arrays under unfavorable climatic circumstances.

[1] Dr. K.Suneeta Professor, [2]Mr. N.Laxman Assistant Professor
[3]Mr. B.Sreenu Assistant Professor
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

Abstract:

For maximum power extraction from two serially linked subarrays, a single phase grid-connected transformerless photovoltaic (PV) inverter, which may work in either buck or boost mode and can extract the maximum power concurrently from both subarrays, is presented in this study. When employing an inverter that can function in buck or boost mode depending on the application, it is much less limiting to use a minimum number of serially linked solar PV modules to construct a subarray. Because of this, when each subarray is exposed to a new set of environmental factors, the power yield from each subarray grows. For the leakage current associated with PV arrays to stay within a given range of values, the topological configuration of the inverter and its control technique must be such that high-frequency components are not present in the common mode voltage. On top of that, a high level of productivity is maintained during the whole working range. In order to determine whether or not a project is feasible, a detailed study of the system is carried out, leading to the creation of a mathematical model of the system. A 1.5 kW laboratory prototype is needed to show the design's correctness via extensive testing..

Index Terms—Buck and Boost based photovoltaic (PV) inverter, grid connection, maximum power point (MPP), mismatched environmental condition, series connected module, single phase, transformer less.

INTRODUCTION

For solar-electric (PV) array design, one of the most critical issues is making sure that individual PV modules function at their optimum capacity even when exposed to varying external circumstances because of variances in insulation level and/or operating temperature. The output of a solar-electric array is significantly reduced when the operational parameters of the modules are incompatible. Solving the issue of MECs (mismatched environmental conditions) gets more difficult as the number of PV modules in a solar PV array increases. To meet the voltage requirements of an inverter in a grid-connected transformer-less (GCT) PV system, a high number of series-linked modules are necessary. A GCT PV system requires a certain number of series-linked modules, as shown in Figure 1. The MEC substantially reduces the power output of a GCT PV system, such as a single phase GCT (SPGCT) inverter based system produced from H-bridges or a neutral point clamp (NPC) inverter based system. As a result of the MEC in a PV system, a variety of solutions have been proposed in the literature. Each of these strategies is thoroughly examined in this paper, which provides a detailed description.

Tracking a PV array's global maximum power point (MPP) using MPPT, a complex algorithm, may maximise the amount of energy harvested during MEC by locating the array's MPP. It is possible to maximise the quantity of power harvested during MEC by choosing the right connection between PV modules or by monitoring the global maximum power point (MPP) of the PV array. In the case of low-power SPGCT PV systems, these techniques are ineffective. For SPGCT solar systems, altering the electrical connections of solar panels to reconfigure them as an array is unsuccessful because of the significant increase in components and escalation in complexity. PV modules in an array have been individually regulated, either via the use of a power electronic equalisation system or by connecting a direct current to direct current converter, in order to capture the maximum power possible from each PV module during MEC. There are many components required for systems that employ a power electronic equaliser, which adds to the expense and complexity of operation. PV modules are all operated at their maximum power point (MPP), and the generation control circuit (GCC) of the system manages the difference in power across modules. Each module in an array may be compensated for its shunt current and series voltage, as stated in the system. This will increase the array's power yield. Specialized DC-DC converters incorporated into each PV module are used in PV system integration solutions. Due to the huge number of converter stages and components used in the above systems, their efficiency is low, and as a consequence, they have the same constraints as the power electronic equalizer-based system described above. By connecting together a number of modules sequentially to make a string, it is feasible to generate a string that may be used under MPP in the same way as each individual module. Even in this case, the total number of parts and the level of complexity of the control system are only somewhat reduced.

Optimization Algorithm Based on Biogeography with Enhanced Harmony Search for Economically Constrained Load Dispatching

G.Sampath Kumar[1],Manchala Ramesh[2],Machireddy Chandra Sekhar[3],Mohamad Jahangir Pasha[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

Abstract

HSA, IHS, and BBO algorithms are compared in this work for handling restricted economic load dispatch issues in a power system with a limited number of available resources. New solution vectors are generated using the IHS algorithm, which makes use of numerous harmony memory consideration rates and dynamic pitch adjustment rates. They were tested in a test system with twenty producing units with ramp rate restrictions and valve point loading constraints, and the algorithms worked well. IHS approach outperforms both Harmony search and Biogeography-based optimization algorithm in terms of total fuel cost and convergence characteristics, as shown by the simulation results.

Introduction

Customers' requests for electrical energy must be met promptly and efficiently, as mandated by national legislation, by the vast majority of the world's electric power companies. Despite meeting the country's power needs, the utility must also guarantee that the electricity is produced at the lowest possible cost. This means that the entire demand must be distributed among the generating units in a way that reduces the system's overall generation cost while still meeting the economic needs of the system. There are several ways to calculate how much power is created by each committed producing unit in order to keep overall costs down while still meeting demand for electricity.

Economic dispatch is one such method. "The operation of generating facilities to provide energy at the lowest cost to reliably supply customers, recognising any operational restrictions of generation and transmission infrastructure" might be termed as "economic dispatch". Allocating generating among committed units in order to meet limits and reduce energy consumption in terms of dollars per hour is an essential optimization job in power system operation. Figure 1 depicts a simple heat rate curve, which depicts the input-output relationship of a thermal unit (a). When the heat rate curve is converted from Btu/h to $/h, the fuel cost curve depicted in Fig. 1 may be seen (b)

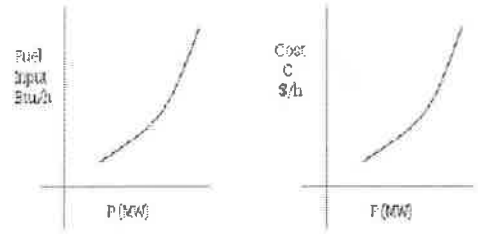

Fig. 1(a) Power Vs Fuel input Fig. 1(b) Power Vs Cost

A variety of derivatives-based approaches, including as lambda iteration, gradient technique, Lagrangian Multiplier method, Dynamic Programming method, were previously used to tackle ELD issues. Because to valve point effect, ramp rate limits, and so on, contemporary generators' input-output characteristics are non-linear. Genetic algorithm (GA), particle swarm optimization (PSO), and artificial bee colony (ABC) optimization approaches have recently been used to tackle the ELD issue with non-smooth cost functions, and have proved effective. The Harmony search algorithm is one of these more contemporary methods. As in improvised music, the goal of the "harmony search" (HS) algorithm is to find the best possible harmony by analysing the pitches of the individual artists involved. The process of musical improvisation resembles that of optimal design, which is concerned with arriving at the best possible solution. Harmony is defined by the pitch of each musical instrument, exactly like a collection of variables. The Upgraded Harmony Search Algorithm (IHSA) is an improved version of HS. This article discusses the IHS method for solving the ELD issue with the addition of Ramp Rate limitations.

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A Useful Overview of Computerized Recurrence Modulator-Demodulator Research and Remote Sensor Organization

[1]LAXMAN BAVANDLAPALLY [2]JOGU PRAVEEN,[3]POLU BALKUMAR REDDY, [4]P.SHANKAR

Abstract— ***In recent years, applications of wireless technologies can be seen everywhere in particular the applications of Internet of Things (IoT). The platforms at which wireless sensor networks (WSNs) are composed have witnessed great advances. In this article, a survey on WSN platforms and their characteristics such as hardware components, sensing capabilities, operating systems, programming languages, networking protocols, energy aspects, etc. is presented. This paper presents the synthesis of a digital frequency modulator-demodulator, the design of its main block non-coherent digital frequency demodulator containing a low- pass active filter and an amplitude detector, the performance of simulation studies, implementation of a laboratory model on developed complete technical documentation and presentation of the results obtained by his experimental study.***

1. INTRODUCTION

Micro-electro-mechanical systems (MEMS) technology, wireless communications, and digital electronics have made WSNs a considerable improvement over traditional sensors in many ways. Design and applications in embedded and wireless networked sensors are gaining tremendous developments integrated with the new era of technologies like "smart sensors", Internet of Things (IoT) and cloud computing [1-4]. It's not uncommon for these systems to be compact, low-cost devices with limited sensing, data processing, and wireless functionality. IoT technology, on the other hand, is defined by the connectivity of many networked embedded devices used in everyday life that are connected to the Internet. Many diverse systems, including as those found in homes and workplaces as well as in the military and transportation sectors are being targeted by this technology [5].

The transmission of information at long distances is related to the use of modulation and demodulation processes and corresponding devices - modulators and demodulators. Initially, the amplitude, frequency and phase analog modulators/demodulators have found a wide application in practice [7]. The improvement of communications systems in recent years has led to their digitization - of the input information signals, their method of processing and their transmission over the communication channel.

,M.Tech Assistant Professor, lax406@gmail.com
, M.Tech Assistant Professor, jpraveen.pec@gmail.com
,M.Tech Assistant Professor, balureddy5586@gmail.com
, M.Tech Assistant Professor, shankardvk48@gmail.com
Department: ECE
Nagole Univerisity Engineering and Technology Hyderabad

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A Wide Voltage Gain Range Switched-Capacitor Bidirectional DC-DC Converter for Electric Vehicles Using Hybrid Energy Sources

[1]*Mr. V.Saidulu* [2]*Dr.*
[3]*Mr. Venkateswar Rao*

Abstract— ***An exchanged capacitor bidirectional DC-DC converter with a high advance up/step-down voltage gain is proposed for electric vehicles (EVs) with a half breed vitality source framework (HESS). The converter displayed has the benefits of being a basic circuit, a diminished number of parts, a wide voltage-gain extend, a low voltage stress, and a shared opinion. Likewise, the synchronous rectifiers permit zero voltage exchanging (ZVS) turn-on and turn-off without requiring any additional equipment, and the proficiency of the converter is improved. A 300W model has been created which approves the wide voltage-gain scope of this converter utilizing a variable low-voltage side (40V-100V) and to give a consistent high-voltage side (300V). The greatest effectiveness of the converter is 94.45% in step-down mode and 94.39% in step-up mode. The test results additionally approve the possibility and the adequacy of the proposed topology.***

Index Terms—Switched-capacitor, Synchronous rectification, Bidirectional DC-DC converter, EVs, HESS, Wide voltage-gain range

INTRODUCTION

To address the challenges of fossil fuels as the primary energy source for transport (including reducing stockpiles and polluting emissions) [1]-[2], electric vehicles (EVs) powered by battery systems with low or zero polluting emissions, are increasing in popularity. Although the developed advancement of batteries can provide higher population performance for EVs, the unlimited charging or discharging current (i.e. inrush current) from batteries will result in shorter battery cycle life, as well as reducing the efficiency [3]. The combination of a battery and super-capacitors as a hybrid energy source system (HESS) for electric vehicles is

Assistant Professor
K.Suneeta Professor

Assistant Professor
Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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An analysis of the efficiency of waste-derived heat recovery systems using thermoelectric mills and heat pipes

[3]CHERIPALLY NAGAMANI [4]P NAVEEN REDDY

Abstract: *Many individuals have been shocked by the inefficiency of the internal combustion engine. (ICE). An engine's exhaust pipe and cooling system must be used to disperse the majority of this energy. By focusing on immediate efficiency gains, engineers are no longer able to improve engines' performance. A potential technology for this purpose has been shown to be TEGs (thermoelectric mills) and heat pipes. Thermal energy generation and heat pipes may be used together. The machine's thermal conductivity may be reduced by the use of heat pipes. TEGs' temperature rule may be lowered in the same manner. TEGs aren't as successful as they may be because of their low performance and temperature limits. The technique has a few drawbacks, including as temperature limits and sudden temperature changes. This combination of methods may be used to recover all solid-state waste heat.*

INTRODUCTION

Pre-market testing is necessary to ensure that a new vehicle is in compliance with the most current emission regulations. People are having a harder time travelling across the globe unhindered. CO2 emissions and fuel use are strongly linked. Automobile makers must reduce their fuel consumption in order to meet the new regulations. According to the European Driving Cycle, ICE cars in Europe have been more fuel efficient during the previous four years (EDC). Coolant and exhaust gases will lose more than half of their heat potential. The alternator may be less stressed if heat produced by the alternator can be converted into power. TEGs and heat pipes may be used to reclaim heat that would otherwise be wasted. These gadgets make travelling more convenient due to their small size and solid-state construction. TEGs use the Seebeck effect to create power, as seen in Fig. 1. It is possible to create a TEG by thermally linking tiny N- and P-type semiconductor material components. Heating one side and then cooling the other generates voltage. For energy production, TEGs may be useful in regions that experience large temperature swings. This device can generate power under any condition. [2] When heated, the Carnot efficiency improves their performance. Approximately a 20% Carnot efficiency may be obtained when the temperature range is big enough to

produce heat (TEG). The thermoelectric figure of merit (ZT) may be used to compare different TEG efficiencies at the same temperature. As ZT rises, so does the TEG's efficiency. The availability of low-ZT gadgets is dwindling as the years go on. Allowing

WHR systems to be extended indefinitely, TEGs are very small and quiet. Rust and wear are not a problem since there are no moving parts or chemical reactions to take place. Rankine cycle waste heat

Department of Mechanical Engineering,
NagoleUniverisity Engineering and Technology Hyderabad

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An Innovative Approach to Fuzzy Linear Programming through Linear Programming

Mr. B.RajuAssistant Professor, Mr. N.Mahesh Assistant Professor

ABSTRACT

Engineering design is typically plagued with inaccuracies due to the complexity of many real-world engineering systems. Fuzzy linear programming issues play an important part in fuzzy modelling, which is able to express uncertainty in the real world. Dubois and Prade's LR fuzzy number is one of the most practical themes in recent research, with several useful and simple approximation arithmetic operators on it. Fuzzy vectors occur as a vector of triangular fuzzy integers in various vector calculations. To begin, we are looking for a nonnegative fuzzy vector x in this situation fuzzy numbers. Here, our main scope is finding some nonnegative fuzzy vector ~x in which maximizes the objective function ~ ~ z = c x so that ~ ~ A x = b , where A and ~b are a real matrix and a fuzzy vector respectively, and n c 1× is a real vector too.

Keywords: Fuzzy arithmetic, Fuzzy linear programming, Fuzzy number

1 Introduction

A wide range of fields have benefited from fuzzy set theory, including control theory, management science, mathematical modelling, and industrial applications. Tanaka et al. [6] initially suggested the idea of fuzzy linear programming (FLP) on a general-level. This was followed by a large number of writers considering different FLP difficulties and coming up with a variety of solutions. Fuzzy numbers may be compared using ranking functions [1,4,5]. In particular, these approaches are the most convenient. Many writers employ this approach by defining an analogous FLP issue and then using the optimum solution of that solution as the FLP solution. To solve the linear programming issue with fuzzy variables and its dual, fuzzy number linear programming problem directly, we used a generic linear ranking function in [4]. A linear programming issue using triangular fuzzy integers is the focus of this research. New methods for addressing FLP issues without ranking functions have been developed by our team. In addition, we provide an example to demonstrate our strategy.

Fuzzy numbers

2 Preliminary

In this section we review some necessary backgrounds of the fuzzy theory inwhich will be used in this paper. Below, we give definitions and notations takenfrom[2].

Assistant Professor
Department- eee
Nagole Univerisity Engineering and Technology Hyderabad

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An Innovative Approach to Fuzzy Linear Programming through Linear Programming

Mr. B.Raju, Mr. N.Mahesh
Mr. B.Mahender

ABSTRACT

Engineering design is typically plagued with inaccuracies due to the complexity of many real-world engineering systems. Fuzzy linear programming issues play an important part in fuzzy modelling, which is able to express uncertainty in the real world. Dubois and Prade's LR fuzzy number is one of the most practical themes in recent research, with several useful and simple approximation arithmetic operators on it. Fuzzy vectors occur as a vector of triangular fuzzy integers in various vector calculations. To begin, we are looking for a nonnegative fuzzy vector x in this situation fuzzy numbers. Here, our main scope is finding some nonnegative fuzzy vector ~x in which maximizes the objective function ~ ~ z = c x so that ~ ~ A x = b , where A and ~b are a real-matrix and a fuzzy vector respectively, and n c 1× is a real vector too.

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1 Introduction

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Assistant Professor

Assistant Professor

Assistant Professor

Department- eee
Nagole Univerisity Engineering and Technology Hyderabad

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Considerations for the Generalized Finite Difference Method in Dynamic Analysis

J.Usha Sri [1],Dr.Tota Srinivas[2],Dr.Mamidi Girija [3],M.Suresh [4],

ABSTRACT

In this study, the generalized finite difference technique (GFDM) is used to perform a dynamic analysis of beams and plates. For beams and plates, we provide the stability criteria for an entirely explicit method. Beam and plate point cloud irregularity measures are provided. Results from solving problems involving beam and plate vibrations demonstrate the reliability of the method for clouds of nodes with irregular shapes.

INTRODUCTION

From the traditional finite difference approach came the generalized finite difference method (GFDM) (FDM). It doesn't matter whether the point cloud you're working with is uniform or very irregular; GFDM may be used on it [1]. The goal is to employ a method called moving least squares approximation to derive explicit difference formulas that can be plugged into the partial differential equations [2]. Benito, Urea, and Gavete have made several promising contributions [3-8] to the refinement of this technique. The GFDM is used to solve hyperbolic and parabolic equations, as shown in [9]. In this study, we provide an explicit approach [10-13] for employing the GFDM to solve dynamic analytic issues involving beams and plates. Specifically, the paper follows this structure. The first part is an introduction. Section 2.1 details the explicit GFDM scheme for beams, and Section 2.2 details the explicit GFDM strategy for plates, both of which are described in Section 2 of this work.

7.

There are two types of truncation errors that are studied in this paper: beam truncation errors in Section 3.1.1 and plate truncation errors in Section 3.1.2. Section 3 focuses on the convergence, consistency, and von Neumann stability. In Section 3.2.1, we examine von Neumann stability for beams, and in Section 3.2.2, we do the same for plates. In Section 4, we look at how the consistency of a cluster of nodes is related to its erratic nature. The index of irregularity of a cloud of nodes is defined for beams in Section 4.1, and for plates in Section 4.2. Some GFDM for solvin applications are discussed in Section 5. Included are difficulties in doing a dynamic study of beams. In Section 6, we look at how the GFDM has been used to address issues in the field of dynamic analysis of plates. Finally, some findings are presented in Section

Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505

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A Local Metric for Defocus Blur Identification

[1]*Anishetty Shiva Rama*
[2]*D Navya,*
[3]*Firdose Fathima, ,*

Abstract—The challenge of detecting defocus blur in computer vision and digital image is complex and time-consuming. Designing local sharpness metric maps has been a major focus of previous work on defocus blur detection. For defocus blur detection, this research provides a simple but successful solution that relies on the feature learning of several convolutional neural networks (ConvNets). In a supervised way, the ConvNets learn the most locally important aspects of the picture at the super-pixel level. We can automatically derive the local sharpness measure by altering the principal component vector by extracting convolution kernels from the trained neural network structures and using principal component analysis. It is also recommended to use the inherent properties of the hyperbolic tangent function to fine-tune the defocus blur detection result from coarse to fine. Our suggested strategy consistently outperformed earlier state-of-the-art methods in the experiments. Defocus blur, feature learning, local sharpness matrices, ConvNets, and PCA are all terms that may be found in the index.

INTRODUCTION

D The most prevalent cause of EFOCUS blur in digital photographs is an optical imaging system that is out of focus. Imaging systems all have a fixed depth of field (DOF). Distance of focus relates to how far the camera can see around the picture plane. During the picture generation process, when the camera focuses on the object plane, and the backdrop is beyond that plane or beyond the depth of field (DOF) distance, defocus blur develops. Defocus blur is a useful tool in digital photography for narrowing down the scope of a scene's details. In order to draw the viewer's attention and accentuate the primary topic, blurring the foreground and background is a useful technique. As a result, computational image processing and scene interpretation may be hindered by a blurred backdrop. In order to identify a somewhat blurry picture, blur algorithms are used. In computer vision and digital imaging, the

Krishna,Associate Professor,
Assistant Professor,

Associate Professor

Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-50150

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Metal Members' Elastic-Plastic Load-Carrying Potential

THIRUNAGARI SRIKANTH,HARIKRISHNA

Abstracts.

The load-sporting capacity of metallic structures and individualssubjected in most cases to bending relies upon in large measure on neighborhood stability oftheir compressed flanges and bending webs in determined cross-sections andareas. relying on nearby balance, the elastic or plastic, ultimately theelastic-plastic evaluation and layout may be implemented. The real standards forlayout of steel structures comprise extraordinarily unique policies for elasticanalysis through the elastic idea and for plastic analysis by using the plastic principle.The elastic-plastic analysis and layout of metallic contributors are in the meantimestill complex from theory, fashionable and application factor of view. Thereal elastic-plastic behavior of the metallic members is complex electricityand balance problem. consequently, the representative experimentalknowledge and outcomes approximately the real elastic-plastic behavior andmechanisms of failure of the metallic individuals were very important fromthe medical and implemented factors. the writer of paper realized in previoustime the huge experimental research inside the range of this purpose. Thepaper contains selected understanding and outcomes of the precedingexperimental-theoretical research of the elastic-plastic nearby stabilityof the steel members subjected more often than not to bending. The good enoughslenderness – stress relation and methodology for sensible calculation ofthe elastic-plastic bending load-sporting ability of the metallic go-sectionsand participants are offered inside the paper.

1 Introduction

The load-carrying capacity of steel structures and members subjected mostly to bending depends in large measure on the local stability of their compressed flanges and bending webs in decided cross-sections and areas. Depending on local stability, the elastic or plastic, eventually elastic-plastic analysis and design can be applied. The actual standards for design of steel structures contain relatively detailed rules for elastic analysis by the elastic theory and for plastic analysis by the plastic theory. The elastic-plastic analysis and design of steel structures and members is meanwhile still problematic from theory, standard and application point of view, [1-3]. The paper contains selected knowledge and results of the previous experimental-theoretical investigation of the elastic-plastic local stability of the steel members subjected mostly to bending. The adequate slenderness – strain relation and methodology for practical calculation of the elastic-plastic bending load-carrying capacity of steel cross-sections and members are presented and compared with procedures that are applied in some selected standards.

2 Local stability and classification of steel cross-sections

Department of CIVIL Engineering,
Nagole Institute of Technology & Science,
*Mail ID: thirunagarisrikanth.nits@gmail.com,Mail ID:*harikrishna.nita@gmail.com
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

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HEAVY INDUSTRIES' MINE WORKERS' SAFETY SYSTEM

[1]MOHAMMED MUJEEBULLAH, [3]POLU BALKUMAR REDDY,
[3]POLU BALKUMAR REDDY, [4]LAXMAN BAVANDLAPALLY

Abstract: *This paper describes the work that was done to design and construct a prototype mine protection device using a wireless sensor network, with the aim of creating a safety system to monitor the environmental parameters of the mining region. A overview of the most recent studies on miner health and welfare, as well as mine safety initiatives, is included. Subsystems of the test system are then simulated. The hardware consisted of electrical circuits with a microcontroller as the primary processing unit. A graphical user interface is often used.*

Mine Security; Wireless Sensing Networks; WIFI Module; Arduino Mega; LCD Display; Sensors

1. Introduction

In terms of worker safety and health, a mining operation is a hazardous enterprise. These dangers arise from the various methods used to harvest various minerals. The higher the danger, the deeper the mine. These safety concerns are particularly concerning in the coal industry. As a result, worker safety should always be a top priority in any kind of mining, whether it's for coal or other minerals. Because of the difficulties with ventilation and the possibility for collapse, underground coal mining poses a greater danger than open pit mining. In all kinds of mining, however, the use of heavy equipment and the techniques used during excavations pose a safety risk.Modern mines often employ a variety of safety measures, worker education and training, and health and safety regulations, all of which result in significant changes and advances in both opencast and underground mining safety. Coal has traditionally been India's main source of energy, and it has played a key role in the country's fast industrialization. Coal is responsible for about 70% of all power production, making its significance in the energy industry unavoidable. However, the manufacturing process generates additional byproducts, which pose a possible danger to the environment and the individuals involved. In lieu of that, the current effort is a genuine endeavor to analyze the gravity of the situation and develop a real-time detection monitoring system based on ZigBee technology.

2. SURVEY ON LITERATURE:

This paper describes the work that was done to design and construct a prototype mine protection device using a wireless sensor network, with the aim of creating a safety system to monitor the environmental parameters of the mining region. A overview of the most recent studies on miner health and welfare, as well as mine safety initiatives, is included. Subsystems of the test system are then simulated. The hardware consisted of electrical circuits with a microcontroller as the primary processing unit.

, M.Tech Assistant Professor,m.mujeebullah117@gmail.com
, M.Tech Assistant Professor, narendarburri@gmail.com
Y,M.Tech Assistant Professor, balureddy5586@gmail.com
,M.Tech Assistant Professor, lax406@gmail.com
Department:ECE
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DESIGN AND ANALYSIS OF 16nm GNRFET AND CMOS BASED LOW POWER 4Kb SRAM ARRAY USING 1-BIT 6T SRAM CELL

[1]NENAVATH DASHARATH ,M.Tech
[2]THOTA SRAVANTI M.Tech
[3]JOGU PRAVEEN, M.Tech
[4]CHEEKATYALA ANJAN KUMAR ,M.Tech

Abstract:

With the evolution in the microelectronic applications like high speed processors, multimedia and in current electronic communication for artificial intelligence devices and IOT necessitates bigger SOC SRAM arrays for high performance with low power consumption and less space. Generally, CMOS based technologies are most extensively utilised for the construction of 6T SRAM cell. When the nanoscale technology is scaling down CMOS devices are usually confronting with leakage current and short channel impact. The constant scaling of CMOS technology restricts the performance of 6T SRAM cell in terms of leakage power. Leakage current is the biggest contributor in the power consumption of SRAM. So, the researchers have invented GNRFET technology to compensate the CMOS technology. Graphene Nano Ribbon Field Effect Transistor is a three terminal device similar to MOSFET, here the semiconducting channel is created using graphene. In this study employing 1-bit 6T SRAM cell, 4kb memory array is developed using CMOS and GNRFET technologies at 16nm technology with supply voltage of 1v. Initially 4x4, 16x16, 32x32 SRAM arrays are created in two technologies and the parameter such as read delay, write delay and average power consumption are evaluated and the results are compared for the two technologies using HSPICE tool.

Keywords: SOC, SRAM, CMOS, GNRFET, MOSFET, HSPICE tool, read delay, write delay, average power.

1. INTRODUCTION

The organisation of embedded memory in current very large-scale integration (VLSI) systems has progressed to a more sophisticated level. Random access memory cells are generally divided into two types: static random-access memory (SRAM) cells and dynamic random-access memory (DRAM) cells. When compared to SRAM cells, which are implemented with transistors and latches, DRAM cells are implemented with capacitors and a single transistor, which takes a long time to charge and discharge the capacitors for storing and retrieving data, as well as consuming a significant amount of power during the process. Because of this benefit, SRAM cells are commonly employed in SOC devices which are semiconductor-based electronics [1].

As a result of the increasing need for power reduction and improved performance in modern SOC devices, several SRAM cells designs have been presented that are optimized for high performance. However, the 6T SRAM cell is often regarded as offering an excellent balance between size and performance. To boost performance, SOC devices make advantage of bigger SRAM arrays than are typically seen in other devices. Consequently, the effect on area resulting from the incorporation of a bigger SRAM array on the chip results in an indirect increase in power consumption, chip size, and cost [2]. When it comes to standard CMOS and GNRFET-based 16nm technology SRAM arrays, 1-bit 6T SRAM cells have been used to create them in the age of nanotechnology creation.

Associate Professor , ndasharath86@gmail.com
Associate Professor, sravanti815@gmail.com
Assistant Professor, jpraveen.pec@gmail.com
Assistant Professor , anjankumarcheekatla@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

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An Empirical Study on the Role of Emotions in Purchasing Decisions in Turkey

Doopati Pitchalah[1],G.Sampath Kumar[2],Dhanunjaya Rao Kodali[3],Mohamad Jahangir Pasha[4],

Abstract

In this research, the role of psychological variables on customer purchasing behavior is studied. There is an effort to quantify the impact of psychological elements on the purchasing decisions of customers, who are growing in importance. The Turkish territory may be divided into seven distinct areas. From each area two provinces are picked by random sampling process. A face to face survey was done on 100 persons from each province and in total 1400 people participated in the study. The information acquired from the findings are examined and interpreted by the computer packet programs.

Keywords: customer, mental aspects, inspiration, insight, education, faith, and conviction

Introduction

Each and every one of us is a consumer. Every day, we use and acquire a wide variety of items depending on our own requirements, tastes, and financial situations. Products fall into one of four categories: consumables, durables, specialized, and industrial. Companies that produce similar products and services are in a cutthroat, more competitive market, and the customer, who has emerged as the central focus of the contemporary corporate strategy, has assumed an increasingly central role. Therefore, it is essential for businesses to understand their target demographic. This research delves into the three main psychological influences on consumer spending. At first, some high-level explanations are provided. Then, the theoretical aspects of consumer psychology that influence their purchasing decisions are examined. At last, the survey's Turkish-based findings are deciphered and discussed.

Defining Consumers and Consumer Behavior in Broader Terms

When done properly, marketing should revolve around the demands of the consumer and result in his complete happiness. The importance of consumer behavior research cannot be overstated in today's service-based economy (Khan, 2007). Customers in today's market are spoiled with choice, making it more important than ever for businesses to successfully persuade them to make a purchase. Marketers need to analyze customer actions if they want to influence buying decisions. Consumers' decisions to make a purchase may be influenced by a number of distinct elements, including those associated with their culture, social circles, identity, and state of mind. The impact of these elements on participants' psyches was the focus of this investigation. A consumer is someone who purchases and uses the products and services that are produced. Therefore, consumers play a crucial role in a country's economic system since the lack of the effective demand that comes from them is almost catastrophic for the economy. Someone who purchases products or services made by another organization is called a customer (Durmaz & Jablonski, 2012). Consumer behavior may be defined as the cognitive, affective, and motor actions consumers do throughout the product discovery, evaluation, purchase, consumption, and disposal phases (Priest, Carter, & Statt, 2013).

Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

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A DIFFERENT TEACHING AND LEARNING METHOD THAN HAS BEEN USED TO DATE IS REQUIRED BY THE INDUSTRY 4.0 STRATEGIC DEVELOPMENT.

[1]CHERIPALLY NAGAMANI, [2]T DASTHAGIRI
[3]P NAVEEN REDDY,[4]CHAITANYA GOGIKAR

ABSTRACT

In recent years, job applicants have been expected to have not just professional knowledge and abilities, but also English that is tailored to the unique needs of their chosen field. As a result, English for particular purposes (ESP) has become the newest and fastest-growing trend in the field. There are a wide range of ESP courses available at most colleges in order to assist students meet their communication and professional requirements. This university has also supplied intriguing ESP courses that are meant to help students in engineering and technology fields. Aiming to help English language learners in engineering and technology as well as those learning English for specific professional purposes acquire specialised vocabulary by using Quizlet, a web-based and mobile study application, this paper proposes that technology be integrated into language teaching and learning. Teachers and students alike will reap the benefits of Quizlet's creative style of learning and teaching, which is likely spreading. While the benefits of Quizlet exceed the drawbacks in this area, it is clear that it should not be required, but rather used in conjunction with other approaches to help fulfil students' rising needs as the industrial revolution approaches. 4.0.

Incorporating technology into the classroom is an important part of the ESP curriculum.

INTRODUCTION

Vocabulary seems to be a critical component in improving students' ability to communicate effectively in English, but this aspect of language learning and instruction has received much too little attention in the past. Learners' needs have expanded greatly since ESP has become a new trend, requiring them to concentrate on enhancing their communication skills via practise in a variety of professional and occupational settings. To date, there are many different kinds of English as a Second Language (ESP) programmes in operation, from those geared toward waiters and tourists to those geared toward business and the sciences. But one thing is clear: the importance of terminology in the field of language teaching and learning cannot be overstated. Aiming to enhance awareness of the relevance of terminology in various professions, this

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biology

[1]MOHAMMED MUJEEBULLAH,M.Tech
[2]CHEEKATYALA ANJAN KUMAR
M.Tech[3]JOGU PRAVEEN, M.Tech
[4]POLU BALKUMAR REDDY,M.Tech

ABSTRACT

With the increase in the use of microwave technology in the workplace, it has piqued the attention of many researchers, leading to an increase in the number of articles addressing the health hazards connected with microwave exposure. With this study, the researchers sought to determine the physiologic effects of microwave-heated food on the blood and organs of experimental mice, and the results were encouraging. This study sought to examine the effects of feeding on microwave-heated meals with the goal of improving their nutritional value. These experiments were carried out on male Swiss albino mice at two distinct ages: one month before (before puberty) and three months after (after puberty). The results of all of the albumin and bilirubin tests indicated that the levels of both parameters had increased, although the protein concentration had decreased in all of the tests. Following exposure to oxidative stress, glutathione peroxidase and superoxide dismutase levels considerably decreased, but malondahyde levels significantly increased. [*] It was discovered that physiological anomalies were caused by the oxidative stress that occurred. A recent study found that microwave radiation has a deleterious influence on liver functioning, resulting in histological and physiological abnormalities of the organ.

Indexing terms/Keywords Microwave, oxidative stress, heated food.

1-INTRODUCTION

Waves of very short electromagnetic energy that are a component of Mother Nature's energy spectrum and may be seen in the sky are referred to as microwaves or microwaves. It encompasses frequencies with wave lengths ranging from the longest to the shortest, and it includes radio waves, microwaves, infrared radiation, optical radiation, ultraviolet radiation, X-rays, and gamma rays, among other types of electromagnetic radiation. An electromagnetic field (EMF) with a high frequency is produced by a range of sources such as radar sites, radio and television transmitters, and microwave ovens, amongst other things. The Environmental Protection Agency has classed microwave radiation as an environmental pollutant since it is a sort of non-ionizing electromagnetic radiation that does not produce any ions (Paulraj and Behari, 2004). According to the World Health Organization, exposure to microwave radiation has a biological effect on living things such as humans and animals. Concerns have been raised concerning the possible influence of microwave leakage on biological systems, especially in youngsters, as a result of the expanding usage of microwave radiation technology in the home and in business. Most often seen in both domestic and commercial food preparation, microwave radiation with a frequency of 2.45 GHz is the most common kind of radiation. Ionizing radiation is a kind of radiation that is harmful to living things. A source of environmental pollution and a potential harm to human health, leakage from ovens that have been improperly maintained (Parkar et al., 2010).

Assistant Professor,m.mujeebullah117@gmail.com
Assistant Professor , anjankumarcheekatla@gmail.com
Assistant Professor, jpraveen.pec@gmail.com
Assistant Professor, balureddy5586@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

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Telescoping Boom Cranes: Conceptualization and Analysis

[1]CHERIPALLY NAGAMANI [2]T DASTHAGIRI
[3]P NAVEEN REDDY [4]CHAITANYA GOGIKAR

ABSTRACT

Telescopic boom design, automated boom extension rope system, and the self-compensating rope mechanism are all described here. CAD was used to generate the boom models, which were then verified for accuracy using finite element software. Filler plates were used to strengthen the parts that had been evaluated. Two rope options have been chosen for this investigation that minimise human participation in the extension process in order to reduce the danger of boom failure.

This research investigates the String Mechanism, Finite Element Analysis, and Telescopic Boom.

INTRODUCTION

Cranes are able to lift and lower items as well as move them from one point to another thanks to the use of wire ropes, chains, and sheaves. Telescoping boom assembly is the most important part of the pick and carry crane. This arrangement may employ anywhere from three to ten components. This project calls for the use of a crane with five boom sections and two rope control systems. Maximum loading conditions were considered throughout the design and analysis. It might be for any of the following:

- Access to a wider range of options
- Adjusting the rope may be done in two ways:
- Boom cross-sectional measures are shown in Figure 1.
- For the optimal weight/strength ratio, you may want to choose the right materials.
- Boom parts may be made in SolidWorks
- ANSYS software is used to simulate the boom components.
- Stiffener plates should be used in regions where research demonstrates they are essential.
- According to sectional failures, boom length is established.
- It's possible to categorise the assembly's components into the following:
- The album's opening song is titled Mother Boom.
- There are two boom parts in the centre (3 in number)
- Suggestions for the 3rd section
- Rope mechanisms are utilised to stretch the booms.

Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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MACHINE LEARNING WITH DATA ANALYSIS FOR BIG MART SALES

[1]M Naveen Kumar, ,
[2]D Navya
[3]Anishetty Shiva Rama Krishna, ,

ABSTRACT

Machine Learning is a category of algorithms that allows software applications to become more accurate in predicting outcomes without being explicitly programmed. The basic premise of machine learning is to build models and employ algorithms that can receive input data and use statistical analysis to predict an output while updating outputs as new data becomes available. These models can be applied in different areas and trained to match the expectations of management so that accurate steps can be taken to achieve the organization's target. In this paper, the case of Big Mart, a one-stop-shopping-center, has been discussed to predict the sales of different types of items and for understanding the effects of different factors on the items' sales. Taking various aspects of a dataset collected for Big art, and the methodology followed for building a predictive model, results with high levels of accuracy are generated, and these observations can be employed to take decisions to improve sales.

Big Mart is online one stop marketplace where you can buy or sell or advertise your merchandise at low cost. The goal is to make Big Mart the shopping paradise for buyers and the marketing solutions for the sellers. The ultimate goal is to prosper with customers. The project "BIGMART SALES DATASET" aims to build a predictive model and find out the sales of each product at a particular store.

1.1 INTRODUCTION

With the rapid development of global malls and stores chains and the increase in the number of electronic payment customers, the competition among the rival organizations is becoming more serious day by day. Each organization is trying to attract more customers using personalized and short-time offers which makes the prediction of future volume of sales of every item an important asset in the planning and inventory management of every organization, transport service, etc. Due to the cheap availability of computing and storage, it has become possible to use sophisticated machine learning algorithms for this purpose. In this paper, we are providing forecast for the sales data of big mart in a number of big mart stores across various location types which is based on the historical data of sales volume. According to the characteristics of the data, we can use the method of multiple linear regression analysis and random forest to forecast the sales volume.

Assistant Professor

,Assistant Professor,

Associate Professor

Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505

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CFD simulation was used to study the combustion and emissions of split injection in DI diesel engines.

SK HUSSIAN BASHA

ABSTRACT

CFD software is used to study the combustion and emissions of a DI diesel engine. The trade-off between soot and NOx is a fundamental obstacle to lowering diesel engine emissions. To reduce both soot and NOx emissions, split injection might be a smart strategy to use. If one injection is broken up into a series of injections with a predetermined time interval, it is known as a "split injection." Diesel engines with a single cylinder and four strokes were researched for their ability to maintain constant speeds. A model of a DI diesel engine was built to provide accurate estimates and evaluations. The finite volume method was utilised to study combustion chamber design and emission characteristics. The findings showed that split injections were more beneficial than a single injection in terms of efficacy.

Keywords–Split Injection,CFDtool,DI diesel engine,Emission,Optimum split injection.

INTRODUCTION

The trade-off between soot and NOx is a fundamental obstacle to lowering diesel engine emissions. To reduce both soot and NOx emissions, split injection might be a smart strategy to use. Soot and NOx levels must be reduced at the same time if significant reductions in exhaust pollution are to be achieved. A reduction in NOx emissions seems to be impossible without an increase in soot emissions. A CFD tool will be used to model and analyse an internal combustion engine (Fluent, ANSYS 14.5 package). The CFD Fluent programme is used to investigate the combustion and emissions of a DI engine with split injection. The emission parameters of the combustion chamber are generated and analysed using finite Pressures, temperatures, and emissions from the exhaust system and its cylindersetc. Graphs and outlines for the findings created by software that are easy to read and understand (NOx, Soot, etc.).

THE MODEL'S DEFINITION

3D geometry was used to examine the impact of centrally located injectors.

Figure 1 shows a cylinder's geometry.

volume analysis for each of the six conceivable split-injection situations.

THE COMPUTER PROCESS

Fluent software (ANSYS 14.5 package) was used to build the multidimensional model, and the different equations were automatically solved. Engine speed, single injection injection parameters, bore, stroke, connecting rod length, starting pressure, and temperature are the most essential inputs[1]. [2]. For each of the six separate split injections, the process is performed six times. The simulation model is used to forecast the results of the programme.

ANSYS Workbench was used to produce the mesh.

The diagrams and specifications of the engine are provided below. The hexadominent mesh was produced in all study locations using the ANSYS 14.5 FLUENT programme. Faces and nodes make up the mesh's total count of 19722.

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Arduino Based Security System for Women

[1]P.SHANKAR, M.Tech Assistant Professor, shankardvk48@gmail.com

Abstract:

Raped, molested, and abducted women are among the problems that women face. Fraud will be reduced as a result of the use of this strategy, which was developed exclusively for women. In order to safeguard women, especially in urban locations where they may have problems travelling, it has been emphasised. Because the device is not unreasonably expensive, many women have elected to utilise it instead of other options.might be beneficial to oneself

Keywords: Arduino, SMS, GPS & GSM

I. INTRODUCTION

Whenever women are travelling or taking part in outdoor activities, and if they are unfortunate enoughto come across these issues, and in order to avoid becoming victims of crimes, they pronounce or rather say speak keywords that will send a signal to an android. However, this can also raise suspicion in the criminal's mind, resulting in the criminal destroying the victim's android

A. Obstacles that Women Are Forced to Surmount

Women are becoming less protected across the world as they deal with major concerns such as sexual harassment and violence against them, which are becoming more prevalent.All forms of abuseincluding domestic violence, rape, and other felonies, are forbidden. In spite of the fact that they dealing with the same problems. Women account for 232,960 people on the planet.It is claimed that the

are in the presence of law enforcement, rapists and child molesters continue to carry out their criminal activities.Laws that are harsh are enacted, and armed soldiers are deployed. The number of crimes recorded in India is increasing, with 195,856 reported in 2008 and 244,270 reported in 2009, according to the National Crime Records Bureau.2012 is the year in question. Not just India, but even the most industrialised country on the globe,theUnitedStates,is

victims of rape or sexual assault saw a spike in the number of such incidents in 2006.

[2]MOHAMMED MUJEEBULLAH, M.Tech Assistant Professor,m.mujeebullah117@gmail.com
[3]CHEEKATYALA ANJAN KUMAR ,M.Tech Assistant Professor , anjankumarcheekatla@gmail.com
[4]ANAM SRINIVASA REDDY , M.Tech Assistant Professor, anam.srinivas@gmail.com
Department:eceNagole Univerisity Engineering and Technology Hyderabad

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A recommendation system built on a decision tree

D Navya, ,
Mallika pasham,
M Naveen Kumar,

Abstract*—Choosing a tourist destination from the information that is available on the Internet and through other sources is one of the most complex tasks for tourists when planning travel, both before and during travel. Previous Travel Recommendation Systems (TRSs) have attempted to solve this problem. However, some of the technical aspects such as system accuracy and the practical aspects such as usability and satisfaction have been neglected. To address this issue, it requires a full understanding of the tourists' decision-making and novel models for their information search process. This paper proposes a novel human-centric TRS that recommends destinations to tourists in an unfamiliar city. It considers both technical and practical aspects using a real world data set we collected. The system is developed using a two-steps feature selection method to reduce number of inputs to the system and recommendations are provided by decision tree C4.5. The experimental results show that the proposed TRS can provide personalized recommendation on tourist destinations that satisfy the tourists.

Keywords: **Recommendation System; Tourist Destination, Feature Selection; Filtering methods; Mutual information; Classification; Decision Tree**

I. INTRODUCTION

The tourism industry is an extremely important sector on a global scale and contributed 9.5% to the total world's economy in 2013. It is expected that tourism will contribute around 10.3% GDP in 2023. South East Asia is expected to be the fastest grown regions in terms of its Travel and Tourism contribution to the GDP. In particular, Thailand, Indonesia, Singapore and Myanmar were identified as the countries possessing the most attractive tourism features in 2013 [1].

International tourist arrivals in Thailand have doubled over the past nine years (See Fig 1). In 2013, Thailand is the 10th most visited destination worldwide[1]. The country attracts 26.5 million international tourists grew by 18.76% over 2012 [2]. Increasing both tourist numbers (international and domestic) and the benefits from tourism are the primary objective of the Thai government. In 2013, tourism generated 1.79 trillion BHT ($55.49 billion) in revenue for Thailand[2].

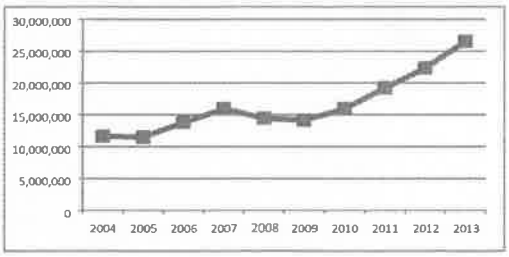

Figure 1. Number of international tourist arriving in Thailand from 2004- 2013 [1]

Assistant Professor[1]
Assistant Professor[2],
Assistant Professor[3]
Department of CSE Engineering,
Pallavi Engineering College,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505.

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Design and Analysis of a Micro Strip Patch Antenna for Wireless Communications

[1]P.SHANKAR, M.Tech [2]MOHAMMED MUJEEBULLAH, [3]CHEEKATYALA ANJAN KUMAR[4]P NANDA KUMAR M.Tech

Abstract:

It is critical that the microstrip antenna used for wideband communication be lightweight, easy to build, and small in size in order to be effective. A basic geometrically organised design for the microstrip antenna is required in the present context in order to achieve appropriate broadband performance. Presented here are the findings from a two-dimensional design study of rectangular and square shaped microstrip antennas conducted by the author. In order to feed both antennas, microstrip line was used in conjunction with each antenna. When compared to the rectangular microstrip antenna used in the preceding example, the square-shaped microstrip antenna provides a wider bandwidth and a more acceptable return loss. Small and lightweight, the small antenna is intended to function in the X band of frequencies, where it will be most effective. According to the results of the antenna performance evaluations, the proposed microstrip antenna has a wide bandwidth of 500MHz and a considerable return loss (-24 dB). Because of its huge bandwidth, it may be used in a wide variety of wideband applications in the X- band spectrum.

Index Terms: Broadband, Microstrip Antenna, Reflection coefficient, Stub Matching.

I. INTRODUCTION

The usage of a Microstrip antenna is a significant advancement in wireless communication systems because it satisfies the needs of the most recent generation of wireless communication technology, which is distinguished by its ability to introduce new concepts and ideas. It is being employed in each of these devices owing to the several benefits [1] that microstrip antennas provide, including the fact that they are incredibly lightweight, have a basic construction, and are highly efficient while being inexpensive. In contrast, the limited operating bandwidth of it is a restriction, and as a consequence, its usage in wireless systems is severely constrained [2]. We have grown to rely on broadband programmes that perform a range of tasks as well as wireless gadgets as crucial components of our day-to-day life. As a consequence, the need for low-profile wideband has been decreased [3] as a result of this development. As well as being able to fulfil the great majority of the requirements for mobile and satellite equipment, microstrip antennas are also capable of addressing an extensive variety of business demands. When it comes to wireless applications, the quantity of electrical circuits required is gradually decreasing, making the microstrip a particularly appropriate match in this case. Additionally, the size of the antennas that are used for the overwhelming majority of applications is shrinking at a frighteningly fast pace. Design of a microstrip antenna fix that satisfies the specifications of these Multiple methodologies have been examined [4-6], and it has been shown that the selection of the appropriate impedance bandwidth of the microstrip antenna may be one of the variables leading to the enhancement of performance. Notches have been shown to elicit craving responses [7,8].

M.Tech Assistant Professor,m.mujeebullah117@gmail.com
,M.Tech Assistant Professor , anjankumarcheekatla@gmail.com
Assistant Professor, nandha.iarevlsi@gmail.com
Department:ECE
Nagole Univerisity Engineering and Technology Hyderabad

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A Study of the Flexure Behavior and Compressive Strength of Fly Ash Core Sandwiched Composite Materials

[1]P NAVEEN REDDY , [2]CHAITANYA GOGIKAR
[3]J RAGHAVENDER ,[4]BANTU SAILESH

ABSTRACT

This article's core material is comprised of a woven glass cloth and an epoxy matrix/adhesive component." Three different combinations were used to assess the flexural and compressive strength of epoxy and fly ash sandwiched composites. It's not uncommon to see composites with 65-35 percent fly ash with epoxy resin, 60-40 percent fly ash with resin, and 55-45 percent epoxy resin in use (fly ash and epoxy resin). The 60-40 percent composite specimen performed better than the 60-40 percent metal specimen in flexure and compression tests. This paper presents and discusses the investigation's results.

Some of the parameters used to assess this product are epoxy resin, compressive strength, and flexural strength.

Introduction

When two or more chemically different materials are macroscopically united, they form a functional entity known as a composite. Composite materials may have an interface between two or more separate materials. Composites' electrical, thermal, tribological, and environmental qualities must also be taken into account. Composites may be defined as materials that contain a continuous matrix element binding together and forming an array of stronger, stiffer reinforcing elements. Generally speaking, the fibre or particle phases of composites are stiffer and stronger than their matrix phases. Several types of reinforcement have a lower coefficient of thermal expansion (CTE) than the matrix, as well as high wear resistance. Two thin yet sturdy face sheets sandwich a lightweight, substantial core. The most essential attribute of these materials is their lightweight core, which reduces the sandwich structures that have been widely employed in aviation during the last several decades. There are numerous methods to characterise these materials. The material used to construct a structural sandwich has an impact on the final design. An integrated approach to material selection must be taken into account rather than depending just on geometric design.

As their flat surfaces may bear extraordinarily high compression stress without buckling, glass-fibre skins and eco-cores are often employed in aerospace sandwiches because to their high specific stiffness structures. As a general rule, control surfaces should maintain their smoothness even when exposed to high amounts of stress. Over the course of its service life, the sandwich structure will be subject to stress fluctuations regardless of the applied tensile or compressive force. The face-sheet of the sandwich construction is being tested to see how it responds to various loading situations. The major goal is to fulfil ASTM requirements in order to better understand the mechanical characteristics of glass fibre face sheet with an eco-core sandwich composite.

A REVIEW OF THE BOOKS.

The influence of fly ash filler on HDPE mechanical properties was investigated by Ahmad and Mahanwar (2010). Fly ash was used in three different particle sizes. Up to 40% of the fly ash's weight was changed. Injection moulding was used to manufacture test specimens after the composites were made using a twin screw extruder. The qualities of tensile, flexural, and impact strength were examined. Fly ash was shown to boost the tensile and flexural strengths and moduli of the composite. Fly ash concentration more than 10% lowered tensile elongation significantly. Impact resistance decreased by 15% or more when fly ash content increased.

Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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A Wide Voltage Gain Range Switched-Capacitor Bidirectional DC-DC Converter for Electric Vehicles Using Hybrid Energy Sources

[1]*Mr. V.Saidulu* [2]*Dr. K.Suneeta*
[3]*Mr. Venkateswar Rao*

Abstract— ***An exchanged capacitor bidirectional DC-DC converter with a high advance up/step-down voltage gain is proposed for electric vehicles (EVs) with a half breed vitality source framework (HESS). The converter displayed has the benefits of being a basic circuit, a diminished number of parts, a wide voltage-gain extend, a low voltage stress, and a shared opinion. Likewise, the synchronous rectifiers permit zero voltage exchanging (ZVS) turn-on and turn-off without requiring any additional equipment, and the proficiency of the converter is improved. A 300W model has been created which approves the wide voltage-gain scope of this converter utilizing a variable low-voltage side (40V-100V) and to give a consistent high-voltage side (300V). The greatest effectiveness of the converter is 94.45% in step-down mode and 94.39% in step-up mode. The test results additionally approve the possibility and the adequacy of the proposed topology.***

Index Terms—Switched-capacitor, Synchronous rectification, Bidirectional DC-DC converter, EVs, HESS, Wide voltage-gain range

I. INTRODUCTION

To address the challenges of fossil fuels as the primary energy source for transport (including reducing stockpiles and polluting emissions) [1]-[2], electric vehicles (EVs) powered by battery systems with low or zero polluting emissions, are increasing in popularity. Although the developed advancement of batteries can provide higher population performance for EVs, the unlimited charging or discharging current (i.e. inrush current) from batteries will result in shorter battery cycle life, as well as reducing the efficiency [3]. The combination of a battery and super-capacitors as a hybrid energy source system (HESS) for electric vehicles is considered as a good way to improve overall vehicle efficiency and battery life [4]. Super-capacitors have advantages of high power density, high cycle life, and very good charge/discharge efficiency. They can also provide a large transient power virtually instantaneously and are therefore suitable for meeting sudden EV power changes such as acceleration or meeting an incline.

The HESS can make full use of the performance of batteries and super-capacitors: the super-capacitors supply power for acceleration and regenerative braking with the battery meeting the requirement of high energy storage density for long range operation [5]. A challenge for the HESS is that the terminal voltage of super-capacitors is low, and varies over a wide range as they are charged or discharged.

Professor ,Assistant Professor

Assistant Professor

Department of EEE Engineering,
Nagole Univerisity Engineering and Technology Hyderabad

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Characterization of Hemp, Vinyl Ester, and Carbon Fiber Composite Laminated Material Reinforced with Carbon Nano Tubes

[1]P NAVEEN REDDY, [2]M ANIL [3]J RAGHAVENDER [4]BANTU SAILESH

ABSTRACT

Natural fibres derived from sustainable natural resources have recently shown promise as an alternative to glass, carbon, and other man-made fibres as a reinforcing material for polymer composites. Hemp is the most often used natural fibre because of its low density, inexpensive cost of manufacturing, and good mechanical qualities. Lightweight, strong, corrosion resistant, and close to net forms are all requirements for today's materials, and composites may help satisfy these. Two or more coupled elements, which are not soluble in each other, make up a composite material, which is a structural substance. Reinforcing phases such as fibres, particles, or flakes exist in composites, as do matrix phases such as polymers, metals, and ceramics. In this study, hemp/carbon fibre and carbon nano tube reinforcement and vinyl ester are used as matrix materials to make various composite materials. The following tests were performed on the composites: a density test, a water absorption test, and an impact test. An investigation into the influence of carbon nanotubes on hemp/vinyl ester/carbon fibre hybrid composites found that fibre loading and performance were significantly affected by the inclusion of carbon nanotubes.

The following terms and concepts are used in this paper: Hemp Fiber, Carbon Fiber, Vinyl Ester, Density, Water Absorption, and Impact.

INTRODUCTION

A major breakthrough in the history of material science occurred with the creation of composite materials and its accompanying design and production processes. Developed for specific applications, composites are materials with unique mechanical and physical characteristics. Materials have a wide variety of benefits over traditional materials, including tensile strength, impact strength, flexural strengths, stiffness, and fatigue properties. Aerospace and commercial mechanical engineering applications, such as machine components, automobiles, combustion engines, mechanical

Department of Mechanical Engineering,
Nagole Univerisity Engineering and Technology Hyderabad