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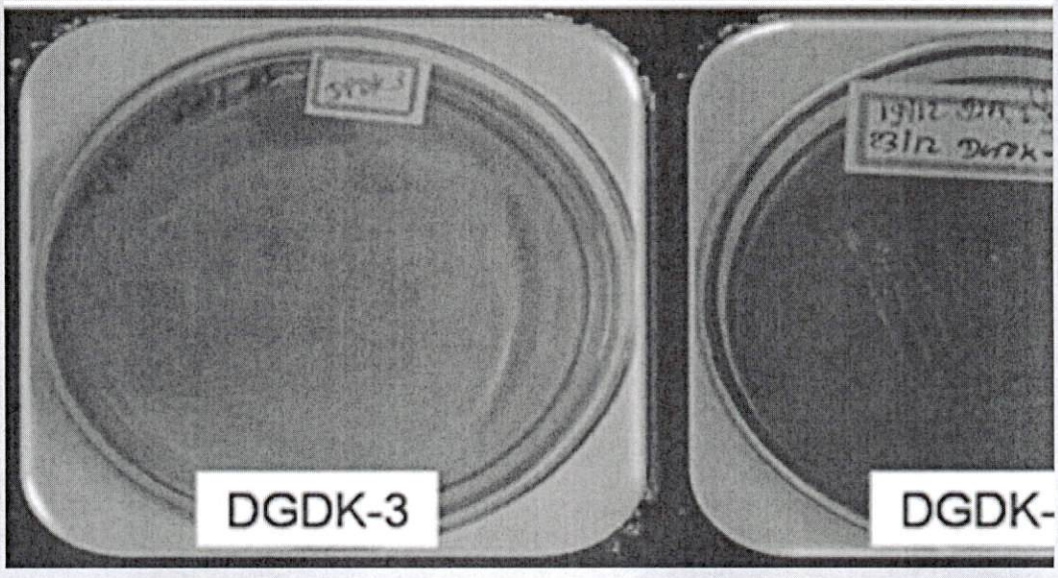

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Image Automatic Categorisation using Selected Features Attained from Integrated Non-Subsampled Contourlet with Multiphase Level Sets

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ABSTRACT

A framework of automatic detection and categorisation of breast cancer (BC) biopsy images utilising significant interpretable features is initially considered. Appropriate efficient techniques are engaged in layout steps of the discussed framework. Different steps include : (a) To emphasise the edge particulars of tissue structure; the distinguished non-subsampled contourlet (NSC) transform is implemented. (b) For the demarcation of cells from background, k-means, adaptive size marker controlled watershed, two proposed integrated methodologies discussed. Proposed Method-II, an integrated approach of NSC and multiphase level sets is preferred to other segmentation practices as it proves better performance. (c) In feature extraction phase, extracted 13 shape morphology, 33 textural (includes 6 histograms, 22 Haralick's, 3 Tamura's, 2 Graylevel Run-Length Matrix) and 2 intensity features from partitioned tissue images for 96 trained images. Lastly, *K* nearest neighbourhood and multi-class support- vector machine are implemented for categorisation of images into normal and cancerous categories using six key features. The results of methodology were tested for 24 image and analysed with pathologist results. It's analysed that proposed method-II achieved better classifier accuracy over literature techniques.

Keywords: Contour let transform; Adaptive marker controlled watershed approach; Multiphase level sets; MC-SVM classification; Biomedical and defence applications

1. INTRODUCTION

Breast cancer (BC) identification and diagnosis has for all time been a foremost concern for the pathologists and even for medical practitioners. 32 per cent of Indian inhabitants get cancer at some time in their life[1]. For Precise detection of BC, experts and medical practitioners prefer microscopic biopsy images collected under the microscope. In histopathology, BC biopsy images will be characterised into cancerous one or normal one[2,3]. Highly (40 x/100 x) magnified biopsy image provides consistent information about abnormal and normal tissues. Later the segmentation and categorisation application can be continued with other defence and military applications where we considered IRS satellite images for segmentation of required areas.

Plissiti[4], *et al.* proposed color gradient watershed transform using 90 pap-stained cervical images of resolution 1536 × 2048 pixels and obtained 6 shape, 8 texture and 3 intensity features. They utilised maximum-relevance with minimum-redundancy (MR-MR) criterion for feature selection. They handled cell level diagnosis using image Processing methodologies. Bergmeir[6], *et al.* presented a model for obtaining the local histograms and GLCM texture features. Huang and Lai[7] explained a methodology for segmentation and categorisation methods for histology images basing on texture features and with help of SVM the highest Categorisation accuracy obtained is 92.8 per cent.

Adem Kalinli[8], *et al.* considered otsu thresholding approach with the classifiers namely *k*-nearest neighbours, radial basis neural networks, support vector machines and *k*-means clustering, naive bayes and functional trees for object extraction followed by classification. Kasmin[10], *et al.* obtained the features of BC tissue images possessing area, perimeter, solidity, convex area, orientation filled area, major axis length, ratio of cell and nucleus area, eccentricity, mean intensity of cytoplasm, and circularity. The efficacy of other classifiers such as SVM, random forest, and fuzzy *k*-means is also examined. Proposed work uses Ductal Carcinoma (DC) BC images, as > 80 per cent of BC is because of ducts. Also 40 X magnified Hematoxylin & Eosin (HE) DC images were chosen for clear cell segmentation.

Ali[5], *et al.* considered Active contour models using multiple level sets for segmentation of 14 BC histology images with resolution 512 × 512 pixels and generated shape features to obtain an accuracy more than 90 per cent. Fatakdawala[9], *et al.* proposed expectation maximisation driven geodesic active contour (EMaGAC) without and with overlap resolution using 100 breast histology images with resolution of 200 × 200

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Energy
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Performance enhancement of centrally finned twist inserted solar collector using corrugated booster reflectors

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Highlights

- Use of corrugated booster reflectors in solar collector fields is proposed.
- Effective reflector area of CBR is 1.6% higher than FBR.
-

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Optical Materials
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Characterization, optical and luminescence features of cobalt ions in multi-component $PbO-Al_2O_3-TeO_2-GeO_2-SiO_2$ glass ceramics

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Highlights

- $PbO—Al_2O_3—TeO_2—GeO_2—SiO_2$: CoO glass ceramics were prepared by melt quenching and heat treatment.
- Prepared samples were characterized by XRD, SEM, EDS and DTA.
- Absorption bands of the samples indicated the cobalt ions exist in Co^{2+} and Co^{3+} state.

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Optical Materials
Volume 77, March 2018, Pages 178-186

Influence of Bi^{3+} ions on optical and luminescence properties of multi- component P_2O_5—PbO—Ga_2O_3 —Pr_2O_3 glass system

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https://doi.org/10.1016/j.optmat.2018.01.030

Highlights

- P_2O_5-PbO -Ga_2O_3-Pr_2O_3: Bi_2O_3 glasses were prepared by melt quenching technique.
- Amorphous nature of the prepared glasses was confirmed by XRD pattern of the samples.
- Maximum energy transfer occurs from sensitizer Bi^{3+} ion to activator Pr^{3+} ion in B5Pr sample.
- Chromaticity coordinates of prepared samples lie within reddish–orange region.
- Broad emission band due to $^1D_2 \rightarrow {}^1G_4$ transition covers most of the telecommunication windows

Abstract

Glasses with composition (70-x) P_2O_5—17.5PbO —10Ga_2O_3—2.5Pr_2O_3:xBi_2O_3 ($0 \le x \le 7$) were prepared by conventional melt quenching technique. The prepared glasses were characterized by their XRD patterns. Various spectroscopic studies like FTIR, optical absorption and

Synthesis, biological and liquid crystalline evaluation of new substituted flavones

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Abstract

Flavones constitute a group of oxygen heterocyclic compounds which have shown significant biological activities. On the other side fatty acid esters of flavones exhibit liquid crystalline properties. 7,2',3',4' – tetrahydroxy flavone was synthesized as antibacterial agent and a series of fatty acid ester analogues of the parent flavones were prepared. All the derivatives were screened for phase transition temperatures and mesophases.

Keywords: Flavones, fatty acid esters of flavones, biological activity, phase transition temperatures, mesophases.

Introduction

The major group of plant poly phenols is represented by flavonoids and a review has estimated their number as 6500 in the plant kingdom[1]. The family members of flavonoids include flavones, flavanes, flavonols, anthocyanidines and catechins. They possess a wide spectrum of biological activities. Some flavonoids have been found to possess antioxidant, anticancer and anti-inflammatory properties[2-4] and several other activities. The antioxidant activity of these polyphenolic compounds, was due to their high propensity to transfer electrons, to chelate ferrous ions and to scavenge reactive oxygen species[5].

Liquid crystals (LC's) are conventionally known as fourth state of matter. The characteristic orientationally order of the liquid crystal state is between the traditional solid and liquid phase and this is the origin of the term "mesogenic state" used synonymously with liquid crystal state. Approximately 5% of all organic compounds exhibit LC behavior and have important characteristic properties like anisotrophy, magnetic and electric susceptibility[6].

We report the synthesis of new flavones as antibacterial agents and its fatty acid ester analogues as liquid crystals. Flavone ester systems may possess quasi planarity with a rigid aromatic core which is necessary for LC behavior. Based upon earlier research,[7-9] esterified flavones may exhibit the properties of discotic liquid crystal materials. Hence it was proposed to synthesize new flavonoid compounds surrounded by paraffinic esters and study the liquid crystallinity of the molecules. To achieve this objective, 7,2',3',4' – tetrahydroxy flavone derivatives (XI – XV) were selected as target molecules to study the liquid crystallinity.

Material and Methods

The flavone esters were obtained via the synthesis route shown in scheme I. Appropriately protected resacetophenone was coupled to 2,3,4-tribenzoyloxy benzaldehyde to give the corresponding chalcones[10-12]. The benzoyl group was our group of choice for the protection of the hydroxyl groups because of its stability under various reaction conditions and ease of deprotection. The chalcone showed red colouration with $SbCl_3/CCl_4$, a positive test for chalcones. The presence of olefinic protons in ^1H NMR spectrum at δ 6.9-6.4 (dd, 2H, -CH=CH-) confirms the chalcone formation. The benzoyl groups were deprotected and the chalcone was subjected to the Iodine-DMSO treatment to give the corresponding 7,2',3',4' – tetrahydroxy flavone[13-15].

The presence of a singlet at δ 6.4 in the ^1H NMR spectrum is assigned for C_3 Hydrogen. I.R. spectrum showed adsorption bands at 3320 cm^{-1} (OH str.), 1687 cm^{-1} (C=O str.). In ^{13}C NMR spectrum the presence of δ 112.057, 111.088, 123.145, 123.450 (aromatic carbons), 148.518, 152.835 (olefinic carbons) and 167.431 (carbonyl carbon) further confirmed the formation of flavone (IX).

In the next step flavone was treated with long chain fatty acid chlorides (RCOCl where $R=C_nH_{2n+1}$, n=7, 11, 13, 15 and 17) in dry pyridine at reflux temperatures and yielded 7,2',3',4' – tetraacyloxy flavones derivatives. All the flavone esters were purified by column chromatography with n-hexane: ethylacetate (99.5 : 0.5) as eluent. All these compounds were re-crystallized from methanol. HPLC analysis of all these compounds showed purity >99.87 %. I.R. and NMR spectral data are in good agreement with the structure of the compounds (table I).

Biological evaluation: The flavone (IX) was tested for antibacterial activity against gram-positive bacteria and gram- negative bacteria at concentrations of 20,50,100 and 200 µg/ml. The cultures of organisms grown overnight at 37°C were used for testing the antibacterial activity which was checked by employing cup plate method[16]. Test solutions of different concentrations of flavones were prepared in DMSO. The plates were incubated at 37°C for 24hrs. and the diameter of inhibition zones was measured. Solvent DMSO alone was kept as control, which do not have any inhibition zone. The activities were compared with standard antibiotic benzyl penicillin.

Liquid Crystal evaluation: All the newly synthesized compounds exhibited liquid crystalline properties which

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Research paper

Controllability, Observability and Stability of Volterra Type Non-Linear Matrix Integro-Dynamic System on Time Scales

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Abstract

This paper investigates the controllability, observability and stability of the solution of Volterra type non linear matrix integro dynamic system on time scales.

Keywords: *Controllability; non-linear Volterra type matrix integro-dynamic system; observability; stability; time scales.*

1. Introduction

In many engineering problems, one may desire to have a system that follows a preassigned behaviour. In other words, necessary steps have to be taken to avoid unwanted behaviour in a system and to compel the system to follow a desired behaviour. The origin of control theory stems from determining these steps called controls. After R.E. Kalman introduced general control theory in 1960, many engineers and mathematicians got attracted by this theory [7, 9, 10, 11, 12, 13, 16]. The importance of control theory in mathematics and its applications in diverse areas such as adoptive controls [9], communication networks [10], switching systems [14], dynamic programs [15], are well established.

The theory of time scales, introduced by Hilger [3, 8] at the end of the twentieth century as a means to unify the difference and the differential calculus, is now a well-established subject.

In [7], J.M. Davis, Ian A. Gravagne, Billy J. Jackson, R.J. Marks discussed the controllability, observability realizability and stability of linear dynamic system on time scales.

On the other hand, the theory of Volterra integro-dynamic equation has drawn the attention of many mathematicians in the last decade [6]. In [1], Adivar derived principal matrix solution using variation of parameters formula for integro-dynamic equations on time scales. In [2], Becker investigated the solution using variation of parameters formula for a integro-dynamic equations and its adjoint. Burton and Mahfoud discussed the various stability properties of integro-dynamic equations in [4, 5, 6].

Controllability, observability and stability of Volterra integro dynamic system on time scales were studied Awais Yonus and Ghaus ur Rahman [16] . They considered linear integro dynamic system of the form

$$x^{\Delta}(t) = A(t)x(t) + \int_{t_0}^{t} K(t,s)x(s)\Delta s + B(t)u(t).$$

Anyhow, much of contribution on controllability, observability and stability of non-linear integro dynamic systems on time scales is not available in literature. With this motivation, in this paper, we establish some new results on controllability, observability and stability of non linear matrix integro dynamic system on time scales.

2. Preliminary Results

Throught this paper $\mathbb{T}$ denotes time scale(an arbitrary nonempty closed subset of the real numbers).

Definition 2.1: ([3]) The mappings σ and $\rho : \mathbb{T} \to \mathbb{R}$ where $\mathbb{T}$ is any closed subset of reals, are defined as $\sigma(t) = inf\{s \in \mathbb{T}: s > t\}$ and $\rho(t) = sup\{s \in \mathbb{T}: s < t\}$.

Definition 2.2:([3]) A non-maximal element t in $\mathbb{T}$ is called right dense if $\sigma(t) = t$; right scattered if $\sigma(t) > t$; left dense if $\rho(t) = t$ and left scattered if $\rho(t) < t$.

Definition 2.3:([3]) If $\mathbb{T}$ has a left scattered maximum M, then $\mathbb{T}^k = \mathbb{T} - \{M\}$, otherwise, $\mathbb{T}^k = \mathbb{T}$. If $\mathbb{T}$ has a right scattered minimum m, then $\mathbb{T}^k = \mathbb{T} - \{m\}$, otherwise, $\mathbb{T}^k = \mathbb{T}$.

Definition 2.4:([3]) The function $\mu^*: \mathbb{T}^k \to \mathbb{R}^+$ defined by $\mu^*(t) = \mu(\sigma(t), t)$ for $t \in \mathbb{T}$ is called graininess. If t is right dense, then $\mu^* = 0$ and if t is right scattered, then $\mu^* = \sigma(t) - t$.

Definition 2.5:([3]) A mapping $f: \mathbb{T} \to \mathbb{R}$ is said to be differentiable at $t \in \mathbb{T}^k$, if there exists an $\alpha \in \mathbb{R}$ such that for any $\varepsilon > 0$ there exists a neighbourhood Q of t satisfying $|f(\sigma(t)) -$

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Resonance Propagation and Elimination in Integrated and Islanded Microgrids

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ABSTRACT

In this paper, a micro grid resonance propagation model is investigated. To actively mitigate the resonance using DG units, an enhanced DG unit control scheme that uses the concept of virtual impedance is proposed. It can be seen that a conventional voltage-controlled DG unit with an LC filter has a short-circuit feature at the chosen harmonic frequencies, whereas a current-controlled DG unit presents an open-circuit characteristic. The application of underground cables and shunt capacitor banks may introduce power distribution system resonances. This paper additionally focuses on developing a voltage-controlled DG unit-based active harmonic damping technique for grid-connected and islanding micro grid systems. An improved virtual impedance control method with a virtual damping resistor and a nonlinear virtual capacitor is proposed. The nonlinear virtual capacitor is used to compensate the harmonic dip on the grid-side inductor of a DG unit LCL filter. The virtual resistance is principally answerable for micro grid resonance damping. The effectiveness of the proposed damping method is examined using each a single DG unit and multiple parallel DG units.

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1. INTRODUCTION

The increasing application of nonlinear loads can lead to significant harmonic pollution in a power distribution system. The harmonic distortion might excite complicated resonances, particularly in power systems with underground cables or sub sea cables [1]. In fact, these cables with nontrivial parasite shunt capacitance will form an LC ladder network to amplify resonances. In order to mitigate system resonances, damping resistors or passive filters can be placed in the distribution networks. However, the mitigation of resonance propagation exploitation passive components is subject to some well understood problems, like power loss and additional investment [2]. Moreover, a passive filter might even bring extra resonances if it's designed or installed without knowing detailed system configurations. To avoid the adoption of passive damping equipment, numerous types of active damping methods are developed [3-6]. Among them, the resistive active power filter (R-APF) is often considered as a promising way to understand better performance. Conventionally, the principle of R-APF is to emulate the behavior of passive damping resistors by applying a closed-loop current-controlled method (CCM) to power electronics converters [7-8]. In this management category, the R-APF will be simply modeled as a virtual harmonic resistor if it's viewed at the distribution system level, in addition, many changed R-APF [9-13] ideas were additionally developed in the

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A Study on Asphalt Pavements by using RAP, Sand & UFS Mixtures as Replacements

K. NagaRajesh, B. Girish Kumar, G. Jagadeesh, R. Srinivasa Rao

Abstract: The centre of this study is concentrated on introducing the lean ideas in asphalt pavement construction particularly in the Quality control (QC) process in HMA. HMA comprises of nearly 95% of aggregate, gravel or sand, filler and these ingredients are binding together with bitumen a by-product from crude oil industry. The aim of the present study is to compare the strength in terms of stability and flow value of Conventional & Non-conventional mix by Marshal Stability test. The present study relates Usage of RAP to reduce the fresh aggregate in the proposed Mix without influencing the properties of mix, from the test results we are adopting 10 % RAP with 90 % fresh aggregate for NCM mixes.VG 30 grade bitumen is used as binder and Maximum aggregate size (MAS) 23.0 mm and Nominal Maximum Aggregate size (NMAS) 19.0 mm. Cement is used as filler for conventional mixes, while UFS, Sand is used as filler for NCM-II and NCM-III respectively. And finally, 1 % lime in the weight of bitumen used as antistripping agent to minimise moisture susceptibility or to increase the resistance to moisture sensitivity of the proposed mix. From this study we are observed NCM –II shows better results than other Non-conventional mixes, the stability values are slightly lesser than conventional mix, other Marshall properties are far better than conventional ones. The optimum binder content (OBC) is 5.68 for NCM – II, which is lesser than Conventional mix 5.72

Keywords: Bituminous concrete, Reclaimed Asphalt Pavement (RAP), Optimum Binder Content (OBC), Used Foundry Sand (UFS), Non-Conventional Mix (NCM).

I. INTRODUCTION

Hot mix asphalt consists of aggregates, binders and air voids. Out these aggregate having nearly 90-96 percent in total weight of the mix, most of the loads carried by the skeleton of aggregate structure. It is also noted that the amount of asphalt binder is 4-6% in the total weight of mix. Due to viscos-elastic property of bitumen it acts like adhesive and bind together all ingredients in the mix. Fillers are fine materials which are passed through 75-micron sieve having lot of advantages in HMA mix. They are not only reducing the voids but also increases the bond between aggregate and bitumen, increases the resistance to moisture susceptibility.

1.1 Lime in HMA

Hot mix Asphalt (HMA) mixtures containing lime having some benefits. Lime improves the resistance to moisture susceptibility and reduces the water damage [15].Lime acts as an-active filler and anti oxidant and also improves durability at low temperatures [20]. It reduces the plasticity of clay fines. Thus, hydrated lime is an additive with a purpose to increase pavement life and performance via multiple mechanisms [20].

1.2 RAP in Pavement construction

RAP is a scarified Asphalt pavement layer which is used as a pavement material with proper inspection [3].By Using RAP we can optimize the usage of Natural resources by partial replacement of aggregate which is a scarce commodity in some regions and can reduce the binder content in mix, since always some binder content present in the RAP [18].Studies proven that Pavements constructed with less than 30 % RAP having same performance compared with the Conventional pavements [18].

1.3 Used foundry sand as mineral filler in pavement construction

Used foundry sand as mineral filler in pavement creation Filler materials in asphalt concrete combinations have a whole lot of advantages. In addition to filling the voids, they decreasing moisture susceptibility, developing the bond of aggregate and asphalt and end result to increase the stiffness through which includes of inflexible materials in much less rigid matrix [10].

However, having too much filler in HMA mixture can lessen the cohesive among aggregates and binder as coating of the aggregates by way of way of fillers will growth the quantity of binders within the mix eventually weakening the aggregate [8]. High content material of fillers will stiffen the combination to a extremely good amount and the workability of the mix can also reduce. Foundry sand is uniform silica sand that is used to make moulds and cores for ferrous and nonferrous metal castings [25].

Recycling of used foundry sand can keep strength, lessen the need to mine new substances, and can lessen expenses for both producers and quit customers. Use of foundry sand as a excellent aggregate and filler in production applications offers task managers the ability to enhance green sustainable creation. Studies have established that used foundry sand can be used between eight to 25 percent in region conventional fillers in asphalt mixes [25].

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Image Super Resolution by Interpolation and Edge Modification

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Abstract— Image Super-Resolution is transforming Low Resolution Image (LRI) into High Resolution Image (HRI). The proposed color image super-resolution method is composition of combining individual advantages of bicubic interpolation and Stationary Wavelet Transform (SWT). Red, green, blue planes are separately given to bicubic interpolation to obtain high resolution planes. The problem in obtained in high resolution planes is blurred edges, these blurred edges are modified with the help of SWT, boosting value. Performance of the proposed method calculated, compared with existing techniques it is effective in terms of PSNR.

Index Terms— Image Super Resolution, LRI, HRI, Bicubic Interpolation, SWT.

I. Introduction

Image super resolution is converting LR image into HR image with the help one or more low resolute images. In Broad classification, super-resolution methods are based on interpolation, example, and regularization [4]. In interpolation based super-resolution methods [1][2][3], on basis of smooth kernel and piecewise smooth the upscale algorithms are useful to reduce degradation of image. Regularization based super-resolution methods [5][6][7][8], local or nonlocal based regularization construction used to deblur the image. Example based super-resolution methods [9], with the help of machine learning algorithms the Low Resolution (LR) patches converted into High Resolution (HR) patches, the problem here is conversion process depends on trained images (knowledge base).

Peitao Cheng [4] achieved single image SR, the high resolution and low resolution patches are matched with the help of Gaussian process regression and Dirichlet process. The method can able to handle large and complex distributed data. Min-Cheng Pan [10] proposed a concept on super resolution of global one dimensional motion blurred images. It is also known to restore spatial-frequency distorted images using linear algorithms and it frequently decrease the sharpness features in the image. This model also proposes a method to estimate the extent of motion blurring directly from the motion blurred image. The gray image super resolution [11] is obtained by using bicubic interpolation then to modify edges, the gray high resolute image is given to SWT. The subbands of SWT are multiplied by boosting value in between 1 and 3, then applied to inverse SWT to get edge modified gray high resolute image. The method has its own drawbacks.

The proposed color image super resolution method uses the individual advantages of bicubic interpolation, SWT. The LR color image is split into three different planes i.e., Red (R), Green (G), Blue (B), and these three planes given to bicubic interpolation separately to obtain high resolute R, G, B planes. The high resolute R, G, B channels are individually given to SWT, results approximation and detail subbands (total four subbands) of each channel. The detail subbands are modified with help of boost value. The modified subbands and approximation subband given to inverse SWT of each channel separately, to obtain edge modified high resolute channels. Finally all three edge modified channel are combined to get high resolute color image. The remainder of the paper is configured as follows. In section 2, the proposed methodology for color image super resolution delineated. Results are presented in section 3, conclusions and future directions are given in section 4.

II. Proposed Methodology

The proposed color image super resolution algorithm has great advantages by combining individual advantages of bicubic interpolation, SWT. In the first step the input low resolute RGB image is separated into R, G, and B channels. The channels are separately applied to bicubic interpolation to obtain high resolute channels. The high

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JARDCS

An Approach to Support for Data Aggregation to Reduce the Hot Spot Problem

A. Vanathi and Dr.M. Naga Malleswara Rao

Abstract:

Many data aggregation, and hotspot handling techniques have been proposed in the wireless sensor networks. However, As of now, there is no work has been undertaken to extend the conventional cluster-based aggregation techniques to DODAG structure of the RPL routing protocol. Moreover, the direct extension of data aggregation techniques in WSN to IoT may not provide several appealing benefits such as energy efficiency, data aggregation, longitivity of network lifetime, and a provision of solution to solve the hot spot issue in IoT network. The extension of data aggregation in IoT has to be considered as a multi-objective function to provide an energy efficient data aggregation without reducing the advantages of DODAG structure. The gateway node should reorganize its routing strategy, considering the global network traffic in providing an optimized in-network data aggregation topology structure to avoid hot spot problem in IoT. Also, a parent candidate selection mechanism should be extended without enabling the communication loops and increasing the number of routing hops. The adaptive extension of data aggregation schemes assists in bridging the research gap between RPL routing protocol and energy efficient data aggregation in IoT.

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Research paper

Asymptotic Stability of Solution of Lyapunov Type Matrix Volterra Integro-Dynamic System on Time Scales

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Abstract

This article emphasizes the characteristics and nature of asymptotic stability of solution of Lyapunov type matrix Volterra integro-dynamic system on time scales.

Keywords: *Asymptotic stability; Lyapunov; integro systems; time scales.*

1. Introduction

Integro-differential equations occur as mathematical models in mechanics, mathematical biology and many other diverse disciplines quite frequently. The origin of the study of integral and integro differential equations may be traced back to the works of Lotka, Fredholm, Volterra etc [9]. From these initial steps, the theory and applications of integro-differential equations have emerged as new area of investigation. Later the study of qualitative properties of Integro-differential equation has drawn the attention of many mathematicians. Burton studied the stability theory of Volterra integro-differential equations [2, 3]. Grossman and Miller observed the asymptotic behaviour of solutions of Volterra integro-differential system [4].

The theory, proposed by Hilger [5], of time scales as a tool to unify the discrete and continuous calculus, is now a well established subject. For further study on dynamic equations, inequalities, linear system of equations on time scales, one can refer [1] and reference there in. In [7], basic properties of quantitave and qualitative results for Volterra integral equations on time scales were introduced by Kulik and Tindell.. Recently, Lupulescu, Ntouyas and Younus have discussed the asymptotic stability and boundedness of Volterra integro-differential equations on time scales [8]. The importance of lyapunov type system is useful in many branches of Science and Technology and particularly in Control theory and Systems Engineering. Inspired by the quite interesting nature of this problem, an effort, to study the asymptotic stability for the system given below, is made.

$$\begin{aligned} X_3^{\Delta}(t) &= A(t)X_3(t) + X_3(t)B(t) \\ &\quad + \int_{t_0}^{t} [K_1(t,s)X_3(s) + X_3(s)K_2(t,s)]\Delta s + F(t), \\ X_3(t_0) &= X_{3_0}. \end{aligned} \tag{1}$$

where $0 \le t_0 \in \mathbb{T}^{\kappa}$ is fixed, A, B and F are an $(n \times n)$ continuous matrix functions on $\mathbb{T}$, $K_1(t,s)$ and $K_2(t,s)$ are an $(n \times n)$ continuous matrix functions on $\Omega = \{(t,s) \in \mathbb{T} \times \mathbb{T} : t_0 \le s \le t < \infty\}$

2. Preliminary Results

Throught this paper $\mathbb{T}$ denotes time scale(closed arbitray and nonempty subset of the real numbers).

Definition 2.1: ([1]) The mappings σ and $\rho : \mathbb{T} \to \mathbb{R}$ where $\mathbb{T}$ is any closed subset of reals, are defined as $\sigma(t) = \inf\{s \in \mathbb{T} : s > t\}$ and $\rho(t) = \sup\{s \in \mathbb{T} : s < t\}$.

Definition 2.2: ([1]) A non-maximal element t in $\mathbb{T}$ is called right dense if $\sigma(t) = t$; right scattered if $\sigma(t) > t$; left dense if $\rho(t) = t$ and left scattered if $\rho(t) < t$.

Definition 2.3: ([1]) If $\mathbb{T}$ has a left scattered maximum M, then $\mathbb{T}^{\kappa} = \mathbb{T} - \{M\}$, otherwise, $\mathbb{T}^{\kappa} = \mathbb{T}$. If $\mathbb{T}$ has a right scattered minimum m, then $\mathbb{T}^{\kappa} = \mathbb{T} - \{m\}$, otherwise, $\mathbb{T}^{\kappa} = \mathbb{T}$.

Definition 2.4: ([1]) The function $\mu^* : \mathbb{T}^{\kappa} \to \mathbb{R}^+$ defined by $\mu^*(t) = \mu(\sigma(t), t)$ for $t \in \mathbb{T}$ is said to be graininess. If t is right dense, then $\mu^* = 0$ and if t is right scattered, then $\mu^* = \sigma(t) - t$.

Definition 2.5: ([1]) A functions $f : \mathbb{T} \to \mathbb{R}$ is said to be differentiable at $t \in \mathbb{T}$, if there exists an $\alpha \in \mathbb{R}$ such that for any $\varepsilon > 0$ there exists a neighbourhood N of t satisfying $|f(\sigma(t)) - f(s) - (\sigma(t) - s)\alpha| \le |\sigma(t) - s|$ for all $s \in N$.

Theorem 2.6: ([1]) If A is differentiable at $t \in \mathbb{T}^{\kappa}$, then $A^{\sigma}(t) = A(t) + \mu(t)A^{\Delta}(t)$.

Theorem 2.7: ([1]) Suppose A, B and C are differentiable $(n \times n)$

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Influence of helix twisted tape on heat transfer and friction factor in forced circulation V-trough solar water heater

A. Saravanan, J. S. Senthilkumaar, S. Jaisankar & J. Ananth

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ABSTRACT

The effect of helix twisted tape with several twist ratios (Y = 3, 4, 5 and 6) in a V-trough solar water heater for enhancing heat transfer, thermal performance and the friction factor has been examined experimentally in forced circulation with the Reynolds number ranging from 3000 to 23,000. The experimental results of plain V-trough solar collector (PVT) fitted with the standard equations and the variation in the Nusselt number are ±7.23% and the variation in friction factor is about ±5.91%.

The PVT has been compared with plain flat plate (PFP) collector. The obtained result shows that the average Nusselt number of PVT performs better than PFP by 8.4%.

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Research Article

Application of fuzzy entropy for the rating of epicyclic gear trains

Srinivasa Rao Vallem, Mallikarjuna Rao Kuchibhotla & Balaji Srinivasa Rao Annambhotla

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Abstract

A Planetary gear train (PGT) is a system containing a total of three or more gears where a *ring* gear encircles the entire system. There are three main parts to planetary gear systems, often called *sun*, *planet* and *ring* gears. High power density in a lesser volume is the main advantage of a PGT. Due to high bearing loads and design complexity of planetary gear train and its inaccessibility for the operator to check, it is necessary to rate the planetary gear trains quantitatively. Planetary gear trains can be modelled as fuzzy systems, so that fuzzy logic can be applied. It is shown that fuzzy entropy can be utilised to compare many planetary gear trains in the enumeration stage from the viewpoint of rigidity and compactness. Graph

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Research Article

Application of fuzzy entropy for the rating of epicyclic gear trains

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Abstract

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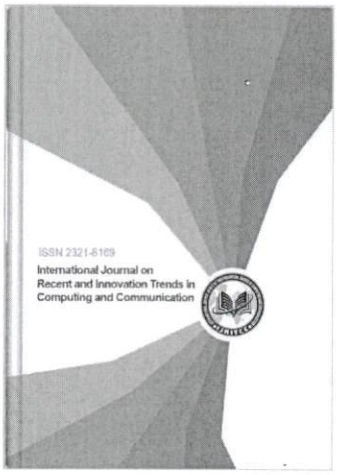

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LNA for UWB transceiver using 0.18µm CMOS Technology

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Abstract— An Ultra WideBand CMOS Low Noise Amplifier (LNA) is presented. Due to really low power consumption and extremely high data rates the UWB standard is bound to be popular in the consumer market. The LNA is the outer most part of an UWB transceiver. The LNA is responsible for providing enough gain to the signal with the least distortion possible. CMOS 0.18µm TSMC technology has been chosen for the design of the LNA at the transistor level. As many as five on chip inductors are implemented for the proper gain shaping over the frequency range of 3.1GHz to 10.6GHz. A noise figure of 3.98 dB is achieved to make sure noise contribution of the amplifier is as low as possible.

Keywords-*Ultra Wideband(UWB), Low Noise Amplifier, Noise Figure.*

*****

I. INTRODUCTION

Ultra Wide-Band (UWB) technology has been designed to bring convenience and mobility of high speed wireless communication to homes and offices. It is specifically designed for short range Wireless Personal Area Networks (WPANs). UWB will play an instrumental role in freeing people from wires and enabling video transmission or other high bandwidth data transmission that is rarely possible with a conventional wireless connection. The short range UWB technology will also complement other wireless standards such as Wi-Fi and Wi-Max. It can transmit data within the radius of 10 meters from the host device. UWB technology is designed to provide a short range, very low power connection with much more bandwidth than cable. Since UWB communicates with short range pulses, it can be used for tracking various objects. It has been shown that a UWB device can successfully transmit data at a rate of 110 Mbps at a distance of 10 meters [1]. This bandwidth is 100 times faster than Bluetooth and twice as fast as Wi-Fi. This bandwidth is large enough to accommodate three concurrent video streams over a single connection. Designers are promising UWB products that have speeds of up to 1 Gbps [2].

A basic block diagram of the UWB transceiver, including a transmitter and a receiver, is shown in Figure 1. The baseband Digital Signal Processing (DSP) unit controls the messaging and signaling of information. The DSP unit also synchronizes the system clock. The main function of the receiver is to amplify the signal without amplifying the noise. The principal role of the transmitter is to boost up the signal using some line drivers in order to send high energy signals.

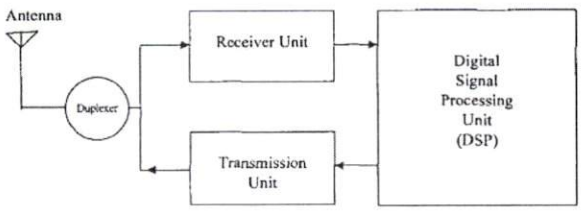

Figure1. Block diagram of UWB transceiver

The block diagram of a UWB receiver is shown in Figure 2. The receiver features a Low Noise Amplifier (LNA) followed by a mixer (demodulator). The mixer removes the carrier from the received radio frequency signal. Usually there is an automatic gain control block between the mixer and the Analog to Digital Converter (ADC). The purpose of this block is to balance the amplification or attenuation of the received signal in a way that it utilizes the maximum range of the ADC. The analog to digital converter then converts the analog signals to digital data which is fed to the DSP to process the transmitted data. The signal is then fed to the DSP block for baseband processing.

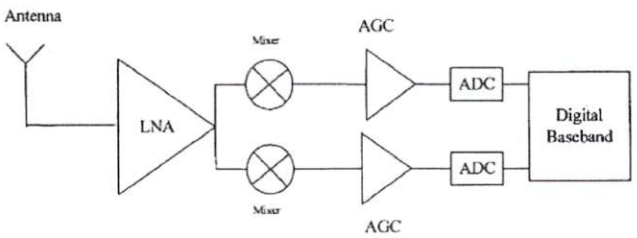

Figure 2. Block diagram of UWB receiver

In this context it is clear that an ultra wideband LNA should pass all the frequencies between 3.1 to 10.6 GHz. Such an amplifier must feature wideband input matching to a 50 Ω antenna for noise optimization and filtering of the out-of-band interferers. Moreover, it must show flat gain with good linearity and minimum possible noise figure over the entire bandwidth.

The LNA is an instrumental component of a UWB receiver. The LNA's noise figure has a major impact in deciding the system's overall noise figure, therefore this thesis deals with various aspects of the LNA design for a UWB device.

II. SYSTEM DESCRIPTION

Design Specifications

The field of UWB technology is of high demand these days because of the huge desire for data rates and speed which it

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Vital Investigation of Data in Hybrid Cloud

K Pavan[1], N Nalini Krupa[2], N Madhuri[3]
[1, 2, 3]*Computer Science And Engineering*

Abstract: ***In terms of computing, data Is essential however by the inclusion of redundant data may consume much storage space. To save the bandwidth we must remove the data which is the replicas of original, to achieve this we have so many techniques of compressing data in that deduplication is one. It is important to have the protection to maintain the secrecy of the sensitive data of the peer groups. To proceed with this, we must maintain some cryptographic standards. In our paper we are implementing a typical approach that must provide security to our data and must eliminate the redundant copies of the data. To achieve this, we are going to scan the copies of the data and another main issue associated with this is the security to go through with some convergent cryptographic techniques. All in all, this approach is going to give the proof of idea on various security investigations of our definitions. Also, we execute a model of copy check &leads some successful results.***
Key words: token, s-csp, public cloud, sensitive, confidential

I. INTRODUCTION

Cloud computing is one of the emerging technologies in today's modern computing. It provides an illusion of accessing infinite amount of resources to the user by hiding the accessing mechanisms as a service over internet. These can provide high quality storage space, accurate and reliable computing results at an affordable price. As it is having much fame user also willing to place larger data on it also can manage and share the data to the other users. While providing the unlimited high-quality storage to the user the first question rises weather is it able to manage that, large volumes of data? To achieve this, we need to have efficient management mechanisms.

Without wasting the storage space of abandon space, we have well known and simple de-duplication techniques to achieve it, which is most popular in recent times and gets the most concentration of the users of storage management.

It is the popular compression technique to remove the replicas of the content stored in the cloud. The basic mechanism why we elect this is, while participating in the communication with the network there is a chance to do interchange of data from the user to data repository, the integration of multiple number of bytes transferred to the repository will increase the utilization of the data store, our motto is also the same i.e. to improve the utilization of the data store management.

Unfortunately, somehow, we are storing the replicas of original contents in the storage space, by implementing the de-duplication mechanism which eliminates the duplicate copies of the data. It is also capable of checking the de-duplication in block level as well file level. If it is the case of block level it can check the block of data that is generated in the dissimilar bunch of files. If it is the case of file level it eliminates the replicas of the same file name or contents.

De-duplication of data provides so many advantages, but it can also get some flaws, that the data of the users is able to get attack in terms of security or private concerns. Past security mechanisms provide secrecy to the data but there is no de-duplication and compatibility. In traditional standards of cryptography data encryption and decryption is done through keys of you want to encrypt the data you need another user to do it. Then there is a possibility to place multiple cipher texts in the cloud, which making the space with redundant copies of information to the plain original text by having in multiple places.

The other is convergent mechanism which can achieve data confidentiality. It can encrypt and decrypt the data based on some cryptographic hash values given to perform computing on the data. By performing key generation to encrypt the data user preserves it and place the cipher text in the cloud. Encryption is a finite operation, it is done from the data, same key is generated to the same data which results same cipher texts. To restrict the access, a protocol is needed as a proof which was detected by the own or same file. After placing this no other user is able to place the same file into the store, the server won't give the permission to do. Later the user who wants to decrypt the data, the key which is given by the owner of the data is used and can be downloaded from the server then performs the decryption of the cipher text.

II. LITERATURE SURVEY

1) Distributed file system allows replicating the files over multiple computers, this uses significantly vast storage space and gets back the used space is crucial thing. J.R.Douceur [2] proposes a method to get the space over duplication for controlled file replication. It even includes convergent security measures with multiple keys of different users.

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A Study on Asphalt Pavements by using RAP, Sand & UFS Mixtures as Replacements

K. NagaRajesh, B. Girish Kumar, G. Jagadeesh, R. Srinivasa Rao

Abstract: *The centre of this study is concentrated on introducing the lean ideas in asphalt pavement construction particularly in the Quality control (QC) process in HMA. HMA comprises of nearly 95% of aggregate, gravel or sand, filler and these ingredients are binding together with bitumen a by-product from crude oil industry. The aim of the present study is to compare the strength in terms of stability and flow value of Conventional & Non-conventional mix by Marshal Stability test. The present study relates Usage of RAP to reduce the fresh aggregate in the proposed Mix without influencing the properties of mix, from the test results we are adopting 10 % RAP with 90 % fresh aggregate for NCM mixes.VG 30 grade bitumen is used as binder and Maximum aggregate size (MAS) 23.0 mm and Nominal Maximum Aggregate size (NMAS) 19.0 mm. Cement is used as filler for conventional mixes, while UFS, Sand is used as filler for NCM-II and NCM-III respectively. And finally, 1 % lime in the weight of bitumen used as antistripping agent to minimise moisture susceptibility or to increase the resistance to moisture sensitivity of the proposed mix. From this study we are observed NCM –II shows better results than other Non-conventional mixes, the stability values are slightly lesser than conventional mix, other Marshall properties are far better than conventional ones. The optimum binder content (OBC) is 5.68 for NCM – II, which is lesser than Conventional mix 5.72*

Keywords: Bituminous concrete, Reclaimed Asphalt Pavement (RAP), Optimum Binder Content (OBC), Used Foundry Sand (UFS), Non-Conventional Mix (NCM).

I. INTRODUCTION

Hot mix asphalt consists of aggregates, binders and air voids. Out these aggregate having nearly 90-96 percent in total weight of the mix, most of the loads carried by the skeleton of aggregate structure. It is also noted that the amount of asphalt binder is 4-6% in the total weight of mix. Due to viscos-elastic property of bitumen it acts like adhesive and bind together all ingredients in the mix. Fillers are fine materials which are passed through 75-micron sieve having lot of advantages in HMA mix. They are not only reducing the voids but also increases the bond between aggregate and bitumen, increases the resistance to moisture susceptibility.

1.1 Lime in HMA

Hot mix Asphalt (HMA) mixtures containing lime having some benefits. Lime improves the resistance to moisture susceptibility and reduces the water damage [15].Lime acts as an-active filler and anti oxidant and also improves durability at low temperatures [20]. It reduces the plasticity of clay fines. Thus, hydrated lime is an additive with a purpose to increase pavement life and performance via multiple mechanisms [20].

1.2 RAP in Pavement construction

RAP is a scarified Asphalt pavement layer which is used as a pavement material with proper inspection [3].By Using RAP we can optimize the usage of Natural resources by partial replacement of aggregate which is a scarce commodity in some regions and can reduce the binder content in mix, since always some binder content present in the RAP [18].Studies proven that Pavements constructed with less than 30 % RAP having same performance compared with the Conventional pavements [18].

1.3 Used foundry sand as mineral filler in pavement construction

Used foundry sand as mineral filler in pavement creation Filler materials in asphalt concrete combinations have a whole lot of advantages. In addition to filling the voids, they decreasing moisture susceptibility, developing the bond of aggregate and asphalt and end result to increase the stiffness through which includes of inflexible materials in much less rigid matrix [10].

However, having too much filler in HMA mixture can lessen the cohesive among aggregates and binder as coating of the aggregates by way of way of fillers will growth the quantity of binders within the mix eventually weakening the aggregate [8]. High content material of fillers will stiffen the combination to a extremely good amount and the workability of the mix can also reduce. Foundry sand is uniform silica sand that is used to make moulds and cores for ferrous and nonferrous metal castings [25].

Recycling of used foundry sand can keep strength, lessen the need to mine new substances, and can lessen expenses for both producers and quit customers. Use of foundry sand as a excellent aggregate and filler in production applications offers task managers the ability to enhance green sustainable creation. Studies have established that used foundry sand can be used between eight to 25 percent in region conventional fillers in asphalt mixes [25].

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Field Evaluation of Dynamic PCU under Heterogeneous Traffic Conditions

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[1]*Assistant Professor, Department of Civil Engineering, GMR Institute of Technology, Andhra Pradesh.*
[2]*Associate Professor, Department of Petroleum Engineering, Aditya Engineering College (A), Andhra Pradesh.*

Abstract: ***In the present paper, dynamic nature of passenger car unit (pcu) values are analyzed under heterogeneous traffic conditions on two-lane urban roads in three unique locations of andhra pradesh state, india. The estimation of pcu values are based on speed and vehicle's projected area on the ground. Speed equations are developed to estimate the speed of vehicles for given traffic volume and composition. Later the acquired pcu values are compared with indian road congress recommended values. Finally the effect of carriageway width on pcu factors is also estimated.***
Keywords: PCU, Heterogeneous traffic, Speed Equations, Carriageway width.

I. INTRODUCTION

Traffic on roads in India is termed to be highly heterogeneous in nature comprising of many variety of vehicles like cycles, cycle rickshaws, two-wheelers, three-wheelers, cars, trucks, bullock carts etc., mostly sharing the same space of the road. Heavy vehicles consume more space and more importantly they have lower performance comparing to the rest of the vehicles. Similarly smaller vehicles like two wheelers move in between heavy vehicles occupying less space. Hence major varying aspects such as speed, size, maneuverability, acceleration, spatial zone influence of various types of vehicles etc., makes harder to examine the traffic characteristics and to estimate the parameters like roadway capacity, density, level of service (LOS) etc., which are the essential fundamentals for design, planning, operation and layout of road sections. The analysis of the heterogeneous traffic is simplified by converting all the vehicle categories in the traffic stream into traffic stream consisting of only one type of vehicle. The most accepted type of vehicle is a passenger car. A particular sort of vehicle category in the traffic stream is converted into passenger cars by multiplying the number of vehicles of that particular category with a factor known as Passenger Car Unit.

Speed portrays the traffic performance measure of the roads and highways. It gives the basic fundamental relationships of traffic flow theory. In the mixed traffic, speed of one type of vehicle is affected by other vehicles in the traffic stream. Hence, speed equations for individual sort of vehicles were developed using traffic composition and spot speed values. In the present study, PCU values are calculated by using the methodology proposed by Chandra. S [1, 2], which is best suitable for the Indian traffic conditions.

In the first edition of Highway Capacity Manual, the term PCU was not utilized. Rather, two cars were considered in place of a single truck. Later in the second edition of HCM (1965) [3], the concept of PCU was first introduced as a measure to convert all different types of vehicles in traffic into equivalent number of passenger cars which helped in converting non uniform traffic stream into uniform traffic stream consisting only of passenger cars. Since then, research is being carried out till date throughout world for the evaluation of PCU factors. Different factors were considered for the calculation of passenger car equivalents. But till now, permutations and combinations of all different factors couldn't satisfy the value of PCU as no value fits the curve of regression perfectly.

Greenshields et al., (1947) [4] suggested a procedure known as basic headway method for the calculation of PCU. Webster & Cobbe (1966) [5] used headway method and obtained PCE value of 1.75 for medium and heavy goods vehicles. Miller (1968) [6] estimated PCE value by measuring additional time required by heavy vehicles over a passenger car to cross an intersection in which, he obtained a value of 1.85 for trucks. Werner & Morrall (1976) [7] suggested that headway method is best suited for the calculation of PCEs on low terrain level and at low level of service. John & Glauz (1976) [8] considered the percentage of grade, truck volume to capacity ratio and mixed vehicle flow and calculated the PCU values. Craus et al., (1980) [9] suggested equivalent delay method for the estimation of PCU values in which they considered that difference between delay caused by heavy vehicle to standard passenger cars and delay caused by slower passenger cars to standard passenger cars. The equivalent delay method assumes that faster vehicles are always resisted by slower vehicles causing queue formation. The proposed equation considered as the ratio of average delay time caused by one truck to average delay time caused by one passenger car. Hu & Johnson (1981) [10] described how to use 1965

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Research Article

EFFECT OF ARABICA AND CANEPHORA COFFEE BEAN EXTRACTS TOWARDS MODIFICATION OF RED BLOOD CELL SURFACE ANTIGENS

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ABSTRACT

Introduction: ABO and RhD variants are the most studied blood group in India. Progress is being made towards modification of red blood cell surface antigens from A and/or B to blood group O. Objective: The objective of this study is a comparative analysis of the changes observed on the red blood cell antigens which differ in a short glycoprotein chain difference, by the effects of a *Coffea arabica* and *Coffea canephora* bean extracts. Methods: The heamatological effect of the coffee bean extract was prepared and evaluated using blood group analysis on haematological indices. Results: Agglutination was clearly observed initially for 5 min for all the eight blood types. Specifically, for the O+ blood group there is a time lag for agglutination to take place for the incubation period of 15 min for *Coffea arabica*, while agglutination occurred after 7 minutes of adding blood group antibodies with *Coffea canephora*. Conclusion: These results, as well as the possibility of adapting this method to a fully automated system, could be an important contribution to the field of immunohematology.

KEYWORDS: *Coffea arabica*, *Coffea canephora*, RBC, Coffee bean, Glycoprotein, Agglutination

INTRODUCTION

Coffee bean extracts has been reported as antioxidant, anti-obesity and hepatoprotective activity[1]. In this study, coffee seed extracts showed stimulatory effect on the immune functions. Globally, blood is an essential part of modern healthcare. In the United States alone, nearly 5 million patients receive approximately 14 million units of red blood cells donated each year according to estimates by the American Association of Blood Banks and the National Blood Collection and Utilization Survey[2]. Morgan in UK and Iseki in Japan discovered that some bacterial enzymes from *Clostridium tertium, Clostridium welchii, Bacillus cereus* and *Trichomonas foetus* specifically destroyed A, B or H antigens[3]. Enzymatic conversion of type B blood using purified or recombinant coffee bean (*Coffea canephora*) α-galactosidase has been achieved using 100-200 U/ml[4]. Glycine max has been proposed to convert B cells in a more efficient way, but these protocols have not been completely evaluated by routine blood-typing tests or clinical trials[5]. The researchers homed in on two enzymes; of which one from a gut bacterium called *Bacteroides fragilis*, removes the B antigen[6]. WBC counts was also increased significantly ($p < 0.001$) in all doses of the plant extract. *Coffea arabica* extract elicited a significant ($p < 0.001$) increase in the DTH response at doses of 50 and 150 mg/Kg, but the change at higher dose of 250 mg/Kg was not statistically significant[7]. Many these plants and their isolated constituent have shown beneficial therapeutic effects, including antioxidant[8], anti-inflammatory[9], anticancer[10], antimicrobial[11], and immunomodulatory effects[12]. In present study, we have been undertaken to explore the effect of *Coffea arabica* and *Coffea canephora* coffee bean extract towards modification of red blood cell surface antigens.

MATERIAL AND METHODS

PREPARATION OF COFFEE BEAN SMOOTHIE

Extraction was carried out by grinding seeds of the plant with a pestle and mortar in the presence of liquid nitrogen and or made into smoothie[13]. The material was transferred to a vial and 500µl of lysis buffer (HiMedia) was added and the sample was vortexed. Later, the suspension was mixed for one hour at 37^{0}C and filtered. The filtrate was spin at 14,000 rpm (Thermo, MicroCL 21 Microcentrifuge) in cold conditions for 10 min and supernatant was removed and stored at 4^{0}C until further analysis.

BLOOD SAMPLE COLLECTION AND PROCESSING

Blood samples were obtained from eight healthy individuals (males and females) aged 18 to 20 years. Informed consent was obtained from everyone before collection of blood, and the procedures followed were in accordance with the ethical recommendations (23/IEC/IG/2017) of our institution[14]. The samples were kept at 4^{0}C and divided into groups, based on blood typing, using ABO diagnostic kit (Span Diagnostics).

Effect of Tyre Rubber Pieces on Strength of Ordinary Concrete

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Abstract- *The use of scrap tyre rubber in the preparation of concrete has been thought as an alternative disposal Solid waste management has gained a lot of attention to the research community now-a- days. Out of the various solid waste, accumulated waste tires, has become a problem of interest because of its non- biodegradable nature. Most of the waste tire rubbers are used as a fuel in many of the industries such as thermal power plant, cement kilns and brick kilns etc. Unfortunately, this kind of usage is not environment friendly and requires high cost. It can't be released off effortlessly in nature as its deterioration takes much time and furthermore creates ecological contamination of such waste to ensure the earth.*

In this context a part of 20% of cement is replaced with silica fume and varying amounts of 5, 10, 15, and 20% of coarse aggregate is replaced by pre-treated scrap tyre pieces. The concrete is molded to desired shape, solidified, and cured. The variations in the rubber content show variations in the mechanical properties of the concrete specimen, which are recorded. Its different properties like compressive strength, split tensile strength and flexural strength will be investigated and compared with ordinary concrete.

The results show that increase in rubber content in the concrete mixture decreases the strength, the strength of the concrete when compared to rubber concrete increases due to addition of silica fume.15% of rubber replacement provides strength to concrete, increase in percent decreases the strength of concrete.

Keywords- Silica Fume, Waste Tyre Rubber, Compressive Strength, Split Tensile Strength, Flexural Strength.

I. INTRODUCTION

Concrete is a composite material made up of coarse aggregate held together in cement and fine aggregate matrix. In a concrete mix, cement and water forms a paste called matrix which fills the voids of the fine aggregate, coats the surface of fine and coarse aggregates, and binds them together. The scarcity and availability at reasonable rates of sand and aggregate are now giving anxiety to the construction industry. Rubber aggregates from discarded tyre rubber in sizes 20-10 mm, 10-4.75 mm and 4.75 mm down can be partially replaced natural aggregates in cement concrete construction

1.1.1 Tyre waste management

Accumulation of solid waste management has become a major environmental problem. Out of the various solid waste, accumulated waste tires is non- biodegradable in nature. Scrap tires are discarded when they are of no use. These waste rubber tires are generally called black pollution, as they take much time to deform, posing a potential threat to environment and also to the living beings.

This process generally is more harmful to the environment and requires high cost. The scrap tires must be reused in the most effective way possible. The use of scrap tire rubber in the preparation of concrete is an alternative way to dispose tire waste to protect the environment. This kind of concrete may be used where elasticity, tensile strength should be achieved. This study is an attempt to identify the various properties of concrete mix with the coarse tire rubber chips as a coarse aggregate.

In this experimental study, a part of coarse aggregate is replaced with chopped waste car tire pieces and a part of cement is replaced with silica fume.

Figure 1.2 Accumulated Scrap tyres

1.1.2 Source of silica fume

Design of Ship Propeller by Using Macros Technique and Analysis with Materials

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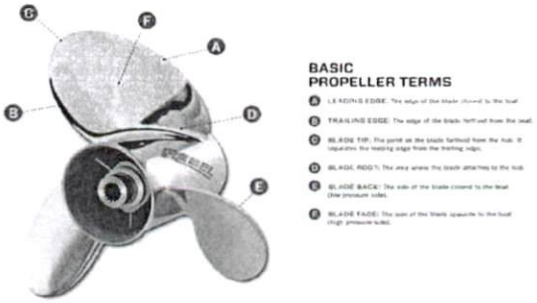
Abstract - In this paper, the ship propeller is designed using macros and the materials are compared. Expanded use of lightweight materials in the marine applications the epoxy composites was chosen which has high performance characteristics and a lightweight thermosetting matrix resin. Propeller is an essential component for underwater vehicles such as ship, submarines etc. This supports the vehicle to move at its operating speed. This works on the Bernoulli's principle and Newton's third law. In this paper, the propeller geometry is designed using macros. The solid model was created in CATIA software. The simulation and modal analysis are performed in ANSYS workbench. Then the material results are compared with the previous material. Finally, the better material for ship propeller is determined.

Keywords: ***Propeller design, Macros, Catia, Ansys workbench, Structural analysis.***

I. INTRODUCTION

For the past few years there have been critical innovative work in the field of propeller designs in order to protect the safety of goods, travellers and the crew and in the mean time reducing the expenses and by improving the efficiency. Ship Propeller is used for propulsion regardless of their sort and size.

A propeller is a sort of whirling fan, which is used to move the ship or aircraft forward by utilizing the power created by the engine. The transmitted power is changed from rotational movement to produce a push or thrust which imparts energy to the fluid (i.e. water or air), bringing about a force that follows up on the ship and drives it forward. The pressure variation between the front and aft side of the blade creates acceleration in the water present behind the blade, which makes the ship start sailing. Propellers continually turn at a steady velocity, which increases the efficiency of the engine. Propellers create push through the generation of lift by their rotating blades. The propeller whose name originates from the Latin word "propeller". A proficient screw propeller was innovated at the start of the nineteenth century as an efficient power source for the steam engine.



A Novel Algorithm to Find Distinct Mechanisms of a Planar Kinematic Chain

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Abstract— In the structural synthesis of kinematic chains development of distinct mechanisms is an important task to be analysed. After finding the distinct kinematic chains resolving the problem of isomorphism, it is necessary to find distinct mechanisms. Earlier, many researchers developed methods based on topological characteristics based on link and joint connectivity. In this paper, a novel algorithm is proposed based on adjacency of each link mixed with the 'degree of vertex' concept in Graph theory. Distinct kinematic mechanisms or inversions are found for 8-link 1-degree of freedom kinematic chains. All the results are in agreement with earlier results. The proposed method can be extended to higher linkages and degree-of-freedom.

Keywords— **kinematic chain, inversion, link, joint, adjacency**

I. INTRODUCTION

In structural synthesis of kinematic chains it is important to find distinct mechanisms. Earlier many researchers [1-11] developed several methods to find distinct mechanisms or inversions. In this paper, 8-link 1-dof planar kinematic chains are studied to find distinct mechanisms.

II. FUNDAMENTAL CONCEPTS

In a planar kinematic chains, distinct kinematic mechanisms are found by fixing one of the link as ground link. If input is given to one of the other links output will be found at another link in movement. This mechanisms are developed for each link fixed. Some of the mechanisms behave similar, are found to be same mechanisms or same type of inversions. Any of those links when fixed results the same inversion or mechanism.

LINK CONNECTIVITI INDEX

Link connectivity index is defined as the summation of degree of vertices of pair of links. For a pair of links 'i' and 'j', if 'i' is a ternary link and 'j' is a binary link, 'link connectivity index' will be 3+2 =5.

TOTAL LINK CONNECTIVITY INDEX

Total link connectivity index is defined as the summation of link connectivities of all pairs of primary link concerned.

NET CHAIN CONNECTIVITY INDEX

Net chain connectivity index is defined as the summation of total link connectivity indices of all the links.

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ISOMORPHISM IN PLANAR KINEMATIC CHAINS-A CASE STUDY IN GRAPH THEORY ALGORITHM

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ABSTRACT

In structural synthesis of Planar kinematic chains(PKC), Detection of isomorphism is an interesting area since many years. Enumeration of planar and geared kinematic chains becomes easy only when isomorphism problem is resolved effectively. Many researchers proposed algorithms based on topological characteristics, code based, genetic algorithm, fuzzy logic, graph theory etc. which need lot of computations and comparisons.

Graph theory is an effective tool in dealing with the structural synthesis of planar kinematic chains in an effective manner. In this work, 'net distance' based algorithm developed recently is tested for the distinct kinematic chains of 8-link single degree of freedom. All the results obtained justified the validity of the 'net distance' algorithm.

Keywords: Kinematic chain, Isomorphism, Net distance, Graph

I. INTRODUCTION

In the structural synthesis of planar kinematic chains, detection of isomorphism is a critical area to be studied. Various researchers proposed methods to identify isomorphism. Many attempts have been made in the past to solve this problem using the graph theory. Woo presented all the 230 isomers of 10-link 1-DOF K-chains [1]. Mruthyunjaya developed computerized methods for structural synthesis of K-chains. In addition, he presented a complete review of kinematic structure of mechanisms [2-4]. Other approaches are theory of finite groups by Tuttle [5], link's adjacent chain table by Kui and C.W.Qing [6]. Ambekar and Agrawal proposed the Max Code and Min Code methods for the detection of isomorphism [7, 8]. Yadav et al. presented 'distance' concept in modified version in checking K-chains for isomorphism and finding inversions [9, 10]. Rao A.C and his co-researchers contributed many concepts in testing isomorphism and structural synthesis of kinematic chains, namely, hamming number approach [11], pseudo hamming values [12], fuzzy logic [13], loop based methods in multi-degree of freedom K-chains to check isomorphism and finding distinct inversions [14]. Bedi and Sanyal had presented Joint connectivity approach for detection of isomorphism and distinct inversions of planar kinematic chains [15-17]. Xiao et al. proposed novel evolutionary algorithms for isomorphism detection [18]. Ashok Dargar et al. used link adjacency values – first and second to identify the distinct inversions. The method has the potential of identifying the isomorphic kinematic chains also [19]. Jaspal Singh Bal et al. [20] used link invariant functions based on distance matrix and kinematic chain loops to detect isomorphism and inversions.

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Enhanced Oil Recovery by using Polymer Flooding in Oil and Gas Industry in Tertiary Recovery Process

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Abstract: ***In very early days of the oil industry, the general practice in land-based shallow reservoirs was to produce oil by primary depletion. In this method, the compression al energy of the reservoir was used to force oil to the producer wells, with a consequent drop in the reservoir pressure. However, it was recognized that reservoirs would ultimately drop below bubble point pressure, such that dissolved gas would be released from the oil. As a result of the appearance of this extra phase, production impairment would occur. In order to maintain reservoir pressure and also to sweep out oil in a more efficient displacement process, water flooding became the standard practice in many reservoir formations and still finds a wide application. When water is injected under pressure, it would seek the path of least resistance to point of lowest pressure, which is generally producing well. If the mobility ratio is one or less, the displacement of oil by water is found to be efficient. In effect, the displacement occurs in a piston like fashion. On the other hand if mobility ratio is greater than one, the more mobile water fingers through the oil leaving it in place in the reservoir.***

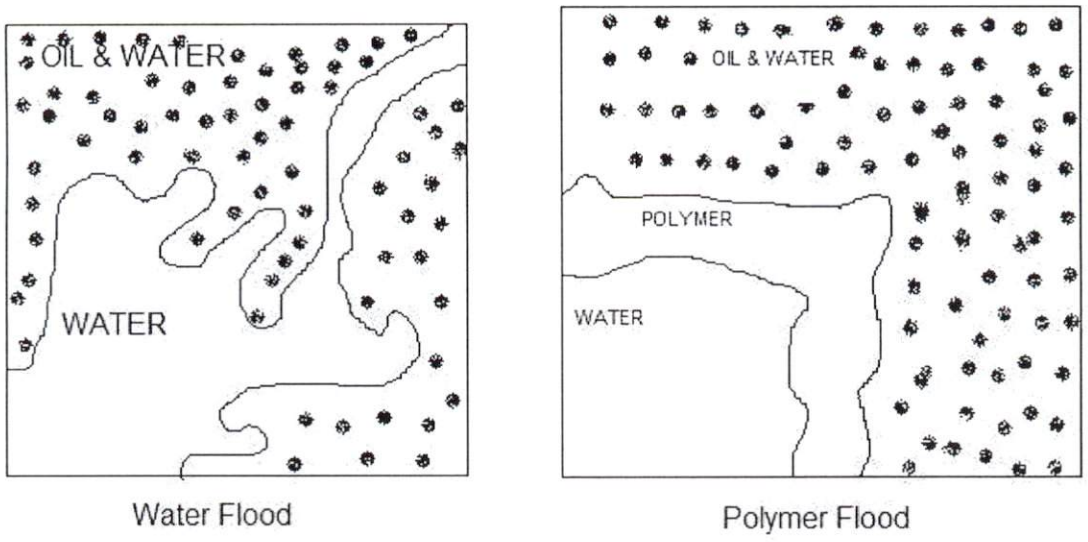

Figure 1.1: Water Flooding vs. Polymer Flooding Sweep Efficiency

I. INTRODUCTION

By polymer flooding a poor sweep efficiency may be improved, because the polymer solution of course first follows the paths prepared by water and then because of its high viscosity tends to —blockl these parts of the reservoir, so that oil that was previously immobile starts flowing. The pressure gradient in the reservoir and especially in those zones where oil was immobile becomes higher in a polymer flood than it was during water drive. Polymer improves the mobility ratio by its high viscosity solution and thereby increases the displacement efficiency.

A. Where Polymer Flooding

There are several broad guidelines which can be used to eliminate reservoirs as poor candidates for polymer flooding. These guidelines have been developed largely on the basis of past mistakes in field tests, (Jennings 1977).

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Present and Future Potentiality of Coal Bed Methane Gas Exploration and Production in Indian Coal Fields

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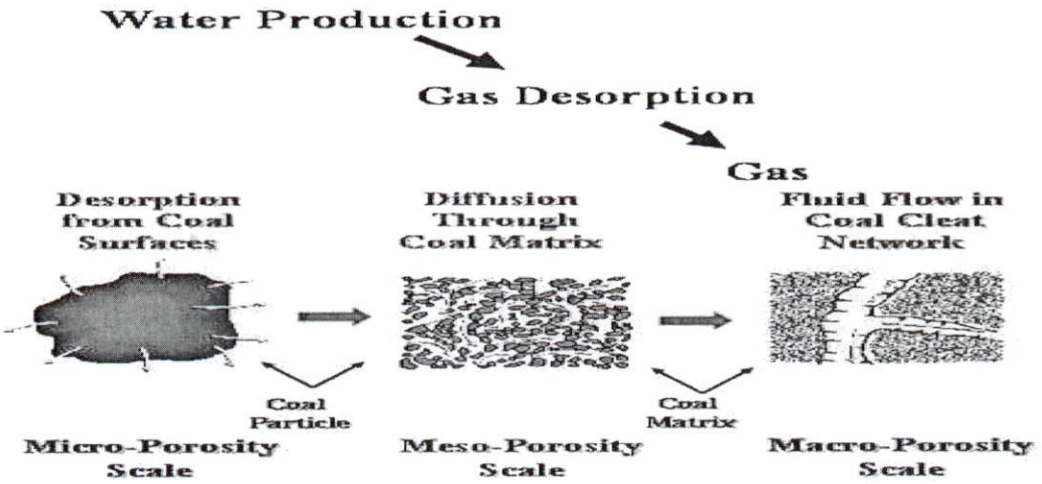
Coal bed methane is produced commercially in the United States, and it has attracted worldwide attention as a potential source of cost competitive natural gas. Since the beginning of the coal bed methane industry in the mid1970s, operators have modified and applied petroleum industry technology to improve the operation of their fields. However, conventional oil and gas technology does not always work effectively for producing coal bed methane.

Because coal geology is so different from that of typical gas formations, you must use a different approach that takes into account:
The composition of the rock. Coal is 90 per cent organic, whereas conventional gas formations are nearly 100 per cent inorganic.
The different mechanical properties of coal. Coal is brittle and weak, and it tends to collapse in the wellbore.
Coal's naturally occurring fractures, or cleats. These fractures, called face cleats and butt cleats, are extensive in coals. Most coal Coal's gas storage mechanism. Gas is adsorbed or attached onto the internal surfaces of the coal, whereas gas is confined in the pore spaces of conventional rocks. The large volumes of water present in the coal seams. Water must be pumped continuously from coal seams to reduce reservoir pressure and release the gas. The low pressure of coal reservoirs. Backpressure on the wellhead must be kept low to maximize gas flow. And all produced gas must be compressed for delivery to a sales pipeline. The modest gas flow rates from coal reservoirs. Capital outlays and operating expenses must be minimized to produce an economical project. field requires prudently managing the technical as well as the economic aspects of the project. To develop techniques for economically producing coalbed methane fields, Gas Research Institute (GRI) and Taurus Exploration, Inc. designed The Rock Creek Methane from Multiple Coal Seams Completion Project. This field research site is located in the Black Warrior Basin southwest of Birmingham, Alabama. The overall objective of this project, initiated in 1983,is to develop technology for more cost-effective production of methane from shallow, thin multiple coal seams using single vertical wellbores. Ile project has specifically focused on determining the best combination of drilling, completing, stimulating, and operating techniques to economically produce these wells. The Rock Creek project and the work of other operators in the Black Warrior Basin have produced many practical techniques and guidelines for developing coalbed methane fields. The cooperation and open communication between operators and service companies in the Black Warrior Basin have been necessary to advance both basic knowledge and applied experience in producing methane from coal seams.

1.2 FORMATION OF COAL BED METHANE



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Petroleum and Gas Exploration and Production by Extended Reach Drilling (ERD) Wells

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The term "vertical well" has always been an oxymoron in the petroleum industry. The simple fact, known almost from the advent of drilling, is that all wells deviate at some point from a true vertical line. The more egregious examples of this were referred to as "crooked holes" and it quickly was recognized that wells in certain areas were prone to being crooked holes. Early crooked holes were identified by production engineers who noticed issues with rod wear and geologists who had difficulty correlating formation tops. API's "Straight Hole Drilling Practice" in the year (Dodge 1929; Lahee 1929), at that time almost all production wells were being planned as vertical wells and drilled with no recorded instances of attempts to control deviation from vertical.

I. WELLBORE DEVIATION

Prior to the mid-1920's, most exploration companies did not quantify the extent of deviation in their wells. Mining companies, particularly diamond miners in South Africa, had been using wellbore surveying techniques beginning in the early 1900's. However, the use of survey techniques was not common in the oil and gas industry. This began to change as oil companies recognized the issues that arose with unintentionally deviated wellbores. In some cases, operators began putting deviation limits and drilling parameter limits in turnkey contracts in order to control deviation. The reasons for controlling deviation were explained in the first large study of well deviation, conducted by Alex Anderson. The first recorded instance of controlled deviation of a wellbore was in 1928 in the Signal Hill field by John Eastman and the Kuster Company. Kuster The inventor of the technology, actually drilled several planned horizontal wells in the Big Lake Field the following year in 1929.

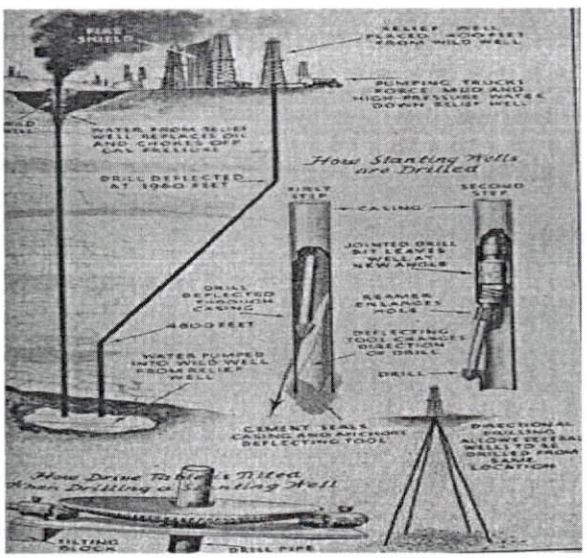

Fig. 1 - First significant use of directional drilling technology: control of 6000 bop blowout in Conroe Field in 1934(Gleason 1934).

On November 12, 1933 the relief well was spudded and the target was reached on January 7,
1934. Eastman had drilled the well to 5135' using single-shot surveys and whip stocks and intersected the oil producing formation close to the original flowing wells (Fig. 1). This was the first significant use of directional drilling in the oilfield and made quite an impact on those who observed it. Popular Science Monthly called it "Brilliant work" and that "...Eastman caused the bit to swerve like a living thing..." summing up the sense of wonder concerning this technology (Gleason 1934). From this point on the practice

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Role of Artificial Lift Techniques in Oil and Gas Production with Respect to Gas Lift System in Tertiary Recovery

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Abstract: ***When a self-flowing oil well ceases to flow or it is not able to deliver the required quantity to the surface, the additional energy is supplemented by means of mechanical or by injecting compressed gas to lift required quantity of oil to the surface is called as artificial lifting. The main purpose of artificial lift is to create or maintain a required low bottom hole pressure against the formation sand so that the well fluid can flow continuously from reservoir to the well bore and there to surface. This is the fundamental basis for the design of artificial lift.***

I. PATH – SECTORS

The path sector influencing design and analysis of ALT can be classified into 4 sectors. The first component includes reservoir drainage area to around the well bore and second from around the well bore to the well. I.e. the first and second one represents the wells ability to bring fluids from reservoir to the well. The third component of flow path is the entire tubing in the vertical /inclined / horizontal path which includes all systems like, down hole artificial lift equipment, sub – surface safety valves, non return valves etc. The fourth component includes the surface flow path which consists of length and diameter of flow line, valves, bends, wellhead, chokes, manifold, separator etc. Any change in the parameters in any of the four sectors, will affect the parameters of other sectors.

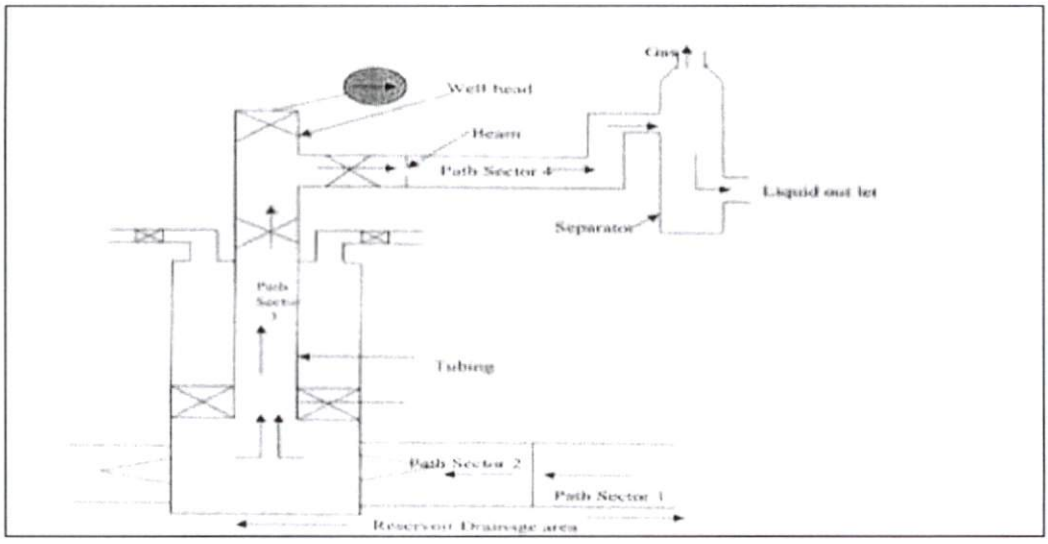

Fig.1.1. Schematic diagram of different path sectors of fluid from reservoir to surface

The four main sectors can be simplified into two categories naming Inflow and outflow performance. The fluid flow from the reservoir up to the wellbore can be termed as inflow performance and similarly flow from wellbore up the tubing to surface equipment can be termed as outflow performance. So the outflow system must be designed in such a way to exploit the well"s inflow capability. For any given well, outflow performance and inflow performance must be equal. In other words, we can produce no more fluid from the reservoir than we can lift to the surface and vice versa.

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Well Logging Importance in Oil and Gas Exploration and Production

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I. INTRODUCTION

Logging is a continuous recording of the physical properties of rocks in the well with respect to depth. These physical properties are porosity, resistivity, density, conductivity, saturation etc. Logging was started with simple electric logs measuring the electric conductivity of rocks, but it is now a technically advanced and sophisticated method. Logging plays a crucial role in exploration and exploitation of hydrocarbons.

Well logging in oil industry has its own meaning; log means "record against depth of any of the characteristics of the rock formations traversed by a measuring apparatus in the well bore". The value of the measurement is plotted continuously against depth in the well (Fig1). For example, the resistivity log is a continuous plot of a formation resistivity from the bottom of the well to the top.

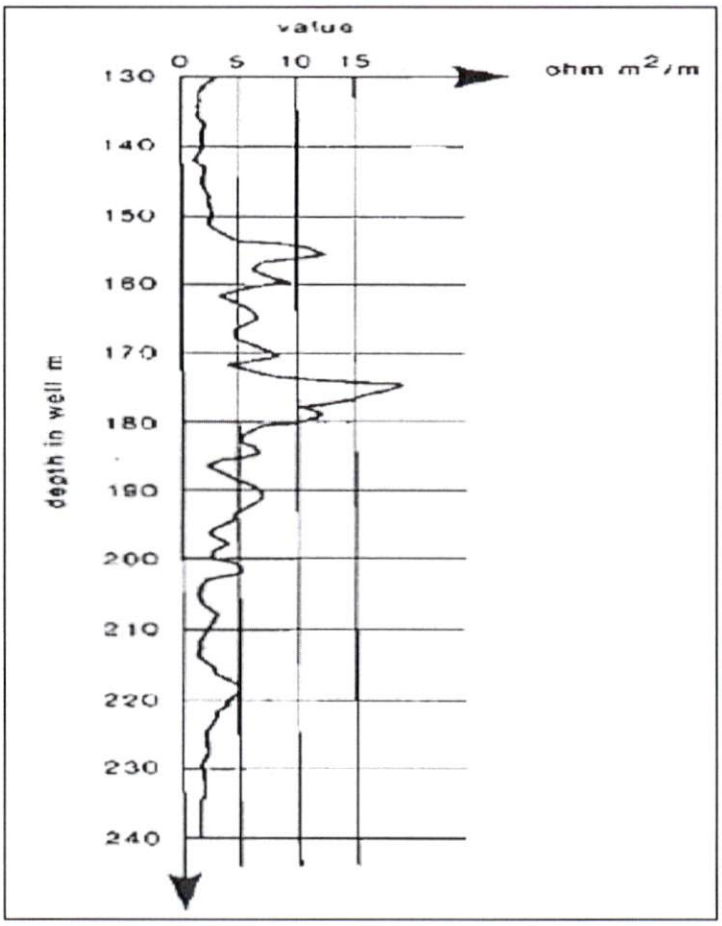

Fig- 1: A well log

The most appropriate name for this continuous depth related record is a wire- line geophysical well log, conveniently shortened to well log or log.

Socio-Economic Data Acquisition Using Mobile GIS Technology (EPICOLLECT)

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Abstract- *The present study focuses on the socio-economic profiles of households in Rayalaseema region through the collection of sample tanks data using Epicollect (open source mobile GIS software) application. Comprehensive improvement of household's economy was studied by surveying tank systems including restoration, improvement of catchment areas and ground water recharge etc. It considers the farmers and landless households, the socio-economic features such as class and community composition, literacy and employment, income, expenditure and asset structure. Sample tanks data was collected and analyzed using Epicollect, which is the mobile GIS software application compatible with android mobiles. A classification of sample households according to land holding sizes showed that nearly 31% fall in the category of marginal farmers. The small and medium farmers vary from 20% and 6% respectively. The large farmers are very less in number i.e., 4%. The landless households in the project area constitute nearly 39%. It can be seen that the small and marginal farmers together form a little above 51% of the total farmers in sample tanks, whereas large farmers are less in number. The farmers in the medium class are significant in sample tanks. The ratio of females to males is 0.88.*

Keywords- Mobile GIS, Epicollect, Sample Tanks, Rayalaseema, GIS, Farmers

I. INTRODUCTION

In India, tanks/ponds and lakes have traditionally played an important role in irrigation, drinking water supply, hydropower, ecology, tourism/culture and domestic use. Relative importance of some of these water bodies has wanted due to a number of reasons such as shifting away from community based tank system to individual beneficiary oriented ground water dependent system, encroachments, silting, population pressure, multiplicity of agencies responsible for their upkeep, etc. Epicollect is an open source and freely available software based on Android frame work for mobile applications. It provides the data collection facility from the field through smart phones (Aanensen et al., 2009). The Design of Epicollect is generic and can be used to modify it, according to our own requirements. It communicates with its web application located at Epicollect.net (Epicollect.net) provides a map interface for display and analysis of data, including, Google Maps and Google Earth. Keeping in view of the generic structure, authors encourage to modify the program including the parameters for selected tanks e.g. villages using irrigation tanks, number of people to living and other information about tanks. The study area selected is Rayalaseema region of Andhra Pradesh (India), which is shown in Figure 1. Rayalaseema is a geographic region in the Indian state of Andhra Pradesh. It includes the four southern districts of Ananthapur, Chittoor, Kadapa and Kurnool. As of 2011 census of India, the region with four districts has a total population of 15,184,908 and covers an area of 67,526 km^2. Interaction among different components of Epicollect is shown in Figure 2. This section explains about the proposed smart phone based solution for post disaster activities. The proposed framework is based on Android operating system, which is open source software from Google (Asif et al., 2012). Open source software (OSS) is technically defined as programs whose licenses give users the freedom to run the program for any purpose, modify the program, and redistribute either the original or modified program without any limitations (www.opensource.org). An increasing number of organizations have chosen and deployed software in order to fill their informational needs (Jing et al., 2008; Adamala et al., 2016).

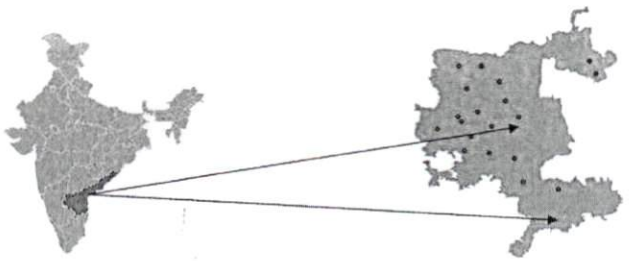

Figure 1 Study area

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PHYTOCHEMICAL SCREENING, ANTI-OXIDANT AND ANTI-MICROBIAL ACTIVITY OF *HEMIDESMUS INDICUS* (INDIAN SARASAPARILLA)

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ABSTRACT

Alternative medicine has become popular these days as it is gaining practices across the globe. The field of alternative therapies is diverse: It encompasses practices spanning diet and exercise changes, hypnosis, chiropractic adjustment, and acupuncture. Ayurvedic medicine is one of the important forms of alternative medicine that was widely available in India.The present study mainly focuson the identification of therapeutic properties of *Hemidesmus indicus*. The ethanolic extract of *Hemidesmus indicus* roots are used for its anti-oxidant and antimicrobial activity. *Hemidesmus indicus* dried roots shown good anti-oxidant and anti-microbial properties. The ethanolic extract of *Hemidesmusindicus*was checked for anti-microbial activity against pathogenic bacteria such as *E.coli, Staphylococcus aureus, Pseudomonas*.

KEYWORDS: *Hemidesmus indicus*, Antioxidant activity, Anti-microbial activity, phytochemical screening.

INTRODUCTION

The medicinal plants find application in pharmaceutical, cosmetic, agricultural and food industry. The use of the medicinal herbs for curing disease has been documented in history of all civilizations. Man in the pre-historic era was probably not aware about the health hazards associated with irrational therapy. With the onset of research in medicine, it was concluded that plants contain active principles, which are responsible, for curative action of the herbs.[1-3] Before onset of synthetic era, man was completely dependent on medicinal herbs for prevention and treatment of diseases. With introduction of scientific procedures, the

Effect of Process Parameters on the Mechanical Behavior of FDM processed PLA Parts

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Abstract- *Fused Deposition Modeling (FDM) is a fast growing rapid prototyping technique used to create functional prototypes as well as end use components.The mechanical behavior of FDM processed parts is studied earlier by various researchers and depends on the process variables like % infill, layer thickness and build orientation, raster angle etc. In the present work, mechanical properties of the FDM parts were studied varying three main parameters i.e., layer thickness, build orientation in XY plane, % infill. The geometry of the specimen is taken as per ASTM D638 standards. A total of 16 specimens are fabricated using Taguchis L_{16} orthogonal array approach. The Surface Roughness and Ultimate Tensile Strength (UTS) of the specimens were measured using Talysurf and Universal Testing Machine. Statistical analysis is performed using ANOVA and Multiple Regression to find out the relationship of process parameters on UTS, elongation at failure, Surface Roughness values. It has been observed that build orientation has more effect on R_z, Elongation at failure, UTS and layer thickness has more effect on R_a, R_q.*

Keywords-- *FDM, UTS, Surface Roughness, ANOVA, Multiple Regression*

I.Introduction

Rapid prototyping is a process in which material is solidified to create a solid object, with material being added together in layer by layer. FDM is one such process in which a filament of thermo plastic or other material is fed into an extrusion nozzle head, which heats the material and is deposited on the part bed surface. FDM uses a .STL file of a model which is sliced by a slicing software into layers .Slicing software generates the tool path in X,Y and Z axes and is given as input to the FDM Machine. The extruder and part bed are maintained at a particular temperature so that the thermo plastic material is heated to semi liquid state. The extruder directs the solidified material based on the geometry of the object until the part is completely built up.

The quality of the FDM parts depends on different factors like process parameters, material used, working environment etc. A lot of research is done to improve the mechanical properties of the FDM processed parts.Farhad et al., [1] studied the effect of process parameters on the mechanical properties of FDM Parts using Taguchi method. They concluded that increase of infill density and layer thickness increases the mechanical properties, while the strength is high at 45^0 and less at 0^0 and 90^0 build orientations.A study on behavior of the mechanical performance of the printed part with respect to three process variablesviz. raster angle, raster width

Surface Scattering and Quantized conduction in semi conducting nano materials

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Dr.K.L.Narasimham ,Professor (A.U.Retired)

Abstract

Electronic configurations of nano materials make changes in the density of electronic energy levels which will cause strong variations in the optical and electrical properties with size. The effects of size on electrical conductivity of nanostructures play a major role in several new technologies. The electronic properties of ultrafine wire structures are studied theoretically. If the scattering probability of such size-quantized electrons is calculated for Coulomb potential then it is suppressed drastically because of the one-dimensional nature of the electronic motion in the wire. For this material In this paper I want to study few mechanisms responsible for enhanced electrical conductivity in semi conducting nano materials.

1.Introduction

Semiconductor nano crystals are tiny crystalline particles that exhibit size-dependent optical and electronic properties. With typical dimensions in the range of 1-100 nm, these nano crystals bridge the gap between small molecules and large crystals, displaying discrete electronic transitions reminiscent of isolated atoms and molecules, as well as enabling the exploitation of the useful properties of crystalline materials. Bulk semiconductors are characterized by a composition-dependent band gap energy (E_g), which is the minimum energy required to excite an electron from the ground state valence energy band into the vacant conduction energy band . With the absorption of a photon of energy greater than E_g, the excitation of an electron leaves an orbital *hole* in the valence band. The negatively charged electron and positively charged hole may be mobilized in the presence of an electric field to yield a current, but their lowest energy state is an electro statically bound electron-hole pair, known as the exciton. Relaxation of the excited electron back to the valence band annihilates the exciton and may be accompanied by the emission of a photon, a process known as radiative recombination.

1.1 Significance of the study

Nanotechnology is a field of science and technology of controlling matter on a nano scale. It is a highly multidisciplinary field, including electrical and mechanical engineering, physics, chemistry, and biosciences. Nanotechnology will radically affect all these disciplines and their application areas . It is commonly attributed for the technologies leading to produce nano-scaled materials (10-9 m) at nanometer dimension. This feather of nano-particles provides a larger surface space per unit mass than those which are not in nano size . To create nano-structured materials there are two commonly routine techniques can be used, top-down technique and bottom-up technique, which their main difference is based on the size of primary entities applied to build nano components with or without atomic level control . One of the main applications of nanotechnology and therefore a driving force for nano science

CONGESTION CONTROL IN NOVEL ENERGY EFFICIENT CLUSTER BASED PROTOCOL FOR HIGHLY DENSE MANET

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Abstract : Due to highly dynamic nature of Mobile ad hoc networks (MANET), predictability and design of efficient protocols and methodology to handle congestion proves to be a tedious task. Since issues and architecture of mobile ad hoc networks are very much different from their counterparts, so are its congestion control strategies due to frequent changes in network's topology. A noted congestion control mechanism is to notify source for the congestion in the network so that either it may pacify the transmission rate or look for an alternative option. It must be noted down that all the existing methodologies are capable to tell the source about the congestion problem as they use TCP. But in case of MANET, the packet losses due to link failure (due to its dynamic nature) are misinterpreted as packet losses due to congestion, and in the snapshot of a timeout, backing-off its RTO. This results in needless reduction of transmission speed due to which throughput of the whole network degrades. In this paper we implemented hierarchical tree alternative path algorithm for congestion control in Fish-eye state routing algorithm , Order-One Manet Routing Protocol (OOMRP)and novel energy efficient cluster based protocol for highly dense MANET. The comparative results shows that congestion control is very good in proposed cluster based protocol. The throughput is high and packet loss is less and finally energy is saved.

Index Terms - MANET, Congestion control, OOMRP, Fish-eye state routing algorithm.

1. INTRODUCTION

MANET is a short-lived self-organizing network of cordless mobile nodes with no existing facilities. It enables various tools to form a network in the locations where no required facilities exists. Albeit, there are numerous problems and also difficulties that need to be resolved prior a large facility of a MANET, tiny and medium-sized MANETs can be easily established [1] In this paper the problem of congestion control in MANETs is considered. In a lot of cordless situations utilized, the tools connect via some networking foundation in the form of base stations. On the other hand, an ad-hoc network does not have any type of infrastructure. Mobile ad-hoc networks are used in circumstances where no framework is readily available, of which a very typical instance is, disaster alleviation circumstance much research initiative has actually been put into the ad-hoc network location. Various approaches have been suggested to carry out transmitting in MANETs. It has also been noticed that the functions of transportation layer needs to be adjusted to the specific buildings of MANETs. Specifically the congestion control approach applied in the transport protocol used nowadays, i. e., TCP; do not deal properly with the particular effects taking place in MANETs [2] Because of this, ideal Congestion control is taken into consideration to be a crucial concern for mobile ad-hoc networks. Several Congestion related problems determined, consists of drastic throughput failure and also other troubles. They have actually been shown to advance from the Tool Accessibility Control layer, network, as well as transport layers, as discussed, in [1], [2] and also [3] There is a big variety of ideas on just how to overcome the problems. In this survey paper, we give a short of existing attempts to address the congestion trouble in mobile multi-hop ad-hoc networks. There is no attention paid in the direction of methods focused on improvising congestion control or TCP performance. Congestion control works very well in TCP over Net. Yet impromptu network display some homes that very impacts the design of proper methods in general, and of specifically Congestion control device. As a result of the dynamic actions,

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DOCKING STUDIES OF BCL-2 WITH *HEMIDESMUS INDICUS* COMPOUNDS FOR ANTI-CANCER STUDIES

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ABSTRACT

Medicinal plants have wide spread properties due to the presence of phytocompounds and are the alternative medicines available for thosewho cannot be helped by conventional medicine. In this work we have selected bioactive compounds from *Hemidesmus indicus* medicinal plant extracts. Gas chromatography and Mass Spectrum studies were studied to identify the compounds present in the ethanolic extracts based on the retention time and area. The identified compounds were used for anti-cancer activity by insilico method with BCL-2 which plays prominent role in causing cancer. Out of twenty selected compounds, docking results showed Methyl-1-Cyclo Hexane carboxylate and 1,2-diacetoxy-5-idohexane as best docked to the BCL-2.

KEYWORDS: Anticancer, BCL-2, Docking studies, *Hemidesmus indicus,* Insilico studies.

INTRODUCTION

Cancer is a global health problem with high morbidity and mortality and poses both economic and psychological challenges. Cancer cure and prevention therefore remain a high priority for the scientific community across the world. Insight gained into the etiology of cancer through various epidemiological studies encompassing various parameters such as geographical location, ethnicity, sex, age and trans-migratory populations have collectively revealed that lifestyle is one of the major influencing factors,[1-2] Other factors include environmental aspects such as automobile exhaust pollutants, solar UV radiation, occupational exposure to carcinogens[5] and mutagens, bacterial/viral infection, and genetic susceptibility[4,5] Lifestyle factors are usually classified as modifiable risk factors and include diet intake, smoking, caspase-3 activity[4] alcohol consumption, and physical activity and body mass. In general, physical activity instead of inactivity, abstinence from smoking and alcohol consumption, low body mass, and diets low in fat/calories are usually recommended for overall good health and have a positive influence on reducing the risk of cancer, especially breast and colorectal cancers.[2,6] Because all these factors can be modified, they also provide us with leverage to use them as interventive/preventive measures. Accordingly, the American Cancer Society has suggested guidelines on nutrition and physical activity for the prevention of cancerand early detection/screening for cancers of certain sites.[7]

From the epidemiological data indicating that dietary habits influence cancer risk, considerable scientific interest has been generated in developing various preventive measures based on diet,[1] especially those involving fruits and vegetables.[8-10] Fruits and vegetables, along with probiotics[3] belonging to plant kingdom, represent a vast source of phytochemicals of varied chemical structure; many of them have already been studied extensively for their potential anticancer or chemopreventive efficacy.[10] As such, interventions based on fruits and vegetables are not only "more natural" in lowering cancer risk without posing "any side effects" but also in maintaining good general health based on the fact that they are major sources of vitamins, minerals, and fiber. The presumptive results may also lead to cloning of the compounds for detailed studies in yeast model systems like Pichiapastoris.[2] In this work, we have focused our discussion on recent advancements largely in Hemidesmus indicus root extract regarding their cancer chemopreventive and anticancer efficacy and associated molecular mechanisms.

METHODOLOGY

GC-MS method for identification of compounds

GC-MS analysis was carried out on a GC CLARUS 550 PerkinElmer system comprising a gas chromatograph interfaced to a mass spectrometer (GC-MS) instrument employing the following conditions: Column Elite-1 fused silica capillary column (30×0.25 mm ID×1EM df, composed of 100% Dimethyl poly siloxane), operating in electron impact mode at 70 eV; helium (99.999%) was used as carrier gas at a constant flow of 1ml/min and an

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DESIGN AND IMPLEMENTATION OF 32-BIT INEXACT FLOATING POINT ARITHMETIC UNIT

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Abstract - In computing, floating-point format is an arithmetic formulaic representation of real numbers as an approximation so as to support a trade-off between range and precision. For this reason, floating-point computation is often found in systems which include very small and very large real numbers, which require fast processing times. In general floating point format is denoting as a mode of representing numbers as two sequences of bits, one representing the digits in the number called mantissa and the other an exponent which determines the position of the radix point. The traditional method of floating point arithmetic involves accurate computation for all applications. This traditional method of computing on floating point arithmetic requires high power. But power has become a key constraint in nano scale integrated circuit design due to the increasing demands for mobile computing and higher integration density. As an emerging computational paradigm, an inexact circuit offers a promising approach to significantly reduce both static and dynamic power dissipation for error tolerant applications. The objective of this project is to implement an inexact 32 bit binary floating point arithmetic which includes floating point adder, subtrctor and multiplier with improving performance. Here pipelined architecture is used in order to increase the performance and to increase the operating frequency. At the same time, the related logic includes both normalizer and the rounder according to the inexact mantissa and exponent parts. Floating point arithmetic is handled by the FP add, FP sub, FP mul. FPadd adds the value in the floating point accumulator to the floating point accumulator. FPsub subtracts the value in the floating point operand from the floating point accumulator. FP mul multiplies the value in the floating accumulator by the floating point operand. In this project,the proposed architecture is simulated and synthesized by Xilinx ISE 14.7.

Keywords - Floating Point adder, Floating Point subtractor, Floating Point multiplier, Dadda multiplier

I. INTRODUCTION

Floating point numbers are one possible way of representing real numbers in binary format, the IEEE 754[1] standard presents two different floating point formats, Binary interchange format and Decimal interchange format. Multiplying floating point numbers is a critical requirement for DSP applications involving large dynamic range. This paper focuses only on single precision normalized binary interchange format. It consists of a one bit sign (S), an eight bit exponent (E), and a twenty three bit fraction (M or Mantissa). An extra bit is added to the fraction to form what is called the significand. If the exponent is greater than 0 and smaller than 255, and there is 1 in the MSB of the significand then the number is said to be a normalized number. Multiplying two numbers in floating point format is done by adding the exponent of the two numbers then subtracting the bias from their result,and multiplying the significand of the two numbers, and calculating the sign by XORing the sign of the two numbers. This is invaluable tools in the implementation of high performance systems, combining the reprogramability advantage of general Purpose processors with the speed and parallel processing. At some point, require general purpose arithmetic processing units which are not standard components of fpga devices [10].

More recently, the increasing size of fpga devices allowed researchers too efficiently Implement operators in the 32-bit single Precision format .Single precision format, the most basic format of the ANSI/IEEE 754-1985 binary floating-point arithmetic standard. Double precision and quad precision described more bit operation so at same time we perform 32 and 64 bit of operation of arithmetic unit. Floating point includes single precision, double precision and quad precision floating point format representation and provide implementation technique of various arithmetic calculation. Normalization and alignment are useful for operation and floating point number should be normalized before any calculation [3].

II. FLOATING POINT FORMAT REPRESENTATION

Floating point number has mainly three formats which are single precision, double precision and quad precision. Single Precision Format: Single-precision floating-point format is a computer number format that occupies 4 bytes (32 bits) in computer memory and represents a wide dynamic range of values by using floating point .As mentioned in Table 1 the single precision format has 23 bit for significand (1 represent implied bit), 8 bit for exponent and 1 bit for sign. The IEEE standard specifies that Single precision floating-point numbers are comprised of 32 bits, i.e. a sign bit (bit 31), 8 bits for the exponent E (bits 30 down to 23) and 23 bits for the fraction f (bits 22 to 0). E is an unsigned biased number and the true exponent e is obtained as e=E–Ebias with Ebias=127 the leading 1 of the significand, is commonly referred

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A Matlab Implementation of "Standard Deviation Pooling based Gradient Magnitude Similarity Deviation (GMSD) FR-IQA Model"

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***Abstract*— Image Quality Assessment (IQA) is one of the emerging area in the field of Image Processing especially in the area of digital image photography, image compression, pseudo and full colour image processing. When an image was captured using a digital camera or created using imaging software, the captured or created image perceptual quality is easily judged by human beings. If the logic behind the human judgement is understood, the same can be implemented as a quality measure in digital image processing. And this idea was presented by Zhou Wang[1] in the year 2004. Since the area IQA is emerged in various ways. In this paper we modelled the idea of FR-IQA using Gradient Magnitude Similarity Deviation (GMSD). The gradients of an image are very sensitive at abrupt changes in a given image, and different local structures will degrade at different levels. This idea motivates us to explore the use of global variation of gradient based local quality map for overall image quality prediction. Here we considered an original image and a degraded image from CSIQ [14] image database and implemented the idea of GMSD using Matlab.**

***Keywords*— Error Visibility, Full reference IQA, GMSD, Human Visual System (HSV), Image Quality Assessment, IQA, Pooling Strategy, Quality Map, Quality Score, SSIM, Structural Similarity, Similarity Function.**

I. INTRODUCTION

In the areas of digital image processing such as image acquisition, compression, restoration the "processed image" is observed by humans. Humans can judge the quality of the image and can classify the image based on quality. It is an ever truth that, developing an algorithm which suits the human intelligence is nearly impossible. But research found that the classical measures in image quality like peak signal to noise ratio(PSNR) or mean square error (MSE) cannot replace the human judgment in image quality assessment. Hence researchers developed advanced quality perception algorithms[2-4]. Image quality assessment (IQA) algorithms are classified[1] into full reference (FR), reduced reference (RR) and no reference (NR) or Blid. A brief comparison of the three classifications are summarized in the following table:

TABLE I
IQA ALGORITHMS CLASSIFICATION

IQA Algorithm	Methodology
Full Reference (FR-IQA)	The degraded image is available along with the knowledge of the original Image.
Reduced Reference (RR-IQA)	The degraded image is available along with the knowledge of the part of the original Image.
No Reference (NR-IQA) or Blind IQA	The degraded image is only available without the knowledge of the original image.

This paper is implemented based on full reference IQA (FR-IQA). FR-IQA Model will provide a good scope for developing various algorithms at various optimization levels. There will be two strategies for implementing FR-IQA Model:

Strategy 1: Bottom-up frame work which simulates various parts of Human Visual System (HVS) including visual masking effect, contrast sensitivity and just noticeable differences. But the HVS model is too complex to implement.

Strategy 2: Top-down framework which will model the entire HVS model with the help of some global assumptions. Most of the FR-IQA Models will follow this strategy. Structural Similarity Index (SSIM), Multi-Scale SSIM [5] and Weighted SSIM [6] are some of the algorithms based on this strategy.

Many IQA models will follow a common two-step implementation [6]. The first step comprises of evaluating a Local Quality Map (LQM) by comparing distorted image with the original image via some similarity function. Then, the second step comprising of calculating a Quality Score via some pooling strategy. The two steps are summarized in the following table and illustration.

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A Comparative Study on Optimization of Coagulant dose in Treating Godavari water with Different Coagulants

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ABSTRACT

Kakinada town in coastal Andhra Pradesh with a population of about 18,000 in 1870 has grown to about 300,000 by 1991 and at present according to census 2011 of about 5,43,000, is expected to touch 1,000,000 by 2040. In this project the municipal water supply system of Kakinada is studied with special reference to chemical treatment of raw water supply from a surface water source from Samalkot near Kakinada. The main objective of this project is to optimize coagulant dose by using chemicals like alum, copperas and compare with natural coagulants/aids like Nirmali seed extract, Moringa oleifera seed powder in the treatment of Godavari water, which may help in minimizing the negative impacts of excess usage of chemicals on the Environment. The usage of natural coagulants not only reduces cost of chemicals but also reduces the potentiality of exposure of individuals to these dangerous chemicals if used in excess. Environmentally the chemical coagulants pose the exposure of dangerous ions like Al^{3+} and Iron causing diseases like Dementia or Alzheimer's disease in humans consuming this water containing more quantities of these ions. The improper disposal of the sludge containing more concentration of these ions into the Environment also results in Bio-magnification in Ecosystem.

Key words: ***Bio-magnification, Chemical Coagulants, Natural coagulants, Godavari water, Water treatment.***

I.INTRODUCTION

Water is the most important natural resource which forms an essential nutrient for the survival of life on the earth. Man can survive for 5 weeks without food but for less than five days without water. It is the only inorganic fluid in this universe and has a relative density of unity. Water is essential for digestion, dissolving nutrients and distributing them to cells, regulating the body temperature, removing the wastes in the body through tears, perspiration, urine and faeces and for lubricating the joints. Public water or drinking water must be palatable and wholesome. It must be attractive to senses of sight, taste and smell and must be hygienically safe. Man needs water for domestic purposes such as cooking, cleaning utensils, gardening, washing clothes and above all for drinking. He also needs it for commercial, industrial and recreational purposes. The water used by him should be of good quality. Polluted water is one which is unsuitable for its intended use. Urbanization and industrialization have directly or indirectly polluted most of the water sources on a global scale. The impurities in water are to be removed to such an extent, so that it is not harmful to public health. The concentrations of different substances are expressed in mg/l or ppm. The term 'wholesome water' or 'potable water' is used to

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DESIGN OF SHIP PROPELLER BY USING MACROS TECHNIQUE

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ABSTRACT

In this paper, the ship propeller is designed using macros and the materials are compared. Expanded use of lightweight materials in the marine applications the epoxy composites was chosen which has high performance characteristics and a lightweight thermosetting matrix resin. Propeller is an essential component for underwater vehicles such as ship, submarines etc. This supports the vehicle to move at its operating speed. This works on the Bernoulli's principle and Newton's third law. In this paper, the propeller geometry is designed using macros. The solid model was created in CATIA software. The simulation and modal analysis are performed in ANSYS workbench. Then the material results are compared with the previous material. Finally, the better material for ship propeller is determined.

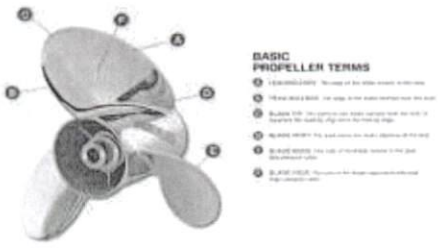
Keywords: Propeller design, Macros, Catia, Ansys workbench, Structural analysis.

I.INTRODUCTION

For the past few years there have been critical innovative work in the field of propeller designs in order to protect the safety of goods, travellers and the crew and in the mean time reducing the expenses and by improving the efficiency. Ship Propeller is used for propulsion regardless of their sort and size.

A propeller is a sort of whirling fan, which is used to move the ship or aircraft forward by utilizing the power created by the engine. The transmitted power is changed from rotational movement to produce a push or thrust which imparts energy to the fluid (i.e. water or air), bringing about a force that follows up on the ship and drives it forward. The pressure variation between the front and aft side of the blade creates acceleration in the water present behind the blade, which makes the ship start sailing. Propellers continually turn at a steady velocity, which increases the efficiency of the engine. Propellers create push through the generation of lift by their rotating blades.

The propeller whose name originates from the Latin word "propeller". A proficient screw propeller was innovated at the start of the nineteenth century as an efficient power source for the steam engine.



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A Secure Distributed Code Discovery in Wireless Sensor Networks

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ABSTRACT

A wireless sensor network (WSN) consists of little sensor nodes, that is capable of assembling information from the surroundings and communicating to the controller via wireless transceivers. Limited battery energy is employed to control the detector nodes and is extremely troublesome to exchange or recharge it, once the nodes die. It is often difficult or not possible to exchange the batteries of the detector nodes. On the opposite hand, the Base station or Sink is often rich in energy. Since the detector energy is that the most precious resource within the WSN, effective utilization of the energy to improve the network period has been the main focus of abundant of the analysis on the WSN. This can have an effect on the network performance. In most of existing protocols authors considered only on the centralized data dissemination methods without more security and energy consideration. We have a tendency to establish the safety vulnerabilities in previously planned protocols and that we extend the secured and distributed information delivery system with energy concerns. It's the first distributed information discovery and dissemination protocol that permits network owners and approved users to collect information items from detectors without base station and with network life time management. The existing did rip [1] protocol is only concentrating on the security point. In this paper, we propose an enhanced dissemination protocol, which is used to improve the quality of service issues. In the enhanced work, the proposed solution is to enhance the energy efficiency in distributed wireless sensor.

I. INTRODUCTION

The communications within the Wireless Sensor Network (WSN) has the many-to one property, in this data items from a large number of Sensor nodes tend to be targeted into one sinks. Since multi-hop routing is usually required for distant Sensor nodes from the sinks to save huge amount of energy, the devices close to a sink are often loaded with relaying an over-sized quantity of traffic from different nodes. Sensor nodes resources affected in term of energy, processor and memory and dynamic behaviour of ad-hoc communication. The Sensor nodes are commonly expected to work with batteries and they are usually deployed to not easily-accessible or hostile surroundings, generally in large quantities. Routing is a crucial issue in information gathering WSN, whereas on the opposite hand sleep/wake maintenance is that the main problems for event detection networks. Even though, we cannot avoid the failure of nodes, so in our research work, further we added the enhancement with the failure rectification techniques. Our ultimate aim of this project is to provide the energy efficient distributed security system for WSN. And more importantly, all previous data discovery &

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Schedule Organizer for Educational Institutes

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ABSTRACT

Generating a schedule for every course in educational institutes involves a lot of work, as number of permutations that need to be tested are high. Manually carrying out such works involves a lot of overhead and in some cases, clashes among subjects are almost impossible to be prevented due to various constraints.
So, an automated scheduler would reduce this overhead by verifying every possibility of generating a clash free time table.

I.INTRODUCTION

The basic idea behind generating an automated scheduler is that comparisons among two entities can be done by a machine easily and it would be more efficient than a human doing the same work.

Here, the two entities are the time table that is being generated and already existing time table. We perform comparisons between these two entities so that there would not be any risk of clash if same faculty were allocated to both old and new time tables.

So we take care such that if there is an entry "a" at position "x" in existing time table, then there would be the same entry "a" in newly generating time table at any position other than "x". "a" cannot be at the same position in both the schedules.

In this way we try to create schedules for multiple sections of the same course where faculty can be same among different sections but there would not be any clash among two subjects of same class nor same subject for different classes.

II.EXISTING SYSTEM

At present schedules are being made by using pen and paper, where a person has to manually check all the possibilities of placing a subject at a particular time slot for a day where comparisons are very high.

Some Institutes also use spread sheets for allocating schedules, which is in a way better than doing it on a paper, but still all the comparisons need to be performed manually, the only advantage of this method is that a change can be undone easily, whereas the number of permutations are still the same.