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Principal

DESIGN OF PROPELLER POWERED VEHICLE

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Abstract-In the last decade many researches have been carried out on wind driven vehicle; a large number of academic publications have been presented. There have been many "Down Wind Faster than the Wind (DWFTTW)" arguments based on energy flow. Wind driven vehicle systems travel faster than the wind along its direction. Here an attempt has been to run a car by using propeller i.e "Propeller powered aircraft". It is one type of simple power system vehicle, which can use for the ground vehicle. In the current scenario the construction of vehicle is very tough challenge for their complex design. It requires lots of time and precaution. It can't be constructed by a single engineer or expert. Propeller powered vehicle is one of the solution to solve these challenge. Propeller power car has a simple design. Propeller is placed at front or back of the main body which gives power to the car. And direction is controlled by the hinges which are connected to the wheel and rudder positioned back of the car, which is controlled by the remote. In defense shifting a vehicle is a very complex task; propeller power car is the solution for them it can be easily dismantled and easily assembled. In any type of emergency assemble it within an hour and can be used. It is pollution free vehicle. Here an attempt has been made by fabricating small scaled modeled and we observed that it is having good balancing; no issue in direction control and its drifting was very good.

Key Words- Airfoil, DWFTTW, Momentum, Propeller, and Thrust Force.

I. INTRODUCTION

In the last decade many researches have been working on propeller driven vehicle; a large number of academic publications have been presented. Here an attempt has been to run a car by using propeller i.e "Propeller powered aircraft". This paper discusses about the feasibility of propeller power aircraft. Here the propeller power car has been tested on three types of two types of ground surface and compare with the theoretical results. It is one type of simple power system vehicle, which can use for the ground vehicle. In the current scenario the construction of vehicle is very tough challenge for their complex design. It requires lots of time and precaution. It can't be constructed by a single engineer or expert. Propeller powered vehicle is one of the solution to solve these challenge. Propeller power car has a simple design. Propeller is placed at front or back of the main body which gives power to the car. And direction is controlled by the hinges which are connected to the wheel and rudder positioned back of the car, which is controlled by the remote. In defense shifting a vehicle is a very complex task; propeller power car is the solution for them it can be easily dismantled and easily assembled. In any type of emergency assemble it within an hour and can be used. It is pollution free vehicle. Here an attempt has been made by fabricating small scaled modeled and we observed that it is having good balancing; no issue in direction control and its drifting was very good.

Propeller power vehicle are small model radio-controlled that moving by electric motor. The Propeller power vehicle is run remotely with the help of a transmitter with joysticks that can be used to run the car and perform different maneuvers. The transmitter comes also with a receiver which is installed inside the Model Propeller power vehicle which receives the commands send by the transmitter and controls servos. The servos are small motors which are mechanically linked to the control surfaces e.g., rudder for yaw control. The servos moves the control rods (which are small rods that connect the servo to different control e.g. to rudder etc) which in turn moves the control

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The Journal of Chemical Thermodynamics

Volume 93, February 2016, Pages 8-18

Studies on molecular interactions of some neurotransmitters in water using volumetric and compressibility measurements at $T = (278.15, 288.15$ and $298.15)$ K

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Highlights

- The compounds studied are bioactive amino acid neurotransmitters.
- Effect of concentration and temperature on derived parameters has been studied.
- NaGlu, Gly.HCl are structure breakers and GABA maker.
- Scaled particle theory (SPT) has been used in interpretation of volumetric results.

Abstract

The systematic measurements of densities (ρ) and speeds of sound (u) of aqueous binary mixtures of bioactive amino acid neurotransmitters viz. gamma amino butyric acid, glycine hydrochloride and sodium glutamate at different temperatures *i.e.* $T = (278.15, 288.15$ and $298.15)$ K within the concentration range of $(0.05$ to $0.35)$ mol \cdot kg⁻¹ have been carried out. The obtained data of densities and speeds of sound were used to calculate different derived parameters such as apparent molar volume of solute (V_ϕ), isentropic compressibility of solution (κ_s) and apparent molar isentropic compressibility of solute (κ_ϕ) of gamma amino butyric acid, glycine hydrochloride and sodium glutamate in water at different temperatures. The limiting values of apparent molar volume (V_ϕ^0) of solute, apparent molar isentropic compressibility (κ_ϕ^0) of solute and apparent molar expansivity

Chloro and Iodo - Stemmed products of Chitosan ^{SAS}

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Abstract

Chitosan is a biopolymer obtained by deacetylation of chitin. Although various derivatives of chitosan have been proposed in specified literature, this study presents a method for the synthesis of Chloro and Iodo derivatives of chitosan. The Chloro and Iodo derivatives synthesized were characterized by ^{13}C - and ^1H -NMR, Infrared spectroscopy, XRD and CHNS. The main scope of this result was to generate derivatives through reaction on the functional groups present in the chitosan keeping its backbone intact.

Chitosan is a biopolymer that consists of D - Glucosamine (GICN, nearly 80%) and N-acetyl-D-glucosamine. (nearly 20 %) units obtained through deacetylation of chitin using hot alkali.¹² Like chitin, chitosan is a $\beta(1-4)$ glycan and has been described as "nature's most versatile biomaterial".⁵ It is found that naturally occurring polysaccharides are acidic in nature whereas chitin and chitosan are basic in nature. Although at molecular level, chitin and chitosan appear similar, having hydroxyl and amino groups, chitosan is more accessible to reagents as compared to chitin due to its less crystalline structure. It is found that chitosan can be dissolved in acetic acid the most.

This study presents a new approach towards the chemical modification for the synthesis of chloro and iodo chitosan from chitosan. The chemical structure of chitin and chitosan is shown in figure 1 and 2 as a family of polymers which present a high variability in their chemical and physical properties.

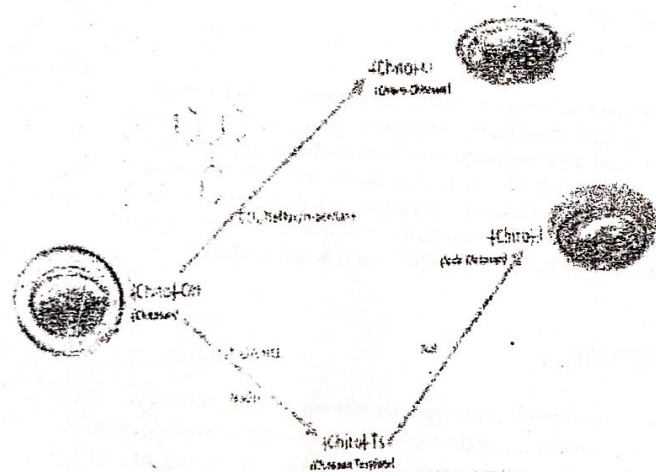
Material and Methods

Chemicals: Crab shells, Sodium Hydroxide, Hydrochloric acid, Tosyl chloride, Chloroform, Carbon Tetra Chloride (CCl_4), Triphenyl Phosphine (PPh_3), Pentane and Dry Benzene were used. All the chemicals were of analytical grade and were used without further purification. Distilled water was used throughout the experiment.

Synthesis of Chitosan from Crab Shells: Crab shells were thoroughly washed with distilled water and finely grinded in mortar and pestle and kept at room temperature for 12 h. 10 gm of this powder was taken in the beaker and mixed with 1M hydrochloric acid to dissolve the calcium carbonate available therein, followed by heating at 70°C on hot plate. The heated product was demineralized with 100 ml of 1M Sodium Hydroxide solution with constant stirring for 3 hrs. The solid content was carefully filtered and dried at 60°C for 16 h in an oven. The yellow colored fluffy powder was obtained as chitin yielding 4 g of product.

Powdered chitin (4 g) was placed in an air tight round bottomed flask and further treated with 150 ml of 40% sodium hydroxide solution. The constantly stirred solution was heated at 125°C for 1 h followed by cooling, washing with distilled water and drying at 60°C for 16 h in vacuum. The formation of chitosan through this process yielded 2.7 g of base product obtained from initial 10 g of crab shell. The chitosan as obtained is shown in figure 3.

Synthesis of Chloro Chitosan: Chloro chitosan is synthesized from the as-synthesized chitosan by halogenations of chitosan hydroxyl group. 1 gm of synthesized chitosan was taken in a round bottom flask



Keywords: Chitosan, Chloro-Chitosan, Iodo-Chitosan, Biopolymer, Derivative.

Introduction

Chitin was the first polysaccharide identified by man from mushrooms in 1811 by Henry Braconnot (1780-1855). Further in 1859, Prof. C. Rouget subjected chitin to alkali treatment resulting into the formation of chitosan. Although chitin remained an unused natural resource for a long time, interest in this polymer and its derivative such as chitosan and chito oligosaccharides (COS) has increased in recent years due to their unique biodegradability, bio-renewability, biocompatibility, physiochemical inertness and hydrophilicity while chitin occurs in great number of animals such as fungi, diatoms, nematodes etc. but the commercial exploitation is mainly focused on marine resources such as shrimps, crabs, lobsters, squid wastes etc. Chitin is a cationic amino polysaccharide composed of N-acetyl D -glucosamine with beta (1-4) glycosidic linkage between each monomer. When chitin reaches a nitrogen content of more than 7 % by weight, or when the degree of deacetylation is over 60 %, the term chitosan is preferred.¹⁰

Photoluminescence Study of Tb³⁺ Doped CaCO₃ Synthesized By Solid State Metathesis

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Abstract. Conventional solid-state reaction or simple solution precipitation techniques suffer from several limitations, i.e. a high processing temperature, relatively high preparation cost and more time of preparation, highly complicated synthesis, in-stoichiometric compositions and poor crystallinity. Preparation of inorganic phosphors by microwave assisted Solid state metathesis is one of the superior methods of synthesis. Time duration required for synthesis by microwave assisted synthesis is relatively low. The required reaction temperature can be attempted using domestic microwave oven with consumption of relatively low energy. CaCO₃ is one of the most abundant biological minerals in nature and has found many important applications in industry, such as pigments, paper makings, plastics, rubbers, and so on.

INTRODUCTION

The use of microwave energy in conjunction with Combustion Synthesis have been reported for a significant number of material systems, composites and coatings with some studies making use of domestic microwave ovens to conduct their research. Microwave heating involves heat generation within the compact via material – microwave interactions as opposed to the conventional means of heating which usually travels inwards from the external boundaries of the material. A considerable number of reactive powder systems involve a metallic component. Although bulk metals are known not to couple well with microwaves and would normally reflect them. However due to very small and limited skin-depth microwave absorption levels, metal powders with their small dimensions have been shown to volumetrically heat due to microwave interactions [1].

Powder mixing procedures were found to have a pronounced effect on the ignition characteristics of the mixture. For example, when the powders were mixed using a pestle and mortar for 2 hour, it was not possible to ignite the mixture even after 15 min of microwave exposure. However, ball-milled powders using alumina balls were found to ignite with time-to-ignition considerably decreasing with increase in ball milling time. The authors attributed this to a reduction in particle size with increase in ball milling time as confirmed through SEM analysis. Gedevanishvili et al. [2] have shown that, preheating metal powder compacts to a critical temperature can enable enhanced microwave coupling and self-heating through microwave-material interactions. Moreover they have used microwave 'sintering' in conjunction with Combustion Synthesis to form a wide range of intermetallics and alloys including binary and ternary compositions reporting that for most cases ignitions start internally from within the compact. Microwaves can either be switched off immediately following the reaction completion or be kept following the reaction as a form of sintering. Here the higher temperature supplied by the Combustion Synthesis reaction is effectively used for enhanced microwave absorption. Moreover enhanced microwave –material interactions or absorption with increased input power at the reaction zone during SHS can increase wave velocities and combustion temperatures [3].

The use of microwave energy to initiate SHS reactions has been reviewed by Binner and Bradshaw [4]. Microwave initiation usually results in ignition occurring at the center of the body with the combustion wave front propagating radially outwards. This leads to a number of differences compared with conventionally ignited SHS



Contents lists available at ScienceDirect

Journal of Luminescence

Journal homepage: www.elsevier.com/locate/jlumin

Full Length Article

Effect of Ce³⁺ ion on Dy³⁺ or Mn²⁺ in KMgSO₄Cl synthesized by centrifuge method

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ARTICLE INFO

Article history:
Received 14 April 2015
Received in revised form 21 November 2015
Accepted 2 December 2015

Keywords:
Luminescence
XRD
SEM
Phosphor
Rare earth
Centrifuge technique
CIE

ABSTRACT

In this paper effect of Ce³⁺ ion on Dy³⁺ and Mn²⁺ ions in microcrystalline KMgSO₄Cl host prepared by ethanol (centrifuge technique) method has been discussed. In KMgSO₄Cl sample X-ray diffraction (XRD), scanning electron microscopy (SEM) and photoluminescence (PL) characteristics have been studied. Powder X-ray diffraction analysis shows the crystalline nature of the phosphor prepared by this new route. The morphological structures of the samples were conducted using SEM technique. An average crystallite size was found to be 5 μm. Photoluminescence in KMgSO₄Cl:Ce³⁺ is observed at 324 nm and 344 nm along with red emission broad band at around 644 nm. In KMgSO₄Cl: Ce, Dy phosphor Ce³⁺ emission around 324 and 344 nm overlaps rather well with Dy³⁺ excitation. The addition of Ce³⁺ showed higher photoluminescence (PL) intensity for the Dy³⁺ emissions around 482 and 576 nm excited via Ce³⁺ ions at 284 nm due to ⁴F_{9/2} to ⁶H_{15/2} and ⁶H_{13/2} levels. Ce³⁺ → Mn²⁺ energy transfer process occurs in KMgSO₄Cl host. KMgSO₄Cl: Mn does not give PL at 284 nm excitation but for co-doped samples with cerium, Mn²⁺ ions exhibits efficient fluorescence at around 560 nm due to ⁴T₁₋₆A₁ transition. KMgSO₄Cl: Dy or KMgSO₄Cl: Mn directly exciting does not show any emission while addition of Mn²⁺ enhances red emission of Ce³⁺ at 644 nm. The CIE co-ordinates of KMgSO₄Cl:Ce; KMgSO₄Cl:Ce, Dy and KMgSO₄Cl:Ce, Mn phosphors reveals that the emission colour varies from blue to deep-red. Hence this material may be a potential lamp phosphor.

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1. Introduction

By continuing the study on the same KMgSO₄Cl host by adopting new ethanol synthesis method (centrifuge technique), we could successfully prepare it. Previously we have worked on KMgSO₄Cl: Ce; KMgSO₄Cl: Ce, Dy and KMgSO₄Cl: Ce, Mn (S.C. Gedam, S. J. Dhoble, S. V. Moharil J. Lumin. 124 (2007) 120–126) by using wet chemical method. The luminescence properties of co-activator compounds have received considerable interest. The main interest has been received concerned with the utilization of efficient energy migration on sensitizer to activator. Energy transfer phenomena have led to the development of new and efficient photoluminescence materials. Cerium doped materials usually show strong broad-band PL. The luminescence is very strongly dependent on the host lattice and can occur from the ultraviolet to the red region of the electromagnetic spectrum. Ce³⁺ emission results from 5d to 4f type of transition. As far as the

spectroscopy is concerned, the Ce³⁺ ground state [1,2] is split between ²F_{5/2} and ²F_{7/2} and these are the only levels possible for 4f configuration. f-f transition in Ce³⁺ is in the IR region. At room temperature, they occur as unresolved bands with a maximum at about 2200–2300 cm⁻¹ and half width of 250–300 cm⁻¹. The excited state, above ²F_{7/2} level, belongs to 5d configuration in the form of broad bands. Energy transfer process from Ce to activators in different host matrices is well known. Broad band emitters are often used to sensitize the luminescence of RE ions. Optical transitions within a 4fⁿ configuration are so strongly forbidden that they appear in the absorption spectra as very weak. However, excitation resulting in high light output can be achieved by exciting a different ion (i.e., sensitizer) with an optically allowed transition which transfers the excitation energy to the RE activator.

Efficient energy transfer from the broad (i.e. Ce³⁺) to the narrow-line emitter (i.e., Dy³⁺ or Mn²⁺) is possible only between nearest neighbours in the crystal lattice and optimal spectral overlap. If the spectral overlap is small, only partial energy transfer is possible. CaF₂: Mn does not give any fluorescence under the UV excitation while CaF₂: Ce gives a characteristic Ce³⁺ fluorescence emission with UV

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Effect of Metal Doped Zinc Oxide Nanorods on Photoelectrical Characteristics of ZnO/Polyaniline Heterojunction

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Received: 17 October 2015 / Accepted: 22 January 2016 / Published online: 27 January 2016
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Abstract The *n*-type vertically aligned metal doped ZnO nanorods (NRs) and *p*-type proton acid doped polyaniline (PANI) inorganic/organic heterojunction diodes have been fabricated. Aluminium (Al) and iron (Fe) doped ZnO NRs were grown on seed ZnO layer on fluorine doped tin oxide coated glass substrates by high temperature chemical bath deposition method. The elemental analysis using EDAX confirm doping of Al and Fe in ZnO. The morphology of doped ZnO nanorods and ZnO/PANI heterojunction exhibit well defined uniform nanorod arrays and interface between nanorods and polyaniline matrix respectively. The dark current–voltage curves confirmed the rectifying diode like behaviors of the heterojunctions, whereas under illumination, the junction revealed good sensitivity to UV and visible range with increased current densities. The highest ideality factor and lowest barrier height was found for FeZnO/PANI heterojunction under dark and under light compared to that of ZnO/PANI, AlZnO/PANI. This research is innovative with respect to low cost synthesis of efficient and sensitive hybrid *p*–*n* junction diodes and possibly serves as the building blocks for future optoelectronic applications.

Keywords Metal doped ZnO nanorods · Polyaniline · Ideality factor · Barrier height · Hybrid *p*–*n* junction

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1 Introduction

Hybrid inorganic/organic heterojunction devices have received much attention as promising junctions for wide-spread applications. There are reports available on the use of these heterojunctions as gas sensors, light emitting diodes, photo detectors and solar cells [1–4]. Transparent conducting oxide (TCO) serves as the inorganic semiconductor in these heterojunctions. Zinc oxide (ZnO) is one of such famous transparent conducting oxides [5]. ZnO, especially in its nanostructured form, has been considered to be attractive because of the wide band gap (3.4 eV) and high exciton binding energy (60 meV). However, it is difficult to fabricate ZnO with stable *p*-type conductivity because of its intrinsically *n*-type nature. The *n*-type behavior is typically because of the interstitial defects and oxygen vacancies in ZnO wurtzite structure. The difficulty in doping ZnO to *p*-type impurity has led the researchers to prepare the heterojunctions with other *p*-type semiconductors for its use in various electronic devices [6]. The quality of *p*–*n* heterojunction is mainly limited by the lattice mismatch. This difficulty gets resolved by using ZnO nanostructures. The nanostructures of ZnO possess self organized growth property which enables easy growth of *p* type material over *n* type material thus producing heterojunctions of quality devices by using external *p*-type materials [7]. In addition, ZnO nanorods provide large surface area which is useful for the heterojunction formation. ZnO/organic hybrid structure has found importance in solar cell, photodiodes, photovoltaic and photochemical applications. The electrical conductivity of ZnO can be increased by adding a small amount of impurity (doping) e.g. alkali metals like B, Li [8] or metals like Al [9], Fe [10], Cu [12], Ni [13], Co [14] and Ga [15, 16] etc. There are reports available for higher values of conductivities

Innovative Teaching Tools And Techniques Language Lab- An Effective Technique For Learning Nuances Of Language

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Today's world considers English as a global language because there has never been a language so widely spread or spoken by so many people as English. The purpose to write this paper is to provide an overview of technology-related changes that are taking place in the engineering institutes of India in learning and teaching English language and to examine how far these changes are actually able to make a difference at the ground level. The advancements in Science and Technology and their use of new terminology have been showing an immediate impact on the language, adding tens of thousands of words to the English dictionary. As these innovations come down from the English-speaking countries, those who wish to update their knowledge and learn about new inventions need to learn English well. In India, English language teaching mainly depends upon the chalk and talk method of teaching. But in recent times the major institutes have begun to realize that language learning should take place in a realistic and practical manner only to achieve language proficiency and fluency. The objective of this paper is to present significance of Digital English Language lab in engineering and technology institutes in India. The quality of the language proficiency will enhance when students learn it from the multimedia, digital and computerized Language Lab.

Intensive reading skills can also be developed by means of various language lab softwares which enables the teacher to assess the reading speed and accuracy of the learners. A language lab also aids learners improve their Study skills like note- taking, note -making and summarizing which integrate the receptive and expressive skills of English language learning English courses of the institution which focus on language skills and soft skills for Placement and higher education. in India and abroad, the two being the mandate of the Directorate of

Design and Simulation of Multirate Filter using BFD Multiplier Architecture

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Abstract: Interpolation and Decimation is very much effective in Multirate signal processing application. This paper proposes VLSI architecture polyphase decimation filter with decimation factor using BFD multiplier. High speed, area and power efficient are the main concerns in this VLSI design. The power dissipation can be reduced in polyphase decimation filter when uses with BFD multiplier which consumes low-power when compared to the conventional multiplier. The speed can be improved by using carry look ahead adder. This architecture also provides significant reduction in area (in terms of number of slices).

Keywords: Area, BFD multiplier architecture, Carry look ahead adder, Polyphase decimation filter, power dissipation, Speed.

I. INTRODUCTION

Polyphase decomposition is the vital techniques which play an important role in Multirate signal processing. Polyphase structure utilize fir filter that leads to very efficient implementation. Less area and minimum power consumption are some of the most important factor for the DSP systems and high performance systems. the performance of a system is contributed by the performance of the multiplier. Power dissipation is the factor that changes speedily and is one of the major issues today. Text as instruments are making a digital circuit that does not require power supply. the power dissipation is minimizing by reducing the switching activity factor and by reducing number of operations to be in custody of filter structure. switching activity is reduce by adder and counter. the BFD multipliers have slightly less area and power than optimize tree multipliers while keeping similar delay. the reduction of power consumption is obtain via altering multiplicands in software without any hardware. spst (spurious Power Suppression Technique) is apply on multipliers for high-Speed and low power purposes.

A low power structure bypass zero, feed A directly (BZ-FAD) for shift and add multiplier architecture considerably minimize the switching activity. In this paper, FIR filter with power efficient BFD multiplier is preferred here to get reduction in power dissipation. This paper describe the design of polyphase filter with high speed, low power BFD multiplier architecture which use carry look ahead adder. This provide reduction in power dissipation as well as increase in speed when compare to conventional multiplier.

II. PROPOSED FILTER STRUCTURE

A filter can be realized with several ways such as cascade form, direct form. If the transfer function of the filter is decomposed into number of sub twigs then process is called polyphase realization.

A) Polyphase FIR Filter

FIR filter is a zero-phase filter. It has magnitude equal to unity in the pass band and zero in the stop band. FIR system is described by the difference equation shown in

$$y(n) = \sum_{k=0}^{M-1} b_k x(n-k) \quad (1)$$

Where filter coefficients $y(n)$ & $x(n)$ are output and input sequences. The equivalent system function is known in "(2)".

$$H(z) = \frac{Y(z)}{X(z)} = \sum_{k=0}^{M-1} b_k z^{-k} \quad (2)$$

A linear-phase FIR filter of order N is characterized by symmetric impulse response given in "(3)".

$$h(n) = h(n-N) \quad (3)$$

and asymmetric impulse response is given in "(4)".

$$h(n) = -h(n-N) \quad (4)$$

In a general case, L-branch polyphase decomposition having transfer function of order N is given by "(5)".

$$H(z) = \sum_{m=0}^{L-1} z^{-m} E_m z^L \quad (5)$$

$$E_m = \sum_{n=0}^{L-1} h(n+m) z^{-n}, 0 \leq m \leq L-1$$

FIR filter is realized based on polyphase decomposition which leads a parallel structure. To point up this approach, a casual FIR transfer function $H(z)$ of length nine is gives in "(6)".

$$H(z) = h(0) + h(1)z^{-1} + h(2)z^{-2} + \dots + h(8)z^{-8} \quad (6)$$

Area Optimized VLSI Implementation for Color Image Edge Detection

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Abstract: Mathematical structure study is recognized as signal processing method and image. Mostly tools such Matlab is suited for image processing. Now the image processing technique is used may field. Image compression by using image edge detection method is used mainly to reduce the memory requirement. Important terminology in image processing is edge detection in computer vision. It is in the front position of image processing for object detection, so it is crucial to have a good understanding of edge detection operators. In the present work, relative analyses of various edge detection techniques in image processing are presented.

Index Terms: Color Edge Detection; FPGA Implementation, Edge Detection.

I. INTRODUCTION

There are numerous edge detection techniques existing for object boundary extraction and segmentation of digital images. Detection of edges [1-2] is a basic difficulty image processing and computer vision. It has been a main regarding issue for the researchers. The principle of segmentation of image is to divide an image into significant regions with respect to exacting application where in digital images; edges are areas with strong intensity contrasts. The intensity from one pixel to the neighbouring pixel can form main deviation in the picture excellence and segmentation of image. For image processing systems and computer vision, first it should be able to detect the all possible edges in the image [8-11]. Each edge detecting operating technique is planned to be sensitive to definite edges. Prewitt, Roberts, LOG, Sobel and Canny are major relating to operators. The most sensitive to edges in the images is determined by the geometry of the operator.

In image segmentation the occurrence of noise makes a trouble. Gaussian noise, Rayleigh noise, Impulse noise and Speckle noise such types of noise in images are very much prone to affect.

Generally the edges of the image are changed of the confined pixel values. So by the calculating local differential operator image edge detection is usually implemented. Color image edge detection and its implementation are based on gray image edge detection. For this first is to convert color image into gray image.

After on local differential operator is used to detect the gray edges. This affects the degree of color image because of edge information lost its color information. Due to this subsequent processing of color image to be unavoidably is affected. Therefore the difficulty in color image edge detection is to be understood.

The edge detection method is very important in the human organs detection. Also it is an important pre-processing for segmentation of image. The border line between two regions with comparatively different gray

level properties is known as edge. An edge is a set of connected pixels that appear on the boundary between two regions [3]. Detection of edges in the an image is a terms in image related to the image processing field, particularly in the areas for extraction of features , to consign to algorithms whose aim is to identify the image brightness changes abruptly at the point in image .

In this paper, how the edge detection is done and how it works is proposed. And the paper the sobel edge detection method is explain, which is for the color image edge detection .The paper gives the complete idea about how the area is optimizing by using sobel edge detection technique.

The remaining parts of paper are organized as below. Algorithm based on color edge detection in section II, proposed architecture in segment III, edge detection algorithm in segment IV, RGB model color image edge detection method in segment V, result in segment VI and conclusion in segment VII.

II. ALGORITHM BASED ON COLOR EDGE DETECTION

The Sobel edge detection technique is edge detector operator. It is the extensively used edge detection method. Principle of Sobel edge detection operator is based on the calculating approximation of the gradient of the given image. The approximation of the gradient is computed by convolving two 3x3 spatial masks with the original image. By using the difference between row and column in 3x3 masks among neighbours is calculated. The two masks namely G_x and G_y are as follows:

$$H_x = \begin{pmatrix} -1 & 0 & 1 \\ -2 & 0 & 2 \\ -1 & 0 & 1 \end{pmatrix} \text{----- (1)}$$

Efficient FPGA Realisation of DA-Based FIR Digital Filter for Power and Area optimization

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Abstract— The paper presents the details of the realisation of FIR filter using distributed arithmetic technique exploiting the look up tables in FPGA. In this project the reconfigurable filter is implemented and tested using audio codec FPGA. To check the filter operations a noise contained music is played through a microphone and ADC will convert this analog signal to the digital one to be processed in filter using FPGA. After processing in filter signal will be given to DAC will convert it into analog signal to be heard from the Line_out port. Instead of ROM we have used DRAM here for variable coefficients. The filter is tested by the microphone and speaker.

Key words: FPGA, DA (Distributed Arithmetic), FIR, LUT

6) Simulation using Xilinx ISE 14.7The code is dumped to FPGA using Quartus II software

IV. SOFTWARE USED

To generate the filter coefficients we used FDA tool of MATLAB and Xilinx ISE.14.7 (64-bit) Xilinx Spartan 6 is used for implementation. Using FDAtool command in MATLAB the Filter designing and analysis tool window with different specification and two design methods pops up. The filter is designed and analysed with filter order 16 and band pass filter configuration. We used HDLcoder for DA arithmetic analysis and Dual port RAM is built using HDLcoder. We generated HDL code for RAM based FIR filter working on MAC principle code is synthesized in Xilinx ISE 14.7 and compared with the DA based structure. It is found that the Da based structure is efficient in terms of device utilization. Figure 1 shows the basic DA structure where input is taken bit by bit.

I. INTRODUCTION

Nowadays realtime processing of the data is highly demanded this paper concludes the digital FIR filter for real time application. The PC contains the audio codec named as realtek, The audio codec in FPGA works as the base for designs like recorder, mp3 player, portable television FPGA designs. DRAM SRAM FLASH memory of FIR filters, is of no use. On the other hand, a general multiplier-based structure consumes more chip area and as a consequence there is a limitation on the maximum possible order of the filter that can be realized for high-throughput applications. The sound is played through line_in port through audio codec. The digital audio inputs word lengths are from 16 bits to 32 bits and the sample rate from 8 kHz to 96 kHz. The default values are used for this project, 24 bits for the input audio data bit length and 48 kHz for the sample rate. There is a stereo line input and a mono microphone input. They are provided with volume control and mute function from the control interface. The converters ADCs and DACs are used with oversampling digital interpolation and decimation filters.

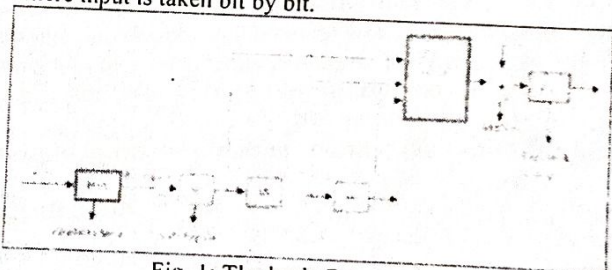


Fig. 1: The basic DA structure

II. FIR FILTER SPECIFICATIONS

FIR filter impulse response is for short duration because it does not contain feedback. As we are using the real time data sound it is nothing but a frequency band so here band pass configuration of filter is studied using MATLAB

III. WORK FLOW

- 1) Study of DA
- 2) To find the coefficients of FIR filter and obtaining its digital form
- 3) To design the Pipeline adder tree, shift accumulator using VHDL
- 4) Study of the different FIR Designs of filter using FDA tool in MATLAB
- 5) Using HDL coder the RAM based FIR filter code is generated and compared with DA based HDL code.

Device Utilization Summary (estimated values)			
Logic Utilization	Used	Available	Utilization
Number of Slices	25	547	2%
Number of 32-bit Slices	25	1046	2%
Number of 4-input LUTs	15	1044	1%
Number of bonded I/Os	4	2	20%
Number of 25.5k	1	1	100%
Number of 25.5k	1	1	100%

Fig. 2: Design summary of DA based FIR filter structure

Device Utilization Summary (estimated values)			
Logic Utilization	Used	Available	Utilization
Number of Slices	78	547	14%
Number of 32-bit Slices	78	1046	7%
Number of 4-input LUTs	48	1044	5%
Number of bonded I/Os	4	2	20%
Number of 25.5k	1	1	100%
Number of 25.5k	1	1	100%

Fig. 3: Design summary of Simulink generated code for MAC based FIR filter

It is obvious from the two device utilization summary table (figure 2 and figure 3) that the code from Simulink HDL coder consumes more slices according to the synthesis report. The code can be compiled in Modelsim and synthesized on Altera FPGA DE2 board.

The real time data/voice to be processed is given through a microphone input port of the FPGA and can be

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International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 5, May 2016

A Comparative Study of Low Power Area Efficient Carry Select Adder

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ABSTRACT: Area, power and delay are the most design objectives of integrated circuits. There are many adders present in VLSI design system for computational and data path processing unit, out of which carry select adder is fast and power efficient. However regular carry select adder is area consuming due to dual RCA structure. Therefore we use binary to excess one converter to overcome carry propagation delay problem and to achieve minimum area. Addition is the most common and often used arithmetic operation on microprocessor, digital signal processor, especially digital computers. Also, it serves as a building block for synthesis all other arithmetic operations. Therefore, regarding the efficient implementation of an arithmetic unit, the binary adder structures become a very critical hardware unit.

KEYWORDS: Carry select adder, Ripple carry adder, Binary to excess one converter, Modified carry select adder.

I. INTRODUCTION

The optimization of power area and speed are prime importance in VLSI industry. In order to achieve such a design specification high speed architectures are needed. As addition is the basic operation of all computer arithmetic operations, adders are one of the widely used components in digital integrated circuit design. An efficient adder design essentially improves the performance of processor and integrated circuits. There are many types of adder designs available (ripple carry adder, carry look ahead adder, carry save adder, carry skip adder) which have its own advantages and disadvantages. The Ripple carry Adder (RCA) exhibits the most compact design but slowest in speed because for an N-bit RCA, the delay is linearly proportional to N. Thus for large values of N the Ripple Carry Adder gives greater delay of all adders. To solve the carry propagation delay Carry select adder is developed which drastically reduces the area and delay to a great extent.

In digital adders, the speed of addition is limited by the time required to propagate a carry through the adder. The sum for each bit position in an elementary adder is generated sequentially only after the previous bit position has been summed and a carry propagated into the next position. The major speed limitation in any adder is in the production of carries and many authors have considered the addition problem. The carry select adder is used in many computational systems to moderate the problem of carry propagation delay by independently generating multiple carries and then select a carry to generate the sum.

The CSA is used in many computational systems to alleviate the problem of carry propagation delay by independent generating multiple carries and then select a carry to generate the sum. However, the CSA is not area efficient because it uses multiple pairs of Ripple carry adder(RCA) to generate partial sum and carry by considering carry input $C_{in}=0$ and $C_{in}=1$, then the final sum and carry are selected by the multiplexers (MUX). Hence, in this paper we have proposed a new technique of designing of carry select adder which will reduce area, delay and power.

II. CONVENTIONAL CARRY SELECT ADDER

The carry select adder comes in the category of conditional sum adder [1]. Conditional sum adder works on some condition. Sum and carry are calculated by assuming input carry as 1 and 0 prior the input carry comes. When actual carry input arrives, the actual calculated values of sum and carry are selected using multiplexer. The conventional carry select adder consists of $k/2$ bit adder for the lower half of the bits i.e. least significant bits and for the upper half i.e.



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REVIEW OF 32 BIT ARITHMETIC ADDER USING REVERSIBLE LOGIC

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Accepted Date: 15/03/2016; Published Date: 01/05/2016

Abstract: For mathematical representation or calculation of very large or small numbers, relatively large size is essential. These large range value can be represented by using IEEE 754 standard. This paper proposed the design of floating point arithmetic adder using reversible logic. Low Power dissipation and smaller area are most important factors while designing adder for digital circuits. Adders used in digital circuits generates large amount of heat whenever there is a transition of bits, reversible logic has emerged as a promising technology in reducing power dissipation. It has application in various fields such as low power VLSI, Quantum computing and Nanotechnology. This paper presents the design of reversible adder using reversible gates.

Keywords- Digital circuits, Full adder, Barrel Shifter, Garbage output, Reversible Logic, Reversible Gate, VHDL, Xilinx 9.2i.



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Corresponding Author: MS. SHUBHASHREE M. DAMLE

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How to Cite This Article:

Shubhashree M. Damle, IJPRET, 2016; Volume 4 (9): 310-317

Analysis of Spectrum for Cognitive Radio using Matched Filter Detector and OFDM Technique

Awani S. Khobragade and Dr. R. D. Raut

Abstract—Cognitive radio is a novel technology which improves the spectrum utilization problem by allowing secondary users to borrow unused radio spectrum from primary licensed users. By sensing and adapting to the environment, a cognitive radio is able to determine the spectrum holes and provide vacant bands to its users without causing harmful interference to the licensed users. To sense the spectrum holes, different spectrum sensing techniques are used. This paper presents an overview of cognitive radio, spectrum sensing techniques and also describe operation of match filter detector. It also gives information about analysis of spectrum using OFDM technique for cognitive radio using MATLAB software.

Keywords—Cognitive Radio (CR), Spectrum Sensing, Matched Filter Detector, OFDM.

I. INTRODUCTION

COGNITIVE radio is a new paradigm for wireless communication which changes its transmission or reception parameters to communicate efficiently without interfering licensed users. This alteration of parameters is based on the active monitoring of several factors in the external and internal radio environment, such as radio frequency spectrum, user behavior and network state etc. The FCC suggests that any radio having adaptive spectrum awareness should be referred to as “Cognitive Radio” (CR) [1], [11]. A cognitive radio (CR) is a radio that can change its transmitter parameters based on interaction with the environment in which it operates. The principle of efficient spectrum usage as shown in Fig. 1.

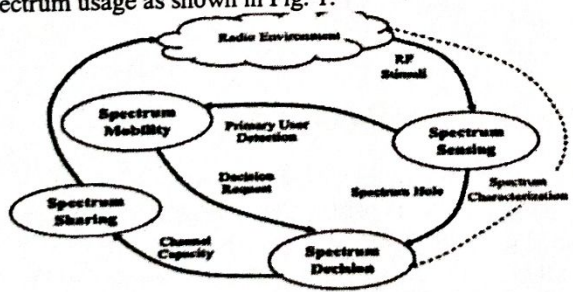


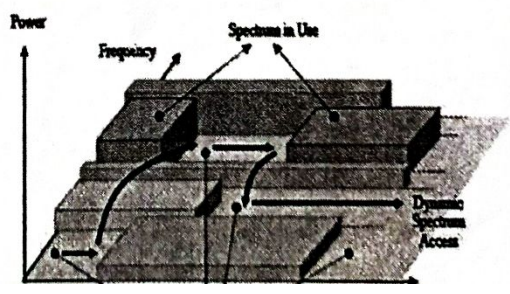
Fig 1. Cognitive Radio Cycle

Today Wireless systems are characterized by static spectrum allocation policy or fixed network coordination policy [1].

Some systems have unlicensed frequency bands which achieved great spectrum efficiency, but they faced interference that limits network capacity and scalability. Cognitive radio systems offer the opportunity to use dynamic spectrum management techniques to prevent interference and adapt to immediate local spectrum availability by creating time and location dependent in “virtual unlicensed bands”, i.e. bands that are shared with primary users [2],[3]. Unique to cognitive radio operation is the requirement that the radio is able to sense the environment over huge swaths of spectrum and adapt to it since the radio does not have primary rights to any pre-assigned frequencies [9],[25]. This new radio functionality will involve the design of various analog, digital, and network processing techniques in order to meet challenges of radio sensitivity requirements and wideband frequency agility. [7] Cognitive radio sensitivity can be improved by enhancing radio RF front-end sensitivity, exploiting digital signal processing gain for specific primary user signal, and network cooperation where users share their spectrum sensing measurements[4],[6].

II. SPECTRUM SENSING

An essential feature of cognitive radio is its ability to sense the presence of radio signals within a broad spectrum of frequencies. In a public safety scenario, the cognitive radio needs to sense where the spectral holes are present and use them to establish communications between emergency responders. The spectrum sensing function enable the cognitive radio to adapt to its environment by detecting the primary users that are receiving data within the communication range of an CR user.[14] Dynamic Spectrum Access (DSA) technique exploit the existing wireless spectrum opportunistically to avoid interference[2][7].



Implementation of Secure Hash Algorithm-1 using FPGA

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ABSTRACT:-Sharing of information over the internet becoming a critical issue. To secure the data lots of techniques are available. The present work will focus on the combination of hashing, cryptography to secure the data. Hash value will obtained from original data. Secure hash algorithm is use for hash value. Then the data is encrypted by using cryptography algorithm. Now the hash value and encrypted data must be hidden in image or audio or video file to secure the data. At the receiver end the hash value is match and data is decrypted by using decryption technique.

KEYWORDS: FPGA, hash function, Secure Hash Algorithm-1 (SHA-1), VHDL.

Hash is a function of cryptography that construct the hash value. The hash value is an arbitrary-length cord that provides the reliability as well as confirmation. The hash value is a one way function. Hash functions play a chief role in cryptographic application. SHA (Secure Hash Algorithm) is a legendary message compress standard use in computer cryptography, it can condense a long message into a short message. The SHA-1 VHDL source code is separated into three modules, namely Initial, Top and Round module. The VHDL code is assemble on Virtex5 FPGA using Xilinx ISE software tool. A comparison between desire SHA-1 hash function implementation in the company of supplementary works shows that it achieves a high output and clock frequency.

I. Introduction

Today the use of internet for communication has greater than before. So the security of information is significant issue for safety. Cryptography is a method of securing the information. For encrypting and decrypting the information, cryptography is useful. Encryption means convert the simple text into cipher text. The decryption means translate the cipher text into plain text. The encryption is completed at the sender side and decryption is completed at the receiver side. Cryptography is divided into asymmetric cryptography and symmetric cryptography. The symmetric key means same key is use at sender and receiver for encryption and decryption. The asymmetric key income dissimilar key is use for at sender and receiver for encryption and decryption.

II. SHA-1 Hashing Algorithm

The hashing function i.e. Secure Hash algorithm-1 is utilize to create the hashing value. It produce the hash value of 160 bits that is 20 bytes. It has the 80 number of round. The consumer which has the hash value can vary the information. The hashing algorithm provides accuracy and consistency. If any user modify the data then the hash value will be distorted. SHA-1 is a complex algorithm that include multiple 32-bit, 5way additions, complex logical functions, data shifting and a great contract of return. Normally implementations of the SHA -1 algorithm have essential large die areas and so made moderately exclusive portable device. A propose method has been useful to be relatively inexpensive one. The architecture is offered for SHA -1 hash

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VLSI Architecture Design for DWT

Using Polyphase and Pipelining and Their Effective Comparison

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Abstract—Wavelet Transform have proven to be useful tool for several applications, the most popular image compression method is depends on selection of proper filter bank, Synthesis and analysis filter bank. Analysis filter bank is used for forward DWT and Synthesis filter bank is for backward DWT. This Paper proposes efficient ways for Designing these filter. They are discussed on the basis of filter response obtained for various methods. In this paper two architectures, one based on polyphase decomposition and other based on combination of polyphase decomposition with pipelining are proposed. Results are presented and compared. Also the effect of pipelining is discussed in detail. VLSI architecture for the DWT filter designed using proposed methods are simulated in Xilinx.

Keywords—DWT, FIR, Image, Polyphase, Pipeline

I. INTRODUCTION

Wavelet transform is a useful tool for several applications including signal analysis, signal coding and image compression. With the rapid progress of VLSI technology many processors which are based on image processing were developed. The discrete wavelet transform (DWT) has been widely used in many areas of science and engineering e.g., signal and image processing, bio-informatics ,meteorology and medical etc. for the applications involving compression and analysis of various forms of data. The well-known image coding standards, namely, MPEG-4 and JPEG2000 have adopted DWT as the transform coder due to its advantages over the other transforms. The coding efficiency and the quality of image resolution with DWT are higher than traditional methods also its gives high compression ratio Hence it is the more popular tool in the image compression.

At present many VLSI architecture are available for 1D and 2D DWT to meet the real time processing requirements .The practical implementation is quite difficult because of the complexity in computation and also needs extra memory for storing the intermediate results .Moreover for the real time image compression huge amount of data needs to be processed at a high speed. The simulation process provide flexibility to check various aspects and try to achieve some timing constrains or may not meet them .Hardware implementation has a major factor to be consider is cost.

The DWT is based on dyadic partition whose main block is filter bank which decomposes the signal into two band LOW PASS and HIGH PASS .This is first level of wavelet decomposition. Since most of the information is available in low pass component of the signal after decomposition , the low pass component is again decompose in the next level signal, the low pass signal is again decomposed into high pass and low pass portion again, This is second level of decomposition. Here filter plays major role in the wavelet decomposition. In DSP various methods of filter design are used based on the requirement.

The main objective of the work is to implement DWT. In this work we are using two different approaches one based on polyphase decomposition of filter and other based on ployphase decomposition with .pipelining. Polyphase decomposition increases throughput and pipelining increases clock speed by reducing critical path .We have implemented single level decomposition of DWT using above two approaches .The simulation is performed to verify the functionality of DWT.

A. Intrduction to DWT

Consider the function $f(x)$ which has discrete values we want to locate all its values hence we have to decompose the signal into lower resolution level .Hence we smooth or average out $f(x)$ or low pass $f(x)$.Then by comparing the original signal and the low pass signal we can depict the decompose signal where α is the scaling factor, for dyadic style of decomposition the scaling is set to 2.

$$\alpha d(x) = f(x) - \alpha f(x) \quad (1)$$

Two dimensional discrete wavelet transform (DWT) is defined as:

$$X_{LL}^j(n_1, n_2) = \sum_{i_1=0}^{K-1} \sum_{i_2=0}^{k-1} g(i_1)g(i_2)X_{LL}^{j-1}(2n-i_1)Q_{n_2-i_2} \quad (2)$$

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Design and Analysis of Reconfigurable Antenna Using RF MEMS and Fractal Geometry

Yogita Nafde and Rajesh Pande

Abstract RF MEMS technology offers superior performance and has edge over the conventional solid state devices. The reconfigurability aspect in an antenna system is a desired characteristic and has been the focus area of research in recent years. The performance of reconfigurable antenna can be improved by optimization of the location of the switches and also by identifying the suitable material of RF MEMS structure. The design of Reconfigurable Micro strip Antenna using Koch fractal geometry is analysed in this paper. The simulation of design is carried out using HFSS. The fractal Antenna can provide Multiband and Wideband operation but the reconfiguration aspect can further help to improve the performance of antenna. This antenna design can support the bands of several applications including WiFi, 3G, WiMax as well as UWB range.

· **Keywords** RF MEMS · Reconfigurable antenna · Fractal geometry · Koch curve

1 Introduction

Reconfigurable multi-band antennas are useful for many commercial and military applications where it is required to have a single antenna that has the capability of dynamic reconfiguration to transmit or receive on multiple frequency bands. The paper focuses on the optimisation of the RF MEM equivalent switches along with fractal geometry to come up with a new antenna design suitable for several wireless applications.

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© Springer International Publishing Switzerland 2016
H.A. Sulaiman et al. (eds.), *Advanced Computer and Communication Engineering Technology*, Lecture Notes in Electrical Engineering 362,
DOI 10.1007/978-3-319-24584-3_107

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Energy Efficiency of Wireless Network Using Balance Routing

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Abstract—Transferring data from source node to destination is the most important task in the wireless sensor network. Main drawback for the any wireless sensor networks is limited energy available to nodes because of the small size of the batteries they use as source of power. Balancing the route of the data transfer is one of the technique that can be used to minimized sensor nodes energy consumption during operation. In this paper we are going to used route balancing techniques to minimize the energy used by the nodes in the network. In this paper the new method has been developed for better energy distribution to save the energy.

Keywords—Wireless Network, clustering algorithm, Routing, Cluster Head.

I. INTRODUCTION

In recent years development in communication technology has allowed to the development of lightweight, intelligent, low cost sensor nodes that efficiently transfer data from one place to another place [1]. These sensor nodes in the communication network have the capability to transfer the data between other nodes and make a contact with the base station node. A sensor node consists of sensing, processing, communication, transceiver and power units [2]. These are used to collect messaging data, process, and communicate to other sensors in the wireless networks mainly, through radio frequency channel [3]. In many different applications wireless sensors networks (Wireless network) have been used such as monitoring movement of wild animals in the forest, battlefield surveillance, home security, earth movement detection, and healthcare applications [4]. Mobile sensor nodes can also be used in sensing ambient conditions such as light, sound, and temperature. Depending on the area of applications, sensor networks can be randomly distributed, for instance in military applications, sensor nodes can be randomly dropped from war-plane into the battlefield to monitor enemies' movement or manually placed.

Wireless sensor network is a large number of static or mobile sensor nodes which form the wireless network using self-organization and multi-hop method, its purpose is to collaborate detection, processing and transmitting the object monitoring information in areas where the network coverage is hard to reach [5].

Wireless sensor network routing protocols can be divided into flat routing and hierarchical routing protocol in the network.

structure All sensor nodes in the flat routing protocol generally have the same function. However, the nodes in the hierarchical routing protocol usually play different roles. The high energy node in the routing protocol is used to process and send a message, while the low energy of the node is used to sense the target area information.

II RELATED WORK

Author Yi Sun and Can Cui present a dynamic clustering routing algorithm for WSN in [6]. In this paper author used comprised of three phases including cluster head (CH) selection, cluster setup and inter cluster routing. Residual energy and node load are used for the cluster heads selection. Then the non-Cluster head nodes choose a cluster by comparing the cost function of its neighbor CHs. Multi-hop communication is used to communicate with cluster head and base station in the network.

Author Lingxia Liu and Qiang Song present a paper "A Kind of Energy-efficient Routing Algorithm for WSN Based on HQEA" [7]. In this paper author proposed a hybrid QEA-based energy efficient routing algorithm (HERA) was proposed. This algorithm is based on LEACH and PEGASIS algorithm which is used in the environment of wireless sensor networks. To minimize the distance between transmitter and receiver, this algorithm uses the hybrid quantum evolutionary algorithm (HQEA) to select the best cluster based multi-chain topology. To minimize the energy consumption, node's maximum energy and its distance from the target is considered.

Author Liang Yuan and Chuan Cai proposed [8], load balanced routing algorithm based on uneven clustering to calculate optimal number of clustering and do uneven clustering. Because of this number of common node under some certain cluster head from near to large ward, load to be overweight. In this paper, author developed an evaluation function which can be used to reflect residual energy distribution of nodes and in the same time constructs routing evaluation function between cluster heads in the wireless network.

Author Haifeng Jiang proposed a [9], single-hop forwarding scheme to proved the better way to consume less energy than multi-hop forwarding scheme within the communication range of the source sensor or a current forwarder. This algorithm uses free space energy consumption model. This algorithm

A REVIEW PAPER ON INTELLIGENT LANE DEPARTURE WARNING SYSTEM FOR DRIVER ASSISTANCE

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ABSTRACT

Most traffic accidents were primarily occurred around the world, because of the lane Departure and cause many casualties and injuries. Lane Departure Warning system(LDWS) is that the part of Advanced driver assistance systems that monitor driver intent warn drivers of lane departures. The lanes have different appearances in different weather, light and road conditions and because of that reason when driving the vehicle it's not properly discover the lane and vehicle cross the Lane and accidents occurs. therefore the Lane detection and Lane tracking may be a difficult task because of the varying road conditions that one will come across while driving. Lane Departure Warning systems(LDWS) is one of the main approaches for Lane Detection and Lane tracking and accident prevention.

In this paper, Lane detection and Lane tracking systems are helpful in avoiding these accidents as safety is that the main purpose of these systems. Such systems have the goal to detect and track the lane marks and to warn the driver in case the vehicle includes a tendency to depart from the lane. A lane detection and Lane tracking system is a vital component of the many intelligent transport systems. however detection of Lane isn't only used to solve the problem of avoiding accidents .To avoid the accidents Lane tracking is vital technique . within the past few years, various approaches for lane detection were proposed and successfully demonstrated.

In this paper, a comprehensive review of the literature in lane detection techniques and Lane tracking techniques is given. the most objective of this paper is to find the constraints of the existing lane detection methods and Lane tracking methods and to overcome all the issues that are enclosed in existing lane detection methods and Lane tracking methods and to develop a proposed computer vision based (Real Time Video based) Intelligent Lane Departure warning system for various weather, light-weight and road conditions.

Index Terms----Lane Departure Warning system, Lane detection, Lane tracking,

I - INTRODUCTION

Most traffic accidents were caused by the negligence of the drivers. so as to reduce the number of traffic accidents and to improve the safety and efficiency of the traffic, research on Intelligent transportation system (ITS) are conducted worldwide. Intelligent vehicle (IV) is a part of the ITS system that aims to help drivers in perceiving any dangerous situations earlier to avoid the accidents through sensing and understanding of the environment around itself. The goal of the Intelligent Vehicles[1] is especially of rising driving safety and enhancing the drivers capability and capability. Advance driver assistance system is employed for increasing the safety of driving cars and support the driver. The inattentive, incompetence or sleepiness driving especially in long-distance journeys would possibly end in traffic accidents and cause dramatic results like loss of life and property.[1] in several countries, completely different statistics was reportable regarding accidents that happened attributable to LD WS. Generally, the reason of regarding two hundredth of the crashes and half-hour of fatal crashes is due the driver drowsiness and lack of concentration means that drift the Lane. In single-vehicle crashes (accidents that only 1 car is damaged) or crashes involving heavy vehicles, the proportion of accidents was reportable up to four-hundredth that ar principally attributable to out of Lane .

This system includes a goal to find the lane marks and to advise the driver in case the vehicle includes a tendency to go away the lane. Lane detection is that the method to find lane markers on the road and so present these locations use Kalman & particle filter for Lane tracking to an intelligent system. A lane detection and Lane tracking system is a crucial part of the many intelligent transport systems. Lane detection and Lane tracking may be a difficult task because of the varied road conditions that one will come across while

driving. but detection of Lane is not only used to solve the problem of avoiding accidents .To avoid the accidents Lane tracking is vital technique .The lanes have completely different appearances in several weather, light-weight and road conditions as shown in - fig.1.[2]

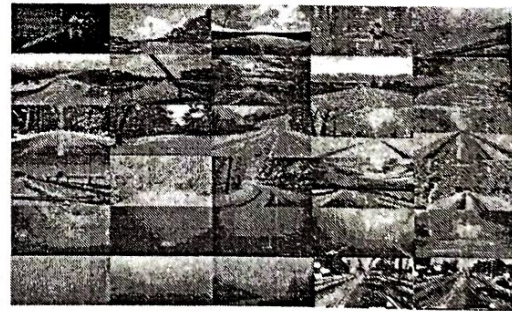


Figure 1: Lane scenario under completely different weather/light/road conditions & Challenges of Lane Detection [2,9]

In several proposed systems, the lane detection consists of the localization of specific primitives such as road markings of the surface of the painted roads. various challenges like parked and moving vehicles, dangerous quality lines, shadows of trees, buildings and different vehicles, sharper curves, irregular lane shapes, merging lanes, writings and different markings on the road, unusual pavement materials and dissimilar slopes causes issues in lane detection. There are active analysis on lane detection and a large type of algorithms of varied representations, detection and tracking techniques, and modalities have been proposed.

Many approaches are applied to lane detection, which may be classified as either feature-based or model-based. Feature -based ways find lanes by low-level

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This is to certify that Prof./Dr./Ms./Mr. Surekha P. Washimkar
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at Jabalpur on date 12 Dec 2015.

Paper Title... Application of FCM Clustering on AM-FM to Detect
..... MRI Disease Progression for Multiple Sclerosis



[Signature]

Prof. Maneesh Choubey
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Lung Sound Analysis Based Methodology to Identify Asthmatic Patient for Low Power Low Cost Embedded System

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Abstract— In this paper, lung sounds of healthy normal, asthmatic patients, tuberculosis patients, rheumatoid patients and pneumonia patients are analyzed and classified to diagnose asthmatic patients for designing and development of low power, low cost portable embedded system. These lung sounds are analyzed using wavelet packet transform (WPT) to get different sub-band coefficients. From the sub-bands coefficients of different lung sound signal statistical features vectors are extracted. New LVQ (ANN) is used to categorize lung sound signals as asthmatic or non asthmatic. Data is obtained in normal hospital conditions by a typical stethoscope. Total 26 patient and 10 healthy person databases are tested. The proposed Methodology provides 86.6% of accuracy.

Keywords— Lung sounds, Wavelet packet transform, Artificial neural network, Low power low cost portable embedded system.

I. INTRODUCTION

Lung diseases including asthma, tuberculosis, rheumatoid and pneumonia cause severe health problems for large part of population. Asthma is disease from which most of the human beings are suffering. In any place or time asthmatic attack may occurred, so asthmatic patient always in a fearful condition. This condition affects his/her will power and they always think about attack and he/her always depends upon his doctor for the treatment because he has no proper indication about asthmatic attack. Changes in weather, over exertion, allergy of dust are the main causes of asthmatic attack. For that, availability of doctor is very important to him. By taking own decision some human error may create problems. For such situation we may have special type of low power low cost embedded system i.e. small in size consume less battery power with affordable cost which will analyze the lung sounds and differentiate asthmatic patients from tuberculosis, rheumatoid and pneumonia patients for better treatment.

Today stethoscope is most used assessment technique for physicians [1]. It's an simple, fast, cheap and non-surgical way to analyze and diagnose patients with lung sounds and needs less coordination [1,2]. It is especially useful for all those who could not perform standard tests. Hence it is still the most frequently used medical device. Using the stethoscope has disadvantages: it depends on expertise and sense of hearing [2-

3]. Other downside of stethoscope is lacks recording, low sensitivity and offers no statistical description.

Also, the stethoscope reduces the strength of frequency of sound above 120 Hz. Moreover the human hearing capability has low sensitivity to the lower frequency components. Using today's digital signal processing techniques, an effective diagnosis would be attainable which avoids human diagnosis drawbacks. Researchers have used different techniques to extract suitable features for classification of respiratory sounds for diagnosing between healthy cases and patients with various respiratory diseases [2-3].

In past years, with the advancement and development in low power low cost DSP processor technology, researchers have tried to extract various parameter lungs sounds with an aim to make auscultation a more objective and valuable analytical tool [5]. During the previous two decades, much research has been carried out on computer-based respiratory sound analysis [6]. A large part of these researches include acquisition, filtering, feature extraction, spectral analyses and classification of respiratory sounds. In literature, frequency analyses methods [7]-[8] such as Fourier based methods, parametric methods such as Autoregressive Method methods [9]; [10] and wavelet transforms [2], [11] have been used mostly to analyze lung sounds. For the Identifications of these lung sounds, artificial neural networks are used for designing and development of low power, low cost embedded System.

II. PROPOSED METHODOLOGY

In this experimentation, normal, asthmatic, tuberculosis, rheumatoid and pneumonia patient's lung sound signals are recorded.

Wavelet packet transform (WPT) are used to analyze the above lung sound signal, because of their high success ratios in previous literature studies. The sound segments are decaying into frequency sub-bands through WPT. Feature vectors which are applied as inputs to artificial neural networks (ANN) are created by extracting statistical features from sub-bands.

Application based design strategies and simulation of Wireless Adhoc Communication Network using Intelligent Transportation system

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Abstract— In this paper we present an idea about the wireless adhoc network which is used in vehicle to vehicle Anti-Collision design system for determining collision course between two or more number of vehicles. This system is giving an idea to generate node information that can be used for finding location awareness between the vehicles. Searching of other vehicles in the moving area is of primary importance to help the driver safely with negotiating speed, acceleration & deceleration. In these position the vehicle must acquire its own positional knowledge with respect to others and identify it's a possible collision. In this paper we used an active alarming system for detecting a collision between two or more numbers vehicles using GPS and IEEE802.15.4 MAC/PHY specification compatible system on chip. We design a mechanism or system for the safety coordinates of a vehicle based on its orientation i.e. distance, current speed, acceleration. This safety coordinates are used to get size of a vehicle thus detecting a possible collision. Firstly, we simulate a scenario up to nearly 10 vehicles in the area and test it practically achievable throughput using commercially available system on chip design.

Keywords— GPS, Vehicular, IEEE 802.15.4, location aware Anti-collision device.

I. INTRODUCTION

Vehicle-to-vehicle interaction resulting from an adhoc network on highways and roads has recently played significant role. Invention of automobiles sectors was one of the greatest commercial achievements for mankind in the last few centuries and has contributed in many ways to the growth of a nation. However, we cannot ignore the fact that hundreds of people lose their life because of accidents occurred due to vehicle to vehicle collisions every year. Research in vehicular anti-collision systems has received significant attention with active work being carried out for over few decades. Causes in traffic accidents are mainly caused by collision between vehicles due to the incapability of the drivers to gauge the distance of their vehicles. This is particularly accentuated in large vehicles like trucks & buses where there are many blind spots. Vehicle-to-vehicle interaction resulting from an adhoc network on highways and roads has recently gathered significant attention. One of the most principal advantages of such a wireless network, location of spot, alarm signaling system is to avoid collision amongst vehicles on highways and other roads so as to avoid the collision between the vehicles.

The objective of such a system or mechanism is to make vehicles automatically be aware of each other's presence through location sensing that is dependent on Physical or actual distance measuring combined with a location determining protocol. Vehicles then are communicating with each other and guide their location to minimize collisions between the vehicles. At an introduction level, the resultant ad hoc network presents a problem of location awareness. The location awareness problem that we observe for a vehicular network can be partitioned into two parts: by measuring the straight line distance between two vehicles and then computing the locations distance of one node with respect to the other as it moves along its own path. While straight line distance measurement between the two mobile objects has been made possible through a different kind of power based measurement techniques, translating this straight line measured distance into pin-pointing the location of the mobile devices is a complex task. The only conclusion of a vehicle can derive from the straight line measurement is the existence of other vehicles lying a locus equidistant from the measuring vehicle meaning its existence on a circle of radius given by the straight line distance measurement. Apart from calculating the straight line distance between the points

II. RELATED WORK

Vehicular collision warning systems are initially divided into two categories. In the initial stage, work focused on systems where a vehicle would get obstacles on its path through the use of cameras, radars, acoustic systems, etc [6] where each vehicle is autonomous and is capable of detecting obstacles, even of heterogeneous system. However, such devices are cost prohibitive. Further, research has continue to identify potential collisions between moving vehicles means at a cross road. In such systems, inter-vehicular communications used between vehicles that are not on the line see, inter-vehicular communication has received large interests with the ubiquitous nature of 802.11 [3]. A collision warning system based on inter-vehicular communication which involves the broadcast of vehicle coordinates and other information like speed, acceleration and direction on awareness channel. These systems are thus known as cooperative collision warning systems. A cooperative collision warning systems cannot

Performance Analysis of Reconfigurable U- Slot Fractal Antenna for Wireless Applications

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Abstract-Rapid growth in the High density networks and advancements in the antenna technology have led to the antenna design with smaller size, lighter weight, lower cost, reconfigurable, multi band & wide band nature. However, all these advances also come with increased complexity. The lower insertion loss, excellent isolation & linearity of the RF MEMS switches serves to replace the semiconductor PIN diode and other RF switches in the reconfigurable antenna design. In this paper Reconfigurable U-slot Fractal Koch Curve Micro strip Reconfigurable antenna is designed. The testing of Antenna is performed in 1 to 6 GHz frequency range. The measured & simulated results are demonstrating the Multi Band and Wide band Characteristics which is the major requirement of High density Wireless network. The design considerations of the RFMEMS switch suitable for reconfigurable Micro strip patch antennas are also discussed in this paper.

Index Terms - Fractal Geometry, Koch curve, RF MEMS Switch, Resistive Series Switch

I. INTRODUCTION

Reconfigurable antennas are becoming more and more popular for wireless industry because of versatility, additional functionality and adaptation. Reconfigurable antennas provide great flexibility for utilizing space effectively. Some researchers obtained the frequency reconfigurability by periodically placing variable MEMS capacitors on coplanar waveguide (CPW) or stubs in micro strip patch antennas. Some Researchers use metal ring, slots, fractal geometries, switches etc. The Antenna design in the present work uses U-Slot Koch fractal [1] geometry along with switches for obtaining Multi-band and Wide band characteristics.

The two major aspects associated with radio antenna design are the antenna resonant point & the antenna bandwidth. The resonant frequency is closely correlated to electrical length of an antenna. Electrical length is generally derived by dividing the physical length of the radiating structure by its velocity factor. The resonant frequency of operation is selected by varying the length of the radiating slot which amounts to change in its electrical length.

II. FRACTAL GEOMETRY

Fractals are generally self-similar and independent of scale. It is the field of electrodynamics which combines fractal [1] geometry and electromagnetic theory to solve the problems of radiation, propagation and scattering in antennas. The number of resonances in antenna structure would not depend on the size of the radiating structure, but on the combination of capacitors and inductors being used. As we know size of the antenna and wavelength of operation are related such that when the antenna size is made much smaller than the operating wavelength or less than quarter of the operating wavelength ($\lambda/4$), it becomes highly inefficient. For the smaller antennas the radiation resistance decreases and hence the stored reactive energy increases which results in the poor radiation efficiency. The fractals therefore are very important in adjusting the electrical length of the antenna through self similarity & Space filling property. With the incorporation of fractals [1,2] in the antenna element the multiband characteristics are obtained, but with the switches incorporation the performance of the antenna is further enhanced in terms of gain and radiation. As compared to fractal antennas, the reconfigurable antennas demonstrate remarkably better use of electromagnetic spectrum, possesses Compact size & deliver almost similar radiation pattern and gain across the desired range of frequency bands.

III. ANTENNA GEOMETRY

In the present antenna design FR-4 Epoxy material of 1.6 mm thickness with dielectric constant of 4.4 is used. The substrate width is 4 cm and height is 4.5 cm. This is a monopole structure and partial ground plane is used over here with feed line having zigzag edges. A trapezoidal [2,13] matching section is used which joins the feed line to the rectangular patch antenna with U-slot Koch geometry. The copper patch is (22.4 x 18.8) mm. The emulated switches [3] are a rectangular metal strip of (400 x 200) μm . The U-slot [8] of 1 mm width is incorporated to enhance the electrical length for operations over lower frequency bands.

FORMULATION OF A FIELD DATA BASED MODEL TO ESTIMATE THE NOISE LEVEL IN A DIESEL GENERATOR SET WITH ACOUSTIC ENCLOSURE

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ABSTRACT

In power starved India millions of diesel generator (DG) sets working to meet the shortage of industrial and commercial units now add up to cumulative capacity of 90000 MW. This figure is nearly equal to India's total installed power capacity just before a decade and about 36% of installed total generator set capacity. The typical generation cost is about 15 Rs. Per unit (Kwhr) for midsize genset with diesel cost about 50Rs per liter. It is observed that diesel generator sets are noisy and cause health hazards such as permanent hearing loss, physiological traumas, stress etc. In order to avoid health risks, Central Pollution control Board (CPCB) the maximum permissible sound pressure level for new DG set with rated capacity up to 1000KVA, should be less than 75dB(A) at a one meter from enclosure surface. For noise control in DG set passive noise control method with an acoustic enclosure with inner surface covered with sound absorbing material is used. The canopy absorbs noise and reduced the noise level to a permissible limit.

This paper presents the formulation of a Field Data Based Multivariate (FDBM) regression model and an ANN model to estimate noise level outside canopy/acoustic enclosure. This model predicts the noise of a DG set with canopy on the basis of various independent parameters such as engine load, canopy thickness, foam thickness and foam density of the system.

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Critical success factors for Lean Six Sigma in SMEs (small and medium enterprises)

CSFs for LSS in SMEs

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Received 12 December 2014
Revised 8 March 2015
13 May 2015
11 August 2015
Accepted 22 October 2015

Downloaded by 80.82.77.63 At 12:35:09 February 2018 (PT)

Abstract

Purpose - The purpose of this paper is to identify and list critical success factors (CSFs) of Lean Six Sigma (LSS) framework affecting and influencing quality, operational and financial performance of small and medium enterprises (SMEs). It also intends to guide researchers and practitioners in selecting appropriate set of CSFs for empirical studies, developing frameworks and to ensure effective implementation experience of LSS.

Design/methodology/approach - It systematically reviews literature on CSFs and Indian experience regarding LSS. It uses exploratory approach for data collection and documents various studies depicting both manufacturing and service experiences by using time tested statistical tools to prioritize CSFs, which critically influence LSS implementation.

Findings - The study guides and facilitates researchers and practitioners in using the most appropriate set of CSFs for empirical studies and in developing/modifying/reviewing application frameworks. It also guides implementation experience regarding LSS, which can be beneficiary for both developing and developed country contexts. Industries can accelerate implementation by understanding and using most important CSFs, which influence LSS framework.

Research limitations/implications - The study mainly remains confined to the CSFs for LSS implementation in SMEs from Indian sub continent.

Originality/value - The value lies in documenting and prioritizing CSFs influencing LSS in a meaningful manner so that researchers/companies take advantage of Indian experience in prioritizing CSFs for framework. The study drastically reduces implementation hassles and simplifies execution for empirical studies. The findings are not restricted to India but are generalizable and can globally utilized in deciding determinants of LSS framework.

Keywords Lean Six Sigma, SMEs, Quality, Productivity, Critical success factors, Pareto analysis

Paper type Literature review

Introduction

This study is especially motivated by India's fast-changing business scenario influencing small and medium enterprises (SMEs) sector which is the backbone of industry, corporate and economy. This change is creating hope for development and, offering tremendous opportunities to try newer techno managerial models, practices

The authors are grateful to the editor and anonymous referees for their constructive and helpful comments on the earlier version of the manuscript that helped to improve the presentation of the paper considerably



The TQM Journal
Vol. 28 No. 4 2016
pp. 613-635
© Emerald Group Publishing Limited
ISSN 1754-2731
DOI 10.1108/TQM-12-2014-017



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Review of Six Sigma applications in clinical testing laboratory

Author: [Name], Editor: [Name]

Abstract PDF

Abstract

Six Sigma is a universal management approach implemented in companies like Motorola and General Electric. Acknowledging great success in terms of global profitability and customer satisfaction in corporate world, the health care sector can also be benefited by the application of the same. To achieve similar benefits in this sector, Six Sigma is currently being spread in several laboratories around the world. The aim of this article is to clearly focus on different features of Six Sigma and its successful applications in medical laboratories, as well as to systematically review articles and books discussing Six Sigma strategy implementation in the laboratory field.

Keywords: Six Sigma, clinical testing laboratory, quality management, Six Sigma implementation, Six Sigma strategy.

International Journal of Six Sigma and Competitive Advantage



Print ISSN: 1479-2494 Online ISSN: 1479-2753

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