Journals Papers

An improved multiclass support vector machine classifier using reduced hyper-plane with skewed binary tree

Pranjal S. Bogawar ✉ & Kishor K. Bhoyar

Abstract

Support Vector Machine (SVM) is mainly used to classify the data into two categories. To solve the multi-category problems using SVM, researchers used two approaches. The first approach based on solving multiple SVM binary classifiers, whereas another approach based on solving a single optimization problem. In this paper, we have used the first approach and proposed an Efficient Multiclass Support Vector Machine (ESVM) algorithm using a skewed binary tree. To construct the skewed binary tree, no extra efforts are required as compared to the binary tree

Title

PAC AS A ADVANCED COAGULATING MATERIAL FOR REMOVAL OF FLUORIDE

Authors

J. P. Kanfade

M. P. Joshi

H. D. Juneja

Abstract

The removal of fluoride from municipal water and their possible harmful effects are major problems to tackle, making use of special processes and methods to remove fluorides from municipal water seems so essential to avoid the health risk. A Poly Aluminium Chloride, commercial product selected for the study, was tested as coagulants, comparatively with the classical aluminium sulfate (alum). This paper describes the performance studies of PAC and alum in the removal of fluorides from waters of different turbidities of natural origin. ECORITE PAC-2010 is a coagulant Poly Aluminium Chloride (PAC) a product of of M/s

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RESEARCH ARTICLE

Synthesis and characterization of KCe(PO$_3$)$_4$ doped with some lanthanide activators

Sharmila U. Bhonsule ✕ Sangeeta R. Wankhede, Sanjiv V. Moharil

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Abstract

KCe(PO$_3$)$_4$ doped with Dy^{3+}, Tb^{3+}, Yb^{3+} and Nd^{3+} phosphors were synthesized by a solid state diffusion method. The prepared samples were characterized by X-ray diffraction and photoluminescence. KCe(PO$_3$)$_4$ exhibits emission in ultraviolet (UV) region which indicates weak Ce^{3+}–Ce^{3+} interaction. The Ce^{3+}–Ce^{3+} energy transfer is not efficient. In light of this, energy transfer from Ce^{3+} to other lanthanides like Dy^{3+}, Tb^{3+}, Yb^{3+} and Nd^{3+} is rather surprising.

Recommended

Impact of C5+ ion beam on Dy activated Sr2B5O9Cl TL phosphor

Authors:

Abha H. Oza   Vibha Chopra

N. S. Dhoble

S J Dhoble
Rashtrasant Tukadoji Maharaj Nagpur U...

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Intelligent Pattern Recognition System with Application to Cotton Leaf Disease Identification

Authors   Authors and affiliations

Prashant R. Rothe ✉, Jyoti P. Rothe

Abstract

The cultivation of cotton is a major source of cash for farmers in most of the regions of India. The production of cotton is affected due to leaf diseases. This paper illustrates technical know-how which identifies the leaf inflicted with the disease, and it segregates them according to the

Automatic Barcode Based Bill Calculation

Ass. Pro.Mrs.K.M Bogawar[1] Badal Armarkar[2] Anuj Agrawal[3] Aman Kashyap[4]

[1,2,3,4]Department of Electronics Engineering

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Abstract— The aim of this project is to utilize updated new technology and suppress the difficulties during shopping in consumer retail shop. In order to avoid the long queue in billing section we are introducing smart trolley technology in all super market for consider for those difficulties. Microcontroller based design has acquired the status of most happening field in electronics. In modern era for automation of super market we are developing a microcontroller based TROLLEY which is totally automatic. Only customer has to hold the barcode side of product wrapper in front of barcode scanner. Then corresponding data regarding product will be displayed on LCD display. By using this trolley, customer can buy large number of product in very less time of effort. At the billing counter, computer can be easily interfaced for verification and bill print out.

Key words: Barcode Scanner, LCD Display, Microcontroller, Trolley

I. INTRODUCTION

Now a day's people spend much of time unnecessarily in shopping centre for billing. Some of the product such that grocery items packed without price tag so people does not know the related product price. To overcome these problems we can use barcode based shopping system using smart trolley.

Here microcontroller is used to display the product price in LCD display. In this project, we discuss an innovative concept of barcode based smart trolley and billing system. The smart trolley will help shorten the checkout lines there by helping the customer at retail stores. The system consists of barcode scanner which communicates with the billing counter wirelessly using RF transreciever. Currently available method in shopping malls is also the barcode method but it is quite lengthy. The cashier scans the product through the barcode scanner and gives us total bill.

But this becomes a slow process when lots of products are to be scanned which eventually results in long queue, making the billing process slow. To solve the problems previously identified, recent year have seen the appearance of several technology solutions for super market assistance.

All such solution shares the same objectives: to reduce and eliminate time taken in billing counter, barcode scanner to allow users to self-check out and increase productivity time.

II. EXISTING SYSTEM

The block diagram of proposed system is shown in below figure.
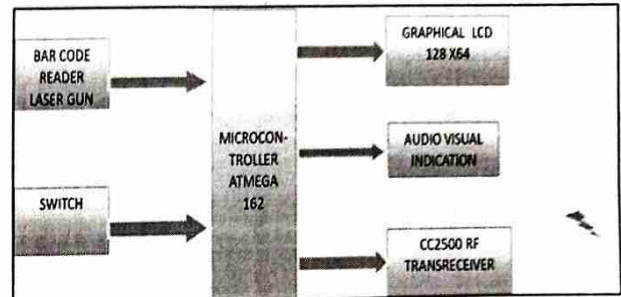
Fig. 1: Block diagram of transmitter section
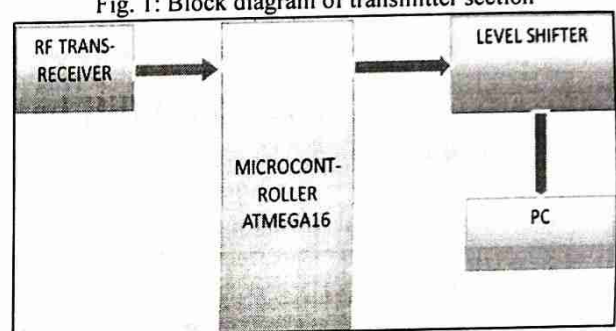
Fig. 2: Block diagram of receiver section

There are two microcontrollers one at trolley that is interfaced with barcode scanner and one at billing section that are interfaced with RF trans receiver. As shown in fig.1 transmitter unit consist of microcontroller (ATMEGA 162), barcode scanner, graphical LCD (128 X 64), RF trans receiver, switch and buzzer.

As shown in fig.2 receiver is composed of microcontroller (ATMEGA 162), RF tans receiver, level shifter, PC.

By using barcode scanner scan barcode on the product. Then barcode reader send this code to microcontroller, after matching code with the code store in SPI memory, controller reads item's name, cost, and other details. Then it displays on LCD. The item details like name, cost and total bill of item inserted in trolley are displayed on LCD.

The entire product in super market having barcode. When the person scan the product with barcode scanner and put it on trolley, the code will be detected by barcode scanner which is interfaced with microcontroller. Microcontroller requires less power for operation. As we put product, the cost will added to total. Simultaneously all details are displayed on LCD. LCD used is 128X62 character alphanumeric type displays. The LCD is interfaced with microcontroller to transmit billing details. At the receiver section the products in trolley are transmitted wirelessly with the help of RF transreceiver. RF transreceiver is interfaced with microcontroller at receiver side. The transmitted information will be seen at billing PC counter.

ACADEMIC

Simulation of human powered flywheel motor energized process machine through electrical cum electronic analog circuit and its mathematical modelling*

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Abstract. During last almost four decades, technology of Human Powered Flywheel Motor Energized process machines is established fairly satisfactorily. The process units tried are mainly rural/village/ interior socio-economic need based. While trying application of HPFM for any new application , present approach of intuition based speculation and determining parameters of process unit by trial and error and associated fabrication has proved to be time taking and costly. Hence a need is felt of establishing simpler and quick simulation of this machine system. This is only possible by simulating a machine system by electromechanical analog circuits. This is essentially achieved in this paper. In addition mathematical model of this elecrmechanical analog circuit and its optimization is established.

Keywords: human powered flywheel motor, electronic/ electromechanical analog

1 Introduction

The first Human Powered Flywheel Motor (HPFM) energized process machine for manufacturing lime fly-ash sand bricks with rectangular cross section was developed by Modak in the period of 1979 to 1982[18, 24]. The schematic line sketch of this machine system is as shown in Fig. 1.

S = Seat,
P1, P2 = Pedals,
BSC = Big Chain Sprocket,
SCS = Small Chain Sprocket,
CH = Bicycle Chain Drive,
G' = Speed increasing gear pair,
FW = Flywheel,
TFC/SJC = Torsionally Flexible Clutch /
Spiral Jaw Clutch
P = Process Unit,
G = Torque Amplification Gear pair
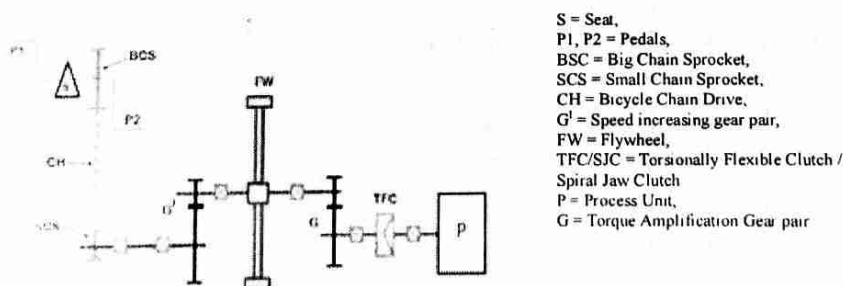
Fig. 1: Schematic Arrangement of the machine system

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Grey wolf optimization based transmit antenna selection for LTE system

Cite This

PDF

Nitin Deotale ; Uttam Kolekar ; Anuradha Kondelwar   **All Authors**

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Abstract

Document Sections

I. Introduction

II. Literature Review

III. Proposed TAS

Abstract:

Basically, Multiple Input Multiple Output (MIMO) effectively enhances the radio communication with improved capacity and reliability. However, it suffers from multiple expensive RF chains, as it holds numerous antennas at both the transmitter and receiver side. This drawback can be removed by the optimum selection of antenna. Accordingly, this paper proposes a novel antenna selection scheme for LTE system using the recently developed meta-heuristic algorithm called Grey Wolf Optimization (GWO). According to this experiment, the best

Prediction of multiple sclerosis in brain MRI images using hybrid segmentation

Publisher: **IEEE**   Cite This   📄 PDF

S. P. Nashimkar; S. D. Chede   **All Authors**

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Abstract

Document Sections

I Introduction

II MRI Dataset

Abstract:

Multiple Sclerosis is a brain disease that forms the number of lesions in white matter of brain as the disease progresses. In this paper texture analysis is done on brain MRI Images of real data of patients to observe the progress of disease by detection. The objective of this paper is to find the progression detection by utilizing the segmentation and feature extraction techniques. The image is segmented using the AM-FM segmentation, the filtering is done by

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Optimal transmit antenna selection for LTE system using self-adaptive grey wolf optimization

Cite

Article type: Research Article

Authors: Deotale, Nitin[a], [*] | Kolekar, Uttam[b] | Kondelwar, Anuradha[c]

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Cross-layer approach for energy & communication efficient protocol of mobile ad hoc networks

Publisher: IEEE   Cite This   📄 PDF

Shashank G. Bhoge ; Manish D. Chawhan ; Yogesh Suryavanshi ; V. K. Taksande   All Authors

Abstract

Document Sections

I. Introduction

Abstract:

Energy conservation is an important for mobile ad-hoc networks where devices are expected to work for longer periods of time without the need for charging their batteries. Reducing the energy consumption for transferring data. network lifetime. and congestion control. When transmitting the data source to destination less energy is used for the transmission because of

Optimal transmit antenna selection for LTE system using self-adaptive grey Wolf optimization

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INTELLIGENT SHOPPING DEVICE WITH AUTOMATIC BILLING SYSTEM USING RFID

A. P. Rathkanthiwar, Babli Umate, +2 authors Sakshi Rahate · Published 1 April 2018 · Computer Science, Business · Journal of emerging technologies and innovative research

The most valuable thing in today's world is time, people are referring those things which consumes less time. Billing in Shopping mall takes lot of time. Billing of products from mall is quite difficult because it takes more time as people have to wait for a long time in a queue for billing. Looking at the advancement in technology, we came up with an innovative idea of Shopping Cart for Automatic Billing in Supermarket. This work consists of RFID reader, motion detector sensor, liquid crystal... Expand

Abstract   Figures and Topics   6 References

Plastic: Historical Development and an Industrial Survey

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Abstract:-This paper presents an overview of historical development of plastic. Author has visited the plastic Molding Industry and speculated the probable areas where, one can improve the process by adopting the Filed Data Based Modeling Approach. These all prominent aspects are elaborated in forthcoming sections.

Index Terms: - Plastic Molding Industry, FDBM, History of plastic, Injection Molding

1. PANORAMA

If one looks back & thinks about material development process then he could observe that initially human being successfully made the use of a stone as a first material & that age was coined as Stone Age. Then comes Bronze Age, Iron Age & now the Plastic Age. Today plastic is having more influence in our life. The word "Plastic" obtained from the Greek language word "Plastikos"which means any stretchable substance that can be converted or changed into another shape or can be easily molded [7]. We can define plastic as, a polymer (synthetic or natural) of high molecular weight. Plasticity is that property of material by virtue of which those are able to deform without breaking. Now a days, plastics are becoming the most versatile materials and mostly used on a volume basis. Almost most of the products use by the society in daily lives contains plastics. Plastics have covered today's human lifestyle[3] & have a major contribution to all product areas because of some important properties like light in weight, high tensile strength, high impact strength, corrosion resistance property especially for chemicals & salt water applications. Application of plastics also covers utility in electrical insulation as well as sustainability for different temperature ranges [7].

2. HISTORY OF PLASTIC AND RELEVANT MOLDING MACHINE

One has to go back more than hundred years to know the history of plastics. Plastic had originated from rubber. Discovered in1851, ebonite, also known as hard rubber was the first thermosetting material [20]. In 1851 the English scientist Alexander Parkes detected the solid residue after the evaporation of the solvent of photographic collision was a tough elastic & impervious to water

[16].Alexander Parkes launched a new material named as Parkesine (1862). Parkesine was obtained by liquefying cellulose nitrate in a minimum of solvent [16]. The mixture was then put on a heated rolling machine from which some of the solvent was then removed. While still in the plastic state the material was then shaped by dies or pressure. An American inventor named John Wesley Hyatt in 1868 developed a plastic material called Celluloid made by combining cellulose nitrate and camphor. Along with his brother Isaiah John Wesley patented the first injection molding machine in 1872[17].Later two German chemists Arthur Eichengrun and Theodore invented the first soluble forms of cellulose acetate in 1903, which was much less flammable than cellulose nitrate. It was available in powder form from which it was readily injection moulded.Arthur Eichengrun developed the first injection molding press in 1919.In1939, Arthur Eichengrun patented the injection molding of plasticized cellulose acetate [14].An American inventor James Watson Hendry, In 1946 built the first extrusion screw injection machine. The rotating screw made the injection speed easier to control and it helped to produce higher quality products. The products like polyethylene, polystyrene, and other materials that had been more expensive in the past, were starting to be produced more cheaply. They also started to replace not only other plastics, but also more traditional materials like wood, metal, leather, and glass [15]. W.H. Willert developed the reciprocating injection molding machine in 1956 [16]. In his machine, the screw moves backwards and forwards during the mold cycle. The screw rotation will stop once the proper mixing will take place. The screw injects the material inside the mould cavity. Many useful new thermoplastics like high-density polyethylenes and polypropylene get

Statistical analysis of sunshine based global solar radiation (GSR) models for tropical wet and dry climatic Region in Nagpur, India: A case study

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ARTICLE INFO

ABSTRACT

In literature, numerous models are available to predict Global Solar Radiation (GSR) on a horizontal surface, which is predominantly a site-specific characteristic. Hence, a comparative study is required to predict GSR using a correct model for a particular site. The principal aim of the present work is to analyze the most precise model for estimation of monthly average daily global solar radiation (MADGSR) on a horizontal surface for the region of interest. In the current work, the performance of 300 existing sunshine based GSR models are compared using 15-year meteorological data for Tropical wet and dry climatic region of India. The accuracy of each model is tested using ten different statistical error tests. Further, the Global Performance Indicator (GPI) is used to rank the selected GSR models. According to results, the Ampratwum Model (Model 274, proposed for Marmul, Oman) has shown the best capability to estimate the GSR on a horizontal surface followed by Srivastava (Model 26, proposed for Kolkata, India) and Rensheng model (Model 282, proposed for China). The results of the present study are valuable for the developing countries and remote areas where very few metrological stations are available since the technological expenses are very high.

1. Introduction

The total population in India is around 1.25 billion approximately, which constitute 17% of the world population. The energy demand in India is very high and is continuously increasing at a very high rate. As on 31st March 2013, the electricity production capacity in India is 2006.64 GW. The total energy requirement can bifurcate as commercial energy demand, which is around 65% whereas as the non-commercial energy demand is about 30%. The commercial energy is produce using coal, which contributes 55% followed by oil 31%, natural gas 11%, and hydro-energy 3% thus emitting an extensive amount of harmful gases like CO_2, SO_x and NO_x (also called as greenhouse gases (GHG)). India is the third largest GHG emitter (1954.02 Mt) country, which contributes around 5% of the total world GHG emission. The production of electricity using fossil fuels has played a significant role in GHG emission [4].

The geographical location of India is between Tropic of Cancer and the Equator thus has a significant solar potential [5]. Solar radiation received in India is around 5000 trillion kWh/year with an average solar radiation which varies from 4 kWh/m²-day to 7 kWh/m²-day [6]. The contribution of renewable energy in the production of electricity was nearly 2% in 2005 [7] which have increased to 10.5% as of 31st March 2013 [1]. The government of India has launched Jawaharlal Nehru National Solar Mission (JNNSM) in 2010 to reduce the fossil-fuel-CO_2 emission and to provide clean energy. The main aim of the JNNSM is to generate 175 GW till 2020 in India. The state governments are also taking the initiative to implement solar power projects in India [8].

To estimate the capacity of a solar power project information about the global solar radiation in India is vital. The information about the global solar radiation can be obtained by installing measuring equipment such as pyranometer etc., at a location of interest which is costly, tedious as well as time-consuming process. We can also get the information about the global solar radiation from the meteorological department, but the availability of meteorological stations in India is very few since the technological expenses are very high. Thus, to estimate the performance of any solar energy device we have to rely on the mathematical model available, which is site specific.

2. Literature review

The first model to predict the global solar radiation was put forth by Angström, which relates monthly average global solar radiation to clear day radiation, and to the average fraction of possible sunshine hours

Experimental Studies on a Reinforced Bottom Ash-Based Geomaterial

Sonali S. Nawkhare[1] and B. Ram Rathan Lal[2]

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[2]Associate Professor, Dept. of Civil Engineering, K.I.T.S., Ramtek – 441106, Nagpur (Dist.), Maharashtra, India. E-mail: rathan_lal@yahoo.com

Abstract

This paper pertains results of experimental studies carried out on reinforced bottom ash based geomaterial. The proposed geomaterial is prepared by blending bottom ash with expanded polystyrene beads, waste plastic water bottle strips and a binder such as ordinary Portland cement. The mix ratios used in the experimental study were 0.2%, 0.6%, and 1.0%. The plastic strips were used in two different aspect ratios 0.1 and 0.2 with different mix proportions 1%, 2%, and 3%. The cement to bottom ash ratio was considered as 10 %. The effect of mix ratio, percentage of plastic strips and curing period on the compressive strength, stress-strain behaviour, density and secant modulus were studied and results are incorporated in the paper. The result indicated that for a particular mix ratio, the compressive strength increased with increasing aspect ratio. Nonlinear relationship was observed between compressive stress and axial strain for all the mix ratios and curing periods.

INTRODUCTION

In the last few years have seen significant world-wide growth, both geographically and technologically. Due to ever increasing demand for conventional building materials like sand, muroom and aggregate etc. for the construction purposes, there has been scarcity and rise in cost of this material. Recycling the waste materials either from industries or agricultural is another environmental issue faced today by many developing countries around the world. Among all the waste materials coal ashes has shown substantial guarantee as replacement to conventional materials. The current world-wide production of coal ash is more than 700 million tons of which about 70 % is fly ash (Prakash and Shridaran 2009).Coal ashes are produced in two forms: fly ash and bottom ash. Fly ash is the fine-grained dusty material that is recovered and collected from furnace flue gases by electrostatic ash precipitators. Bottom ash is coarse material falls through the furnace bottom to the ash hopper below. Bottom ash is used in road and construction filler material, as a foundation material, in noise barriers, as a capping layer on landfill sites (Ghafoori and Buchole 1996). Bottom ash has been successfully used as a surface material on service roads, park trails, and driveways. This is due to the interlocking characteristic of angular particles of bottom ash (Naik et al. 2007).

Implementation of a New 7-Level H-Bridge Inverter Fed Induction Motor with Low Harmonic Values

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Abstract: A multilevel structure with more than five levels can significantly reduce the harmonic content. The output voltage and power increase with number of levels. Adding a voltage level involves adding a main switching device to each phase. The goal here is to implement the seven level H-bridge inverter with less number of switches. The output of this circuit is fed to the induction motor. Using this scheme, we can control the speed and also reduce the noise and vibration of the induction motor. This research stresses on improving the efficiency of multilevel inverter and quality of output voltage waveform. A new seven level scheme is implemented with only seven switches. The MATLAB simulation is done and hardware is implemented by using IGBT's for the seven switches of seven level inverter.

Key words: IGBT, multilevel inverter, H-bridge, induction motor, vibration, hardware

INTRODUCTION

Multilevel converters can be applied to utility interface systems and motor drives. These converters offer a low output voltage THD and a high efficiency and power factor. There are three types of multilevel converters: diode clamped, flying capacitors and cascaded. The main advantages of multilevel converters include the following, Gobinath *et al.* (2013), Sekhar and Sekhar (2012), Bharath and Satputaley (2013), Kavousi *et al.* (2012), Napoles *et al.* (2013) and Kumar (2012):

- They are suitable for high-voltage and high current applications
- They have higher efficiency since the devices can be switched at a low frequency
- Power factor is close to unity for multilevel inverters used as rectifiers to convert ac to dc
- No Electromagnetic Interference (EMI) problem exists
- No charge unbalance problem results when the converters are in either charge mode (rectification) or drive mode (inversion)

The multilevel converters require balancing the voltage across the series-connected dc bus capacitors. Capacitors tend to overcharge or completely discharge at which condition the multilevel converter reverts to a three-level converter unless an explicit control is devised

to balance the capacitor charge. The voltage-balancing technique must be applied to the capacitor during the operations of the rectifier and the inverter. Thus, the real power flow into a capacitor must be the same as the real power flow out of the capacitor and the net charge on the capacitor over one cycle remains the same (Gobinath *et al.*, 2013; Sekhar and Sekhar, 2012; Bharath and Satputaley 2013; Kavousi *et al.*, 2012; Napoles *et al.*, 2013; Kumar, 2012).

Literature review: In the study of Gobinath *et al.* (2013), two types of methods or topologies have been compared, i.e., cascaded and reduced switches topology. Out of these two, this research uses reduced switches topology. In the study of Maheswari *et al.* (2012), Wanjekeche *et al.* (2012), Kumar *et al.* (2014) and Sathik and Romani (2014), the THD contents of 7-11 and 15 level cascaded multilevel inverters have been discussed. The total harmonic distortion depends on the switching angles for different units of multilevel inverters hence, the switching angles are calculated first by using Newton-Raphson method where some of harmonic components has been eliminated. Using the calculated switching angles, THD analysis is carried out analytically as well as using MATLAB simulation.

The study of Murugesan *et al.* (2012) demonstrates how the reduced harmonic distortion can be obtained for a new topology of multilevel inverters. The new topology has the advantage of its reduced number of devices

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Photovoltaic Based Series Z-source Inverter fed Induction Motor Drive with Improved Shoot through Technique

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Abstract

This paper explores the series Z-source inverter (SZSI) topology for induction motor (IM) with solar photovoltaic (SPV) as source in drive application. Series Z-source inverter has single stage power conversion with buck-boost capability. Shoot through ratio is used for boosting dc link voltage in series Z- source inverter. In this paper, for enhancing the performance of SZSI improved shoot through envelop technique along with sinusoidal pulse width modulation control technique for solar PV based series Z-source inverter fed drive, is presented. The major benefits of modified boost control technique are current reduction and harmonics reduction in output voltage as compared to simple boost control scheme. The validity and feasibility of modified boost control technique for shoot through envelop to control SZSI fed induction motor is verified by simulation and experimental results.

1. Introduction

The use of conventional energy sources and their environmental effect have created an opportunity in choosing renewable energy sources such as solar PV. Due to low cost of renewable energy sources, solar PV system have given lot of importance particularly in the area where grid connected electricity is not available. SPV fed converter system requires buck-boost capability to satisfy the load requirement. It requires two stage power conversion. This two-stage power conversion increases volume, cost and degrades the reliability of system. For reducing cost and

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Direct-axis Current (ZDC) Control for Variable Speed Wind Energy Conversion System using PMSG

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control scheme for variable speed wind energy conversion system (WECS) ...
... ZDC ... The control scheme extracts maximum power from wind using maximum ... power ...
... paper the proposed control scheme achieves ... using back-to-back volt...
... voltage to be maintained ... the converters ... discussed in this paper is zero ...
... stator current is kept zero. Performance analysis of the system is carried out and ...
... MATLAB SIMULINK ... simulation ... proves the effective...
... variable speed WECS.

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... CONtrol.

Keywords: ... WECS ... MPPT ... zero direct ...

Introduction

Wind energy is gaining a lot of awareness because of depletion of fossil fuels and the concern over global ... environmental issues. The renewable sources present for generation of energy are solar, wind, hydro ... among these resources, wind energy is one of the highlighted and rapidly growing renewable energy ... sustainable supply, easy availability and smart and effective power conversion ...

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Synthesis and Photoluminescence in Yb doped Cerium Phosphate CePO$_4$

S.U.Bhonsule[1, a], S.P.Wankhede[2] and S.V.Moharil[3]

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Abstract. This paper presents the preparation of CePO$_4$ and Yb doped CePO$_4$ using simple solid state reaction method. PL measurements indicated significant energy transfer from Ce^{3+} to Yb^{3+} ions. Further evidence of energy transfer was provided by analysis of Luminescence Decay measurements. Energy transfer efficiency of 50% was obtained for 5%Yb doping. Energy transfer from Ce^{3+} to Yb^{3+} ions takes place by Cooperative energy transfer mechanism. Such phosphors can be used in white LED's, Lasers and energy saving fluorescent lamps.

Fabrication of Inorganic/Organic Hybrid Heterojunctions of Polyaniline Composite/Blend for the Study of Diode Characteristics

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ABSTRACT: *Inorganic/organic hybrid heterojunctions of polyaniline composite/blend with metal doped zinc oxide nanorods (NRs) have been fabricated and systematically investigated for diode characteristics. Vertically aligned aluminium (Al) and iron (Fe) doped ZnO nanorods were grown on fluorine-doped tin oxide (FTO) coated glass slides using cost effective, eco-friendly and simple solution chemistry methods. Heterojunctions of doped ZnO NRs with polyaniline (PANI), poly(3,4-ethylenedioxythiophene) doped with poly(4-styrenesulfonate) (PEDOT:PSS) and PANI:MWCNT nanocomposite and PANI:PEDOT:PSS blend showed rectifying behaviour with large rectification ratios. SEM results show clear interface between ZnO nanorods and PEDOT:PSS, PANI:MWCNT nanocomposite and PANI:PEDOT:PSS blend indicating junction formation. Ideality factors and barrier heights were calculated using thermionic emission model. Heterojunctions of undoped and doped ZnO NRs with PANI:MWCNT composite showed moderate ideality factors, reduced barrier heights and greater forward current as compared to heterojunctions of undoped and doped ZnO NRs with PANI:PEDOT:PSS blend. The study is innovative and important with respect to selection of materials for fabricating hybrid p-n heterojunction diodes.*

Keywords: Inorganic/organic, nanocomposite, heterojunctions, ideality factor, blend

RESEARCH ARTICLE　　　　　　　　　　　　　　**OPEN ACCESS**

Review on Multiply-Accumulate Unit

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ABSTRACT
In present day MAC unit is demanded in most of the Digital signal processing. Function of addition and multiplication is performed by the MAC unit. MAC operates in two stages. Firstly, multiplier computes the given number output and the result is forwarded to second stage i.e. addition/accumulation operates. Speed of multiplier is important in MAC unit which determines critical path as well as area is also of great importance in designing of MAC unit. Multiplier plays an important roles in many digital signal processing (DSP) applications such as in convolution, digital filters and other data processing unit. Many research has been performed on MAC implementation. This paper provides analysis of the research and investigations held till now.
Keywords: Carry save adder , MAC, Urdhav Triyagbhyam, Vedic Mathematics, VLSI

I. INTRODUCTION

Multiplier is an important basic building block in designing of systems using digital signal processing and in other applications such as microprocessors, microcontroller and other data processing unit. Many researchers are continuously trying to design multiplier with low power consumption, high speed, regular structure, reduced delay for compact VLSI implementation. Multiplication dominates the execution time of the most DSP and hence, it's the overall operation of the systems. Multiplication of binary numbers is usually implemented by using repeated addition and shift operations. Since the binary adders are designed to add only two binary numbers at a time, instead of adding all the partial products at the end, results in increased delay. Thus the systems speed gets reduced and consume more power.

Many algorithms are designed to perform the multiplication process. Every algorithms has its own advantages and disadvantages in terms of their area, delay, speed, circuit complexity and power consumption. Multiplier is the essential element in the MAC unit. The MAC architecture consists of multiplier, adder and an accumulator. In order to improve speed and reduction in delay of the MAC, there are two bottlenecks. The first is to reduce the partial products and the second is the accumulators. Since multipliers in MAC are rather complex circuits and must typically operate at a high system clock rate, reducing the delay of a multiplier is an essential part of satisfying the overall design.

The main goal of the MAC unit is to increase the speed which in turn reduced the delay and consumes less power. In order to increase the speed of the adders and multiplier, the number of the partial products generated must be reduced. During

the operations, the partial products determine the number of clock cycles which generates the systems delay. In digital signal processing, speed and throughput are the two important parameters and hence designing of MAC with enhance speed is need of now. The MAC unit is briefly described and its operation is introduced.

II. LITERATURE SURVEY

Meenu S Ravil, R H Khade and Ajit Saraf [1] in this paper, a floating point multiply and accumulate unit is designed using ancient mathematics that reduces the number of partial products to be added as well as increases the speed of accumulation of partial products by reducing the number of stages of partial products that needs to be added thereby making it a high performance unit. The output of this unit is simulated using simulation software ModelSim SE plus 6.2C and the language used is VHDL. G.Indira, G. Madhusudhana Rao, P.Jaya Babu, M. Ravi Kiran [4] in this paper, Digital signal processing is the application of mathematical operations to digitally represented signals. MAC is the most important block in DSP system. High throughput multiplier accumulator (MAC) is always a key element to achieve a high-performance digital signal processing application for real time signal processing applications. This is because speed and throughput rate are always the concerns of digital signal processing systems.

Hybrid Spectrum Sensing Method for Cognitive Radio

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ABSTRACT

With augmented use in the internet applications and wireless communications, higher and efficient data transfer rates are required. Hence proper and effective spectrum is the need of the hour. As spectrum demand increases there are limited number of bands available to send and receive the data. Optimizing the use of these bands efficiently is one of the science tasks. Various techniques are used to send the data at same time, but for that we have to know which bands are free before sending the data. For this purpose various spectrum sensing approaches came with variety of solutions. In this paper the sensing problem is tackled with the use of hybrid spectrum sensing method. This new networking paradigm uses the combined concept of spectrum sensing and creates one of the most robust spectrum sensing mechanism. This proposed technique is simulated using MATLAB software. This paper also provides comparative study of various spectrum sensing methodologies.

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1. INTRODUCTION

Due to increase in wireless devices and applications, the available electromagnetic radio spectrum is getting crowded day by day. It has been also noticed that, because of the static allocation policy of the spectrum, the allocated spectrum is under-utilized. The unutilized part of the spectrum results in "Spectrum holes" or "White Spaces". The limited available spectrum and the inefficiency in the spectrum usage necessitate a new communication paradigm to exploit the existing wireless spectrum opportunistically [1-4]. To deploy new services or to enhance existing ones ie. Dynamic spectrum access is proposed to solve these current spectrum inefficiency problems as shown in Figure 1.

Cognitive Radio (CR) using spectrum sensing technique can be used to solve the issues of spectrum underutilization. In order to supply extremely reliable communication for all secondary users of the network, CR is defined as "An intelligent wireless communication system that provides more efficient communication by allowing secondary users to utilize the unused spectrum segments". From the definition, the main functionalities required for the cognitive radio systems can be summarized as follows:

1. Spectrum Sensing: Sensing and monitoring the available spectrum bands in order to detect the unused portion of the primary user spectrum.
2. Spectrum Decision: The cognitive radio can allocate a channel based on the regulatory policies and spectrum sensing results.

4. Spectrum Mobility: The cognitive radio user is provided as shifting to the network user services.

Real Time Monitoring of Transformer using IOT

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Abstract: - A recent huge interest in Machine to Machine communication is known as the Internet of Things (IOT), to allow the possibility for autonomous devices to use Internet for exchanging the data. This work presents design and execution of real time monitoring and fault detection of transformer and record key operation indictors of a dispersion transformer like load current, voltage, transformer oil and encompassing temperatures and humidity. They have to look at it continuously by using this project it can minimize working efforts and improve accuracy, stability, efficiency in this project, sensors are used to sense the main parameters of equipment such as voltage, current(over voltage, under-voltage, over current) this sensed data is sent to microcontroller and this controller checks parameter limits which further send to the IOT web server Adafruit software using Wi-Fi module of these data makes sure the right information is in hand to the operator and operator can make useful decisions before any catastrophic failure on basis of that data of parameters.

Key words: Real time monitoring, Distribution transformers, IOT (internet of things).

INTRODUCTION

The internet of things [1] is about connecting the unconnected things. It allows for thing to accessible from the internet that historically have not been. The internet of things is able to improve quality of life for everyone by taking advantage of these connected thing and data produced. The billions of m2m connection make possible the everything in IOT. The process element leverages the connection between data thing and people to deliver the right information. To right thing or person, at the right time, it is these billions of connection that add value.

Distribution Transformers have a long life if they are operated under appraised conditions. However, their life is essentially decreased if they are overloaded, resulting in unexpected failures and loss of supply to an expansive number of customers hence affecting system unwavering quality. Overloading and ineffective cooling of transformers are the major significant reasons for failure in distribution transformers. Most power companies use Supervisory Control and Data Acquisition (SCADA) system for web-based monitoring of power transformers yet amplifying the SCADA system for online monitoring of distribution transformers is an a costly suggestion.

1) Distribution transformers are as of now observed physically where a man intermittently visits a transformer site for support and records parameter of significance. This type of monitoring can't give data about incidental over-load and overheating of transformer oil and windings. Every one of these variables can essentially decrease transformer life.
2) Normal transformer measurement system generally detects a single transformer parameter, for example, control, current, voltage, and stage. While some ways could recognize multi-parameter, the time of acquisition and operation parameters is too long, and testing pace is not sufficiently quick.
3) A monitoring system can only monitor the operation state or guard against steal the power, and is not able to monitor all useful data of distribution transformers to reduce costs
4) Auspicious detection data will not be sent to observing centers in time, which cannot judge distribution transformers three phase equilibrium.
5) Detection system itself is not reliable. The main principle execution is the device itself instability, poor anti jamming capability, low measurement accuracy of the data.

According to the above requirements, we need a distribution transformer real-time monitoring system to detect all operating parameters operation, and send to the monitoring center in time. It leads to Online monitoring of key operational parameters of distribution transformers can provide useful information about the health of transformers which will help the utilities to optimally use their transformers and keep the asset in operation for a longer period. This will also help identify problems before any catastrophic failure which can result in a significant cost savings and greater reliability.

Block Diagram:

In the transformer side the voltage and the current are sensed and also the oil level, oil quality, temperature is sensed using the respective sensors and also the load is sensed using this efficiency of the transformer is easily identified. Finally all the data are sent to the receiver. Based on the load current, load will shed automatically .If any short circuit fire occurs it is sensed by the fire sensor provided. The transformer side block diagram is shown below

DESIGN OF A PROSTHETIC ARM USING FLEX SENSOR

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ABSTRACT

Prosthesis is an artificial device that replaces a missing body part. In medicine, prosthesis is an artificial device that replaces a missing body part, which may be lost through trauma, disease, or congenital conditions. Prosthetic amputee rehabilitation is primarily coordinated by a prosthetist and an inter-disciplinary team of health care professionals including psychiatrists, surgeons, physical therapists, and occupational therapists. A person's prosthetics should be designed and assembled according to the patient's appearance and functional needs.

For instance, a patient may need transradial prosthesis, but need to choose between an aesthetic functional device, a myoelectric device, a body-powered device, and an activity specific device. The patient's future goals and economical capabilities may help them choose between one or more devices.

Key words: Prosthesis, Flex sensor, Data glove, Robotic arm, human hand replica.

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http://www.iaeme.com/IJECET/issues.asp?JType=IJECET&VType=8&IType=2

1. INTRODUCTION

Many people incur an illness or experience an accident that results in the loss of a limb. They may also have been born with a congenital condition in which one or more of their limbs are missing. Fortunately, there are artificial limbs that enable those people to still do things such as run, walk, reach, and grip. These apparatuses are known as prosthetics. A robotic arm is a robot device, which can perform similar functions to a human arm. Robotic arms are the important part of almost all the industries. In industries, a robotic arm performs various different works such as welding, trimming, picking and placing etc. Moreover the biggest advantage of these arms is that it can work in hazardous areas and also in the areas which cannot be performed by human. The main objective of this research work was to design and construct a prosthesis that will be strong and can perform assigned task. The hand is the one of the most complex and load bearing part of our human body which act as an input and

Review Of Diverse Techniques Used For Effective Fractal Image Compression

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Abstract - The image compression in an image processing plays an important role since the beginning of Internet era and telecommunication. It is necessary for efficient storage and transmission of image. Fractal image compression (FIC) is one of the most suitable image compression approaches for its high compression ratio and quality of retrieved images. Many algorithms are available to compress an image file like Quad tree Partitioning Huffman Coding (QPHC), Discrete Cosine Transform based FIC (DCTFIC), Discrete Wavelet Transform based FIC (DWTFIC), Grover's quantum search algorithm based FIC (QAFIC)and Tiny Block Size Processing algorithm(TiBS). This paper presents different approach of designing a fractal image compression in order to enhance the compression ratio with low losses in the image.

Key Words: Image Processing, Discrete Cosine Transform (DCT), Discrete Wavelet Transform (DWT), Fractal Image Compression (FIC), Grover's Quantum Search Algorithm (QSA), Tiny Block-Size Processing Algorithm (TiBS).

1. INTRODUCTION

Images are very useful documents nowadays for a number of applications. They need to be compressed before storing and transmitting, due to limited bandwidth and storage capacity. Image compression plays an important role in multimedia and digital communication fields. The purpose of image compression is to reduce irrelevance and redundancy of the image data in an efficient form. This not only reduces the storage cost but also increases the speed of transmission.

Image compression is divided into two categories which are Lossy as well as Lossless [1]. In lossless compression, the reconstructed image after compression is numerically same as the original image. Thus, it gives good quality of compressed images, but yields only less compression. In lossy compression [2], the reconstructed image contains some degradation comparative to the original due to loss of data with higher compression ratio. For lossless image compression, various approaches available are Variable-Length encoding, Adaptive dictionary algorithms such as Bit-plane coding , LZW coding, lossless predictive coding, etc. For lossy compression, various approaches are lossy predictive coding and transform coding such as Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT) [3].

Fractal image compression (FIC) was firstly proposed by Arnaud E. Jacquin [4]. It is one of the lossy compression technique with high Compression ratio and fast decompression times. The decoding phase is independent of the reconstructed image and the reconstructed image is of good quality [5]. FIC is based on fractal geometry that means split geometric shapes that can be break into parts, each of which is a decreased-size copy of the total, a property called self-similarity [6]. FIC is good for natural images and textures because they exhibits enormous amount of self-similarities. So there is huge work load of searching self-similarities, which lead to FIC rapid development.

In recent years, many FIC algorithms have been proposed, such as discrete cosine transform based FIC (DCT-FIC) [7], Discrete wavelet transform based FIC (DWT-FIC) [8], Baseline FIC etc. But reducing intrinsic computational complexity of FIC is still a problem. Fortunately, L. Grover [9]–[11] invented Grover's quantum search algorithm (QSA), based on quantum computing. The idea of quantum computing is brought into FIC, to utilize quantum particles as a computational resource in order to reduce search complexity in FIC. C. Zalka [12] proved that Grover's QSA is precisely best in search problems. This Grover's quantum search algorithm based FIC (QAFIC) reduces the time complexity of FIC drastically and maintain quality of retrieved images without sacrificing the compression ratio. For the above reasons and motivations, in this research, we try to use this QAFIC algorithm for further improvement.

2. LITERATURE REVIEW

The research papers on the design of fractal image compression are published in different journals and presented in many conferences.

Utpal Nandi and Jyotsna Kumar Mandal et. al.[13] designed an image compression based on the new fast classification scheme with quadtree partitioning method. In this method, the quadtree partitioning scheme where a range is broken up into four equal sized sub-ranges and the classification scheme divides square block of image (range/domain) into 16 sub-block. For each block, a 64 bit ID is generated. The ID has row part and column part each of 32 bits. The row part has four 8 bit sub-ids- ID1, ID2, ID3 and ID4. To generate ID for each row, each sub-block are assigned a two bit code out of four possible codes 00, 01,10 and 11 that are termed as

Signal Jump Detection Process

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Abstract: Now a days we see that various types of accidents happens on the road. In India many accidents are caused due to human negligence. License Plate detection and recognition is a key technique in most of the traffic related applications such as signal jumping road traffic monitoring, airport gate monitoring, speed monitoring and Automatic parking access control. It is simply the ability to automatically extract and recognition of the vehicle license number plate's character from a captured image. In this paper, we try to give an enhance view of the signal jump detection and recognition of number plate.

Keywords: Signal jump detection, Number plate detection, Plate Recognition, Image processing, ANPR system, Vehicles detection, character detection

1. INTRODUCTION

With the growth of the urbanization, industrialization and population, there has been a tremendous growth in the traffic. There is occurrence of bundle of problems too, these problems include signal jump, traffic jams, accidents and traffic rule violation. In 1868, the traffic lights only installed in London and today these have installed in every cities around the world. Today red light violation is one of the most common and serious problem which results in the collision of millions of vehicles at the traffic light signals every year. A red light violation occurs when a vehicle try to cross the intersection at the red traffic light. So to give the punishment to the drivers of these vehicles, we must identify the vehicle that violates the traffic light signals

Number Plate Recognition (NPR) is an image technology used to identify plates for their vehicles. This technology is gaining popularity in security and traffic facilities. The purpose of NPR was to build a system capable of automatically recording of the license plate numbers of signal jump traveling down a roadway.

2. EASE OF USE

2.1 Use of Microcontroller ATmega16[5]

Standard for a microcontroller based low cost platform. It consists of an Atmel ATmega16 is a low power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega16 achieves throughputs approaching 1 MIPS per MHz allowing the system designed to optimize power consumption versus processing speed. The AVR core combines a rich instruction set with 32 general purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers.

The ATmega16 provides the following features: 16K bytes of In-System Programmable Flash Program memory with Read While Write capabilities, 512 bytes EEPROM, 1K byte SRAM, 32 general purpose I/O lines, 32 general purpose working registers. On-chip Debugging support and programming, three flexible Timer/Counters with compare modes. Internal and External Interrupts, a serial programmable USART, a byte oriented Two-wire Serial Interface, an 8-channel, 10-bit ADC with optional differential input stage with programmable gain, a programmable Watchdog Timer with Internal Oscillator, an SPI serial port, and six software selectable power saving modes. The Idle mode stops the CPU while allowing the USART, Two wire interface, A/D Converter, SRAM, Timer/Counters, SPI port, and interrupt system to continue functioning. The ADC Noise Reduction mode stops the CPU and all I/O modules except Asynchronous Timer and ADC, to minimize switching noise during ADC conversions.

1. Atmega 16 run at 16Mhz clock 8051 run at lower clock speed

2. Atmega16 has inbuilt ADC 8051 doesn't has ADC

3. RAM and ROM memory of Atmega16 is more than 8051

4. Form Factor of Atmega16 is cheaper than the 8051.

5. Programmer for Atmega16 is cheaper than the 8051.

6. Atmega16 have 16kb flash memory and Atmega have 32 kb.

7. Atmega have 1kb SRAM and Atmega have 2kb SRAM

8. Atmega have 512bytes EEPROM and Atmega have 1kb

In this project we doesn't need more memory and RAM so we are not using Atmega32. And the cost of Atmega32 is also high.

2.2 Use of IC-MAX 232(Level shifter)

MAX 232 converts signals from a RS 232serial port to signals suitable for use in TTL-compatible digital logic circuits. The MAX232 is a dual transmitter / dual receiver that typically is used to convert the RX, TX, CTS, RTS signals. The drivers provide TIA-232 voltage level outputs about ±7.5 TO 12 Volts from a single 5 volt supply by on-chip charge pump and external capacitors. When a MAX232 IC receives a TTL level to convert, it changes a TTL logic 0 to between +3 and +15 V.

Hybrid Spectrum Sensing Method for Cognitive Radio

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Article Info	ABSTRACT
Article history: Received Dec 25th, 2016 Revised , 201x Accepted , 201x	The day to day developments in internet applications and wireless communications demand higher data transfer rates, this puts a load on the spectrum , as spectrum demand increases there are limited number of bands present to send and receive the data. To optimize and to use these bands efficiently is one of the tedious task. Various techniques are used to send the data parallel, but for that we have to know that which bands are free before sending data, therefore various spectrum sensing approaches came with the solution. In this paper the sensing problem is tackled with the use of hybrid spectrum sensing method, This new networking paradigm uses the Centralized concept of spectrum sensing and create one of the most trusted spectrum sensing mechanism. This proposed technique is simulate using MATLAB software.
Keyword: Cognitive Radio (CR), Hybrid Sensing, Match Filter Detector, Energy Detector, GLRT, Robust Estimator, Temperature based detector.	

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1. INTRODUCTION

Due to increase in wireless devices and applications, the available electromagnetic radio spectrum is getting crowded day by day. It has been also noticed that, because of the static allocation policy of the spectrum, the allocated spectrum is under-utilized. The unutilized part of the spectrum results in 'Spectrum holes' or 'White Spaces'.The limited available spectrum and the inefficiency in the spectrum usage necessitate a new communication paradigm to exploit the existing wireless spectrum opportunistically. To deploy new services or to enhance existing ones ie. Dynamic spectrum access is proposed to solve these current spectrum inefficiency problems as shown in figure 1.[1]
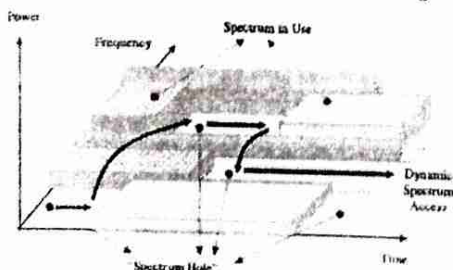
Figure 1: Illustration of spectrum white space

Cognitive radio (CR) using spectrum sensing technique can be used to solve the issues of spectrum underutilization. In order to supply extremely reliable communication for all secondary users of the network.

CR is defined as "An intelligent wireless communication system that provides more efficient communication by allowing secondary users to utilize the unused spectrum segments". From the definition the main functionalities required for the cognitive radio systems can be summarised as follows:[2] [4]

• **Spectrum Sensing**: Sensing and monitoring the available spectrum bands reliably to detect the unused portion of the primary user spectrum.

• **Spectrum Decision**: The cognitive radio can allocate a channel based on the regularly policies and spectrum sensing results.

• **Spectrum Sharing**: Coordination among multiple cognitive radio users is needed to pre-vent the colliding in the available portion of the spectrum.

• **Spectrum Mobility**: The cognitive radio user is regarded as visitor to the primary user spectrum and a reliable communication cannot be sustained for a long

Design and Analysis of Resistive Series RF MEMS Switches Based Fractal U-Slot Reconfigurable Antenna

Yogita Nafde & Rajesh Pande

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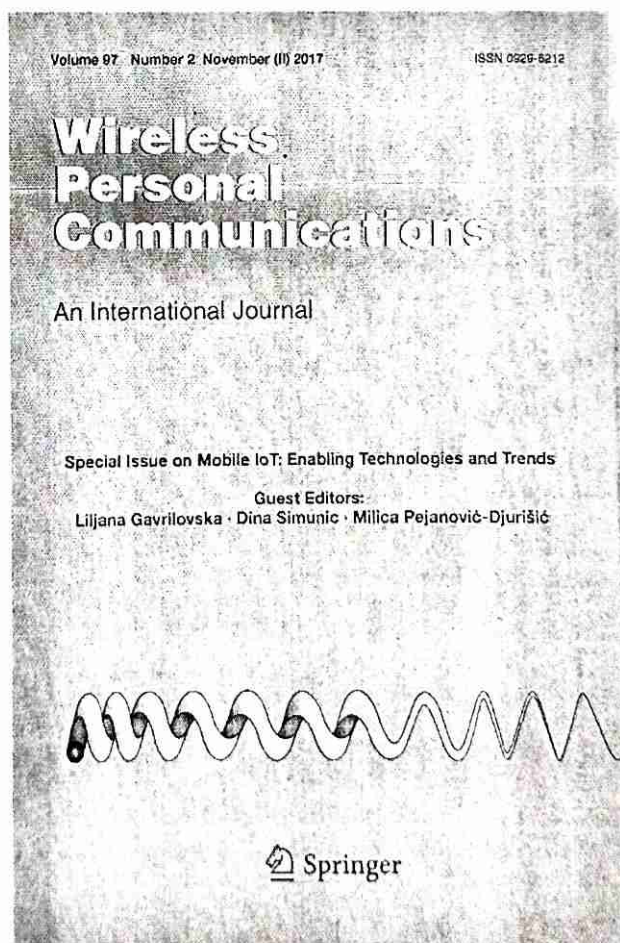
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Design of Computer Vision Intelligent System for Lane Detection

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Abstract: The Intelligent vehicle is an interesting area of research now a day which can be used for the intelligent transport system. It can help to maintain lane and changing lanes travelling lane information necessary to provide smart vehicle to achieve a smooth, safe driving. The system is developed to detect the lanes on the road along with the departure system. The concept in such systems works towards development of the lane departure warning system based on video image processing techniques for Night light, Rainy weather , broken lane and normal road conditions. Due to the growing traffic and improper driving one may suffer from an accident. The proposed system will be helpful to determine the lane in which the car/bus etc should be driven. It is a tedious job to obtain the proper lane in the night light, in broken edges of the lane also in the rainy season. The main objective of the system is to avoid this problem .To deal with this difficulty an (intelligent system) i.e. neural network/fuzzy logic is used in the proposed system which is not included in the existing system .

Keywords: Intelligent system, lane detection, departure warning, video image processing

I. INTRODUCTION

A present challenge of the automotive industry is to develop economical advanced driver assistance systems. ADAS will be able to increase traffic safety and driving comfort. Vision is the most used human sense for driving: some ADAS features rely on visual sensors. Specifically, lane departure Warning system can be obtained by detecting the lane markings on the road by means of a forward- facing camera and computer vision techniques. This method focus on this problem, which is one of the first addressed in the field of Advance driver assistance system. It is a difficult and not yet completely solved problem due to rainy conditions tremendous contrast variations, vehicles

occluding the marks, broken markings, vehicle ego-motion, foggy conditions etc.

The lane image capturing is one of the most crucial aspect in the lane detection and lane recognition, which can provide the necessary information when the vehicle is in motion. We take advantage of the information to complete automatic drive reliably and safely.

The application background is the highway or the general city-grade highways or the city roads. According to the lane of the particular road, the research on the algorithm of lane snatch will be launched in this project. So it will offer some effective technologies for the stray warning system of automated driving. Lane detection is the process to determine the lane markers on the road and then present these locations to an intelligent system. In this intelligent vehicles cooperate with smart infrastructure to achieve the system in favor of environment and better traffic conditions. The applications of a lane detecting system could be as simple as showing out lane locations to the driver on an external display, to more complex tasks such as predicting a lane change in the instant future so that it can avoid collisions with other vehicles. Some of the interfaces used to detect lanes include cameras laser range images.

II. LITERATURE SURVEY

Existing literature states that a vision based lane tracking system is based on three aspects -interface to vehicle network, camera position and calibration for the validation of the selection. Much emphasis is given on obtaining the edges of the road lane in day condition or sunny condition. The use of kalman filters to predict the lanes has also been considered. The accuracy and the dependability of the results of DAS systems can be determined by a various factors like the location of the camera and the vehicle front

TRANSMIT ANTENNA SELECTION IN MIMO FOR CONTINUOUS PHASE MODULATION SYSTEMS

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Abstract

Transmit antenna selection (TAS) technique is widely used in multiple input multiple output (MIMO) systems as it reduces the hardware complexity of multiple antennas giving all the diversity benefits of MIMO. The TAS technique proposed in literature is mainly considered with the linear modulation techniques using space time block codes (STBC). The detailed bit error rate analysis was carried out for TAS in MIMO by considering different linear modulation

CrossMark

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New Algorithm for Time and Frequency Synchronization in MIMO-OFDM Systems

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Abhay S. Gandhi[1]

Abstract This paper addresses the problem of time and frequency synchronization in MIMO-OFDM systems, which are extremely sensitive to these errors. A preamble based algorithm is proposed for the estimation of synchronization errors. Product of autocorrelation function and cross correlation function is used for symbol timing offset estimation which reduces the uncertainty in timing estimation due to timing metric plateau. Phase difference between two identical parts of the preamble is used for carrier frequency offset estimation. Simulation results are presented to validate the performance of the algorithm.

Keywords MIMO-OFDM · OFDM synchronization · Timing synchronization · Carrier frequency offset · Frequency synchronization

1 Introduction

Multiple input multiple output-orthogonal frequency division multiplexing (MIMO-OFDM) is the backbone of the most of practical wireless communication technologies such as IEEE 802.11n, 3GPP LTE, and WiMAX etc. It is one of the most used air interface for 4G and among important technologies for 5G, Massive MIMO, broadband wireless communications [1]. MIMO-OFDM combines and exploits advantages of both the technologies, for example achieving greatest spectral efficiency, delivering the highest capacity and data throughput, etc [2].

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Implementation of safety alert system for elderly people using multi-sensors

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Abstract:

The fall-detection systems are used to create a reliable surveillance system for elderly people. In this paper an enhanced fall detection system with higher accuracy, sensitivity and specificity is proposed for elderly person monitoring. It is based on smart sensors that are worn on the body and operating through consumer home networks. With treble thresholds, accidental falls can be detected in the home healthcare environment. By utilizing information gathered from an accelerometer, cardiotachometer and smart sensors, the impacts of falls can be logged and distinguished from normal daily activities.

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Affinity Group of IEEE Bangladesh Section

(35)

Paper Id	Title
2287	Improved Iterative Adaptive Thresholding Algorithm with Sleep scheduling for Lifetime Maximization in Wireless Sensor Network

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Abstract

Wireless sensing element Network may be a network distributed in universe. This one consists of big quantity of nodes that are helpful in assembly of information within the various setting. However the nodes operate on battery of adequate power. As the nodes died, the network time period is reduced. Thus raising the network time period is final issue of sensing element network. This paper proposes the node sleep scheduling technique inside the cluster of cluster heads protocol for rising energy potency. First, cluster is executed for complete set- up and cluster heads are chosen based on remaining energies of nodes. The cluster head equipments sleeping schedule in cluster supported the edge worth of energy calculated antecedently. The sleeping likelihood of every node is set by the energy of node when put next with threshold value. The implementation outcomes indicate that the advised procedure will diminish the energy intake and improve the era of network.

Paper Id	Title
2295	Impact of Service learning and Social Immersion on education and career building of young Indian Engineering Graduates – A case study

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Abstract

For more than a decade the engineering education has been a point of concern and debate since there is a large gap between the skill level cultivated by education and that required for employability. Though techniques like practice based learning and activity based learning are trying to address this, ethics and culture based learning can impact the gap to a higher level. The paper shows how service learning and social immersion projects increase the skill level of the students thus improving their learning curve. When the students are encouraged to use the technology learned for real world problems it helps develop and retain their skills. The student data set was studied with and without social immersion projects and the impact was measured in terms of their conversion to industry professionals. The results show that the conversion rate is higher. Various factors like academic performance, behavioral and social attitude of the students are considered as inputs for analysis. The analysis on academic performance is performed using Rapid Minor and the students are categorised as A,B, C and D to indicate their performance. After the student has been introduced the service learning, the performance of the same students are compared and the results prove that the skill based learning and their focus improves when combined with service learning.

Wavelet Based Image Enhancement Using Adaptive Fusion Methodology

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Abstract—Theimage fusion is one of the important branch of data fusion. Data fusion techniques have been designed not only to allow integration of different information source images, but also to take advantage of complementary. Though there are various definitions of image fusion, more or less all definitions agree that image fusion is a process to obtain better content image from multiple images. In this project, our goal is to obtain a single image, which presents better performance under several popular evaluation criteria, by fusing Wavelet transform along withBurt and Adaptive fusion algorithm on multi-resolution images. Wavelet Transform represents image variation at different scales. The processing of wavelet transform of image involves recursive filtering and sub-sampling of source images. In this paper, aadaptive threshold fusion method based on wavelet transform is proposed on multi-resolution images. It will adaptively fuse the source images by match degree and have a better performance than other methods like PCA. Further various performance matrices are evaluated for analysis. The experimental results on several images show the efficiency improvement of our method both in quality and noise reduction in comparison with several recent proposed techniques.

Keywords—*Image Fusion,Wavelet Transform,Adaptive fusion, Burt method.*

I. INTRODUCTION

The motivation for image fusion research is mainly due to the contemporary developments in the fields of multi-spectral, high resolution, robust and cost effective image sensor design technology. Since last few decades, with the introduction of these multi-sensory imaging techniques, image fusion has been an emerging field of research in remote sensing, medical imaging, night vision, military and civilian avionics, autonomous vehicle navigation, remote sensing, concealed weapons detection, various security and surveillance systems applications.

Image fusion is classified into two: Spatial domain and transform domain. Average method, select maximum\minimum method, PCA, HIS are the spatial domain methods which produces spatial distortion. While in transform domain images spatial distortion is well handled. So in the present paper wavelet transform method is used which is of the transform domain method. Image is filtered recursively and decomposes in the sub bands. Further Burt's method and adaptive method for fusion algorithm is implemented.

Proposed method can be implemented on multi-focus images also on the multi-resolution images.The objects in front of or behind the focus plane would be blurred. A popular way to solve this problem is image fusion, in which one can acquire a series of pictures with different focus settings and fuse them to produce an image with extended depth of field. This is multi-focus image fusion.
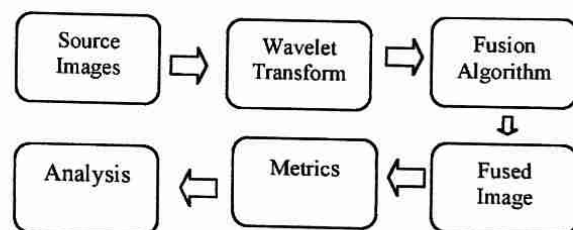
II. PROPOSED METHOD

Figure 1: Proposed Model

A. Wavelet Transform

The principle of image fusion using wavelets is to merge the wavelet decompositions of the two original images using fusion methods applied to approximations coefficients and details coefficients. The Wavelet Transform provides a time-frequency representation of the signal. Successive application of this decomposition to the LL sub band gives rise to a pyramid decomposition where the sub images correspond to different resolution levels and orientations.After one level of decomposition, there will be four frequency bands, namely Low-Low (LL), Low-High (LH), High-Low (HL) and High-High (HH) as shown in figure 2. The next level decomposition is just applied to the LL band of the current decomposition stage, which forms a recursive decomposition procedure. Thus, an N-level decomposition will finally have $3N+1$ different frequency bands, which include $3N$ high frequency bands and just one LL frequency band.
General process of image fusion using DWT

Step 1. Implement Discrete Wavelet Transform on both the input image to create wavelet lower decomposition.

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Electromagnetic Behaviour of Ohmic Series RF MEMS switch for Frequency Reconfigurable Antenna Application

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Electromagnetic Behaviour of Ohmic Series RF MEMS switch for Frequency Reconfigurable Antenna Application

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Abstract—RF switching devices are vital elements of all reconfigurable antennas as these are essential for redirecting the signals and current paths. This redirection of current changes the antenna's electrical length and subsequently changes in resonating frequencies are observed. RF MEMS switches possess an excellent electromagnetic characteristics as compared to other RF switches such as high isolation in off state and very much low insertion loss in on state. In this paper the ohmic series RF MEMS switch is designed and its critical parameters are analyzed. This ohmic RF MEMS switch is suitable for reconfigurable microstrip patch antenna operating at 1-10GHz. The effect of variation of design parameters are analyzed by varying the design parameters such as gap between the electrodes and thickness of cantilever. The pull in analysis is done to predict the operating voltage of the switch. The test prototype of switch is fabricated which is incorporated in reconfigurable antenna design and performance characteristics are presented in this paper.

Keywords— RF MEMS switch, Ohmic RF MEMS switch, Reconfigurable antenna, PDMS.

I. INTRODUCTION

RF switches have potential impact on modern reconfigurable antenna systems. The rapid growth of RF MEMS technology resulted in the development of several kinds of switches with variable operational characteristics. The several researcher have presented RF MEMS based capacitors, RF MEMS based phase shifters and RF MEMS based Cantilevers switches or capacitive switches for the development of reconfigurable antenna systems [1,2,7]. This advancement in RF MEMS technology motivated us to analyze the electromagnetic behaviour of the switch which will be beneficial for the micro strip patch antennas. The switch design plays the key role in reconfigurable antenna design as it affects the overall performance. Hence the design and optimization of switch is very important. The variation in the gap between the electrodes and thickness of the cantilever are having great impact on switch performance [4]. The paper is organized as follows-the

design methodology and switch optimization are discussed in section II & III respectively. The isolation and insertion loss analysis is discussed in section IV. The fabrication of test prototype with results is discussed in section V & VI respectively followed by conclusion.

II. DESIGN METHODOLOGY

Reconfigurable antennas are becoming more and more popular for wireless industries due to adaptation, more versatility and enhanced functionality. In this paper an ohmic series RF MEMS switch is designed and its detailed electromagnetic behavior is analyzed using HFSS and Coventor simulation tools. The design methodology is:

A. Design and optimization of ohmic series RF MEMS switch for 1-10 GHz range and suitable for micro strip patch antenna.

B. Analysis of isolation by varying the gap between the two electrodes and by varying thickness of the cantilever. Also the analysis of insertion loss, return loss & pull in analysis of the switch forms important aspects.

C. Fabrication of test prototype and testing. The introduction of PDMS based cantilever switches has been done in this work which makes it more distinguished.

III. SWITCH OPTIMIZATION AND DESIGN

The design parameters are optimized by using Taguchi Method. By the use of Taguchi method the lesser number of commutations are required and due to this the time needed for analysis is also reduced. Basically series RF MEMS switch comprises cantilever, pull down electrode, contact electrode, anchors etc. The cantilever is pull down with the application of pull in voltage between the cantilever and the control electrode. The control electrode is placed below the cantilever's middle portion and tip of the cantilever makes the contact. The overall operation of the switch depends upon several design parameters which are considered here for analysis. [2,5]

Paper No.2

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A CASE STUDY ON IMPROVEMENT OF PLANT

LAYOUT FOR EFFECTIVE PRODUCTION

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ABSTRACT

This study aims to improve the existing plant layout for Tushar Engineering and Works, Nagpur. The final solution for a plant layout has designed to balance among the characteristics and considerations of all factors, affecting plant layout in order to get the maximum advantages.

KEYWORDS: *Facility Layout, Existing Layout, Proposed Layout & Miscellaneous Time*

INTRODUCTION

Layout design involves a systematic physical arrangement of different departments, work stations, machines, equipments, storage areas and common areas, in a manufacturing industry. In today's competitive global environment, the optimum facility layout has become an effective tool in cost reduction, by enhancing the productivity. It has become very essential to have a well organized plant layout, for all available resources in an optimum manner, to achieve the maximum returns.

OBJECTIVE OF THE WORK

To design a new plant layout with the aim of organization of machines and working areas, in the most efficient way and at the same time satisfactory and safety for the personnel doing the work.

PROBLEM STATEMENT

In the present work, existing facility layout of the industry has studied in detail, which shows unutilized spaces. The present layout supports 10% of the production, most of the processes for the products are the same, but the present layout has designed for the product that accounts for 10% of the total annual production and due to this, the material handling cost has increased for the product, that has 90% of the annual production.

OVERVIEW OF EXISTING PLANT LAYOUT

Figure 1 shows an existing plant layout. The material handling time is the important criterion for the analysis and selection of existing plant layout. For the development of new plant layout, following procedure has been followed.

Step 1: Summarization of interdepartmental moves of existing plant layout.

A Case Study

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DESIGN AND DEVELOPMENT OF PNEUMATIC COTTON BOLL PICKING MACHINE

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ABSTRACT

This paper focuses on design and development of a new machine, to pick cotton bolls. In India, entire cotton is handpicked by labour, and internationally available machines for picking the cotton bolls are costlier and not affordable to Indian farmers. Also, these machines are not suitable for Indian farming condition. Pneumatic cotton boll picking machine, will give a new technology in the field of agriculture which is helpful for Indian farmers.

KEY WORDS: Cotton Boll Picking Machine, CFD Analysis, Impeller & Tetrahedron Elements

INTRODUCTION

In the world, China and India are the largest producers of cotton. Cotton is an important commercial crop in India. In India, the state of Maharashtra, Gujarat, Andhra Pradesh and Madhya Pradesh are lading cotton producing states, where cotton is harvested manually. A cotton boll picking machine, that plucks the cotton from the boll without damaging the cotton plants, does not exist in India. The average land holding capacity of farmers is 1-3 hectares of land. Hence, pneumatic cotton-picking machine will be very useful for Indian farmers, for minimizing drudgery involving in hand picking.

A pneumatic type cotton boll picking machine has been designed and developed, to pluck cotton from cotton boll, by using pure suction method. When engine gets started, impeller starts rotating and suction is created at the outlet. By using this suction pressure, cotton can be picked from cotton boll, with the help of hose pipe. Pneumatic cotton boll picking machine, has been designed ergonomically, having low weight and very efficient for Indian farms. It is a knapsack type machine. The proposed machine is affordable and easy to handle. Farmers can easily use pneumatic cotton-picking machine, without fatigue.

A CASE STUDY ON APPLICATION OF SOLAR PARABOLIC TROUGH COLLECTOR FOR REDUCING PROCESSING COST

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ABSTRACT

This paper deals with the use of solar parabolic trough collector for improvement in productivity in aluminum anodizing process by reducing the processing cost. The case study is carried out at aluminium anodizing plant which suffered from high production cost due to high gas consumption. During this study, researchers analyzed energy consumption at different processes in the plant and maximum consumption of gas is found out in the etching and sealing process. To reduce this gas consumption, researchers come out with a solution of use of solar parabolic collector for heating of acid and water for etching and sealing process. With the installation of solar parabolic trough, the gas consumption is reduced and productivity is increased.

Keywords: anodizing process, solar parabolic trough collector

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http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=8&IType=11

1. INTRODUCTION

Arunudoy Industry is an aluminium anodizing plant situated at MIDC, Nagpur in central India. Figure 1 explains the process flow of aluminium anodizing at the plant. The plant caters to the supply of aluminium window panels and other applications requiring an anodized surface finish. With an increasing number of competitors and existing high processing cost, profit margins kept on declining, due to which the anodizing plants forced to look and adopt cheaper and nonpolluting technologies to reduce processing cost and comply with tight government norms.

ICEMS 2016

Formulation of Mathematical Model for Processing Time Required for Bamboo Sliver Cutting Using HPFM

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Abstract

The present work is the formulation of models for sliver cutting from bamboo using human powered flywheel motor (HPFM).It reports the design of experimental work to be executed for establishing approximate generalized empirical model for Resistive Torque, Processing Time & No. of slivers during Bamboo Sliver cutting process using human powered flywheel motor (HPFM) on the basis of experimentation data chosen using methodology of engineering experimentation. Out of which process for formulation of mathematical model for Processing Time required for Bamboo Sliver cutting process is elaborated completely in this paper

1. Introduction

The Bamboo Sliver cutting machine driven by human powered flywheel motor (HPFM) consists of Energy Unit and Process Unit. Energy unit consists of bicycle drive mechanism with speed increasing gearing, appropriate clutch transmission and a flywheel. Process unit is the bamboo sliver cutting unit which is coupled to the energy unit.

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Need of Six Sigma in Testing Laboratories: Some Explorations

Shailesh V. Wandsakhe (Bapurao Deshmukh College of Engineering, Sevagram, India), Sunil V. Deshmukh (Suresh Deshmukh College of Engineering, Selukate, India) and Ramesh R. Lakhe (Shreyas Quality Management Systems, Nagpur, India)

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Abstract

Six sigma is a well-established improvement approach implemented to companies like Motorola and General Electric. Acknowledging grand success in terms of global productivity and performant factors in hospitals and in Health care sector, it is high time for the application of the same to achieve similar benefits in healthcare sector. Six sigma is currently being spread to several sectors improving their work. Acknowledging this situation, few articles have been published in the present review literature on this subject. The aim of this article is to clearly focus on different features of Six Sigma and its successful applications in testing laboratories as well as for systematically review articles are there discussing Six Sigma strategy implementation in the laboratory field.

Article Preview

Introduction

The importance of institutionalized healthcare system with a development perspective is a study by the Institute of Medicine reports the annual preventable deaths 44,000 in the US and estimated to be 2.10 million patients deaths due to laboratory services remain important as around 70% of the patient clinical decisions are based on the central laboratory services (Plebani et al. 2010). The total lab step procedure is divided into preanalytical, analytical and post-analytical measurement systems. Identifying the error rates is to be in pre-analytical 46% to 68.2% for analytical and 9-55% for post-analytical phase (Stankovic 2004) various project quality within the testing laboratory and its more outcomes.

Six sigma was introduced during manufacturing industry by Motorola Corporation in the 1980s with the goal of decreasing the defect rates in production process, and in the current trends used for improving the quality process and near zero defect rates in the healthcare system. Six sigma is an improvement and data driven methodology. Six sigma officers use it in combination with total allowable error. It is quantitative measure of the overall variability performance against a requirement methodology. Six Sigma is viewed today as a business driven, multi-dimensional structured approach for improving quality of the process.

The main focus of this article is the application to the analytical phase with a quantitative effort. This article reviews the basic principles of Six Sigma methodology and their practical utility in the Testing Laboratory.

What is Six Sigma?

Paper No. 7

DESIGN AND DEVELOPMENT OF CONSTANT PRESSURE DELIVERING PUMP

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ABSTRACT

Water pressure is one of the major problems to day we are facing in domestic, agriculture and industrial sector since in all cases the initial requirement is to provide the water at high pressure. To maintain proper boosting pressure in commercial buildings and all other purposes, hydro pneumatic pump can be used. These pumps are highly energy efficient as we maintain a set pressure level whereas if we use constant speed booster systems it will tends to waste of energy. Hydro pneumatic system are generally installed in the basement of a building for the convenience of the user on the other end of a fixture side at any given time. Boosters have a simple job; they "charge" the system with pressurized water such that as soon as tap is opened on an upper floor, the water is available immediately for the user. This reality has its inherent "inefficiencies" since many times throughout the day, the pump must either re-start to replenish any lost water in the system or continue to run as the water is disbursed to the fixture throughout the day. Sometimes these "occasional" loads can last throughout the day, this phenomenon realize that this run time was costing more money. Hence the work of construction, designing and selecting of various accessories is being carried out in industry which is given in this paper.

Keywords: Control Panel, discharge, losses, manifold, pressure.

1. INTRODUCTION

A pump is a machine which is used to raise the pressure of the liquid and to move the liquid with pressure from one place to another. A pump can be further defined as a machine that uses several energy which gets transform to increase the pressure of a liquid. The transfer of liquids against gravity existed from time immemorial. A pump is one such device

Paper No. 8

Design of Experimentation process for grains and herbs drying process using Conical Solar Dryer

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Abstract- Drying is one of the methods used to preserve food products for longer periods. The objective of this work is to develop a conical solar dryer in which the grains are dried by forced convection, the air passing through the aluminum plate present in the collecting tank heated due to high temperature of plate due to trapped heat by glass. The other problem arise is orientation of sun which is eliminated by conical solar dryer containing four drying chamber so that orientation of sun does not become the issue [1,2]. This paper presents an experimental investigations and Sequential classical experimentation technique has been used to perform experiments for various sizes of green herb, at different weather conditions to establish a model for moisture removal rate for drying operation. This paper also reports the experimental procedure to establish mechanical properties using specially designed instrumentation during experimentation.

Keywords- Conical Solar dryer, forced convection, Green Herbs, Instrumentation

I. INTRODUCTION

The disadvantages of open sun drying need an appropriate technology that can help in improving the quality of the dried products and in reducing the wastage. This led to the application of various types of drying devices like solar dryers, electric dryers, wood fuel dryers and oil burner dryers [3]. However the high cost of oil and electricity and their scarcity in the rural areas of most third world countries, have made some of these dryers very unattractive. Therefore, interest has been focused mainly on the development of solar dryers [4,5]. One basic disadvantage of forced convection dryers lies in their requirement of electrical power to run the fan. Since the rural or remote areas of many developing countries are not connected to the national electric grids, the use of these dryers is limited to electrified urban areas. Even in the urban areas with grid connected electricity, the service is unreliable. In view of the prevailing economic difficulties in most of these countries, this situation is not expected to change in the foreseeable future. The use of natural convection solar dryer could boost the dissemination of solar dryers in the developing countries. Therefore, experimental performance of solar dryer has been evaluated in this project.

This project presents the design, construction and performance of a solar conical dryer for food preservation. In the dryer, the heated air from a separate solar collector is passed through the perishable food item. The results obtained during the test period revealed that the temperatures inside the dryer and solar collector were much higher than the ambient temperature during most hours of the day-light. The temperature rise inside the drying cabinet was up to 74° for about three hours immediately after 12.00h noon.

II. PROBLEM CONSTRAINTS

Drying processes play an important role in the preservation of agricultural products [6]. They are defined as a process of moisture removal due to simultaneous heat and mass transfer. The purpose of this project is to present the developments and potentials of solar drying technologies for drying grains, fruits, vegetables, spices, medicinal plants. The traditional method of drying, known as sun drying, involves simply laying the product in the sun on mats, roofs or drying floors. Major disadvantage of this method is contamination of the products by dust, birds and insects. Some percentage will usually be lost or damaged, it is labor intensive, nutrients loss, such as vitamin A and the method totally depends on good weather conditions. Because the energy requirements- sun and wind - are readily available in the ambient environment, little capital is required. This type of drying is frequently the only commercially used and viable methods in which to dry agricultural products in developing countries. The safer alternative to open sun drying is solar dryer. This is a more efficient method of drying that produces better quality products, but it also requires initial investments. If drying conditions such as weather and food supply are good, natural circulation solar energy, solar dryers appear to be increasingly attractive as commercial proposition.

III. CONSTRUCTION OF CONICAL SOLAR DRYER

The experimental set-up of an indirect forced natural convection solar dryer consists of a flat plate solar air collector, conical drying chamber and four drying trays. The schematic diagram of the experimental set-up is shown in Fig 1. A 1 mm thick heating plate made up of Aluminum sheet painted with dull black paint is used as a collector plate to