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Algorithm to determine ϵ -distance parameter in density based clustering

Article Expert Systems with Applications
41(6):2939-2946 May 2014 with 77 Reads
DOI: 10.1016/j.eswa.2013.10.025

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Abstract

The well known clustering algorithm DBSCAN is founded on the density notion of clustering. However, the use of global density parameter ϵ -distance makes DBSCAN not suitable in varying density datasets. Also, guessing the value for the same is not straightforward. In this paper, we generalise this algorithm in two ways. First, adaptively determine the key input parameter ϵ -distance, which makes DBSCAN independent of domain knowledge satisfying the unsupervised notion of clustering. Second, the approach of deriving ϵ -distance based on checking the data distribution of each dimension makes the approach suitable for subspace clustering, which detects clusters enclosed in various subspaces of high dimensional data. Experimental results illustrate that our approach can

An efficient image transmission technique using wireless multimedia sensor networks

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Abstract— The concept of obstacle to human action pictures over wireless detector networks has been the dearth of appropriate process architecture and communication methods to take care of the large volume of knowledge. High packet error rates and therefore the want for retransmission build it inefficient in terms of energy and bandwidth. This paper presents novel design and protocol for energy economical image process and communication over wireless detector networks. sensible results show the effectiveness of these approaches to create image communication over wireless sensor networks possible, reliable and economical.

This application note explains a way to connect a Kinetic MCU to CMOS device through GPIO to receive image knowledge in memory. the appliance will be enforced on Kinetic MCUs and CMOS devices with CSI (CMOS sensor interface) gutlessly, with none external hardware. During this case the implementation was done by mistreatment Tower analysis board for Kinetic K60 and CMOS image device. The compatibility of Kinetic MCUs permits this application to be enforced on different sub-families of Kinetic apart from K60. the actual fact all Kinetic K series shares a similar modules (IP blocks) permits easy use of the code across the whole K sub-families. Examples of target applications for this application note area unit security systems and different shopper merchandise that specialize in low cost and low power

DESIGN IMPLEMENTATION

OVERVIEW OF THE SYSTEM

Presents the design of the projected WMSN processing system. The network processor performs some standard operations further as custom directions to support the operations of the wireless transceiver. It operates at a low clock frequency to stay the facility consumption low. The image process block runs at a high frequency to method

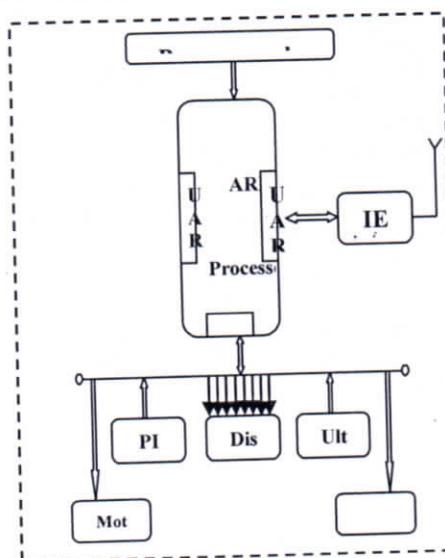
images at a high speed. By default, it's in inactive mode (sleep mode with suppressed clock source), and might be quickly set into the active mode by the network processor whenever AN object extraction task must be performed.

In WMSN applications, the camera atom typically incorporates a fastened frame of read. during this case, to discover moving(updated) objects, background subtraction may be a ordinarily used approach. The basic idea of this can be to discover the objects from the difference between the present frame and also the background image. The background image represents a static scene of the camera read with none moving

objects. AN algorithmic program should be applied to stay the background image frequently updated to adapt to the changes within the camera read. For background subtraction, the Running mathematician Average seems to own the quickest process speed and lowest memory necessities it's additional optimized for ARM implementation and is incorporated into the projected WMSN system.

A)Back ground subtraction algorithm for image compression

Background subtraction, also known as Foreground Detection, is a technique in the fields of image processing and computer vision wherein an image's foreground is extracted for further processing (object recognition etc.). Generally an image's regions of interest are objects (humans, cars, text etc.) in its foreground. After the stage of image preprocessing (which may include image delousing etc.) object localization is required which may make use of this technique. Background subtraction is a widely used approach for detecting moving objects in videos from static cameras. The rationale in the approach is that of detecting the moving objects from the difference between the current frame and a reference frame, often called "background image", or "background model".[1] Background subtraction is mostly done if the image in question is a part of a video stream's.



Multimodal Biometrics using Face, Ear and Iris Modalities

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ABSTRACT

Automatic person identification is an important task in computer vision and related applications. Multimodal biometrics involves more than two modalities. The proposed work is an implementation of person identification fusing face, ear and iris biometric modalities used PCA based neural network classifier for feature extraction from the face and ear images and hamming distance for calculating iris templates. These features fused and used for identification. Better result was obtained if the modalities were combined. Identification was made using Eigen faces, Eigen ears, Template of iris and their features tested over the self created image database.

General Terms

Principal component analysis (PCA), Segmentation, Normalization, Hough transform.

Keywords

Multimodal biometrics, PCA, Eigen faces, Eigen ears, Euclidian distance, Hamming distance.

1. INTRODUCTION

Now, most of the new applications of technology employ some kind of biometrics for authentication purposes. Biometrics deals with identification of a person based on biometric traits such as face, ear, fingerprint, iris etc. As a result, recognition based on a single biometric trait may not be sufficiently robust and it has a limited ability to overcome spoofing. The biometric technologies can be combined to provide enhanced security over a single modal biometrics, which is called as multimodal biometric system [1]. A multimodal bio-metric system integrates multiple source of information obtained from different biometric sources. Multimodal biometrics system involves various levels of fusion, namely, sensor level, feature level, matching score level, decision level and rank level [2-4]. Identity management system is challenging task in providing authorized user with secure and easy access to information and services across a wide verity of networked system. Biometrics refers to the use of physiological or biological characteristics to measure the identity of an individual [5]. These features are unique to each individual and remain unaltered during lifetime. Many problems arise because of the variation in several parameters such as scale, lighting, poor illumination and other environmental parameters [6, 7]. Biometric systems are designed to make binary decisions-accepting the authorized personnel and rejecting the impostors. Two types of errors are encountered in biometric systems namely false acceptance (FA) errors allowing the impostor in and false rejection (FR) errors which keep the authorized personnel out.

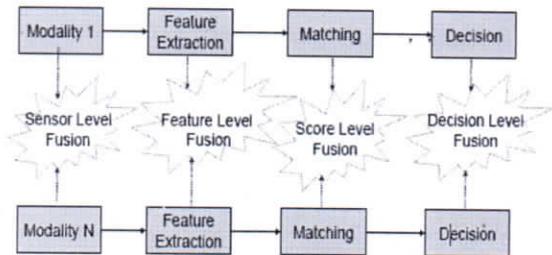


Fig 1: Multimodal biometric system.

Figure 1 shows a multimodal biometric system. In the proposed work, PCA classifier is used to obtain the features by the input face and ear images and Hamming distance for iris images. segmentation, normalization and feature encoding are the subsystem. Decision is made by matching the test image with the images registered in the database using Euclidean distance and Hamming Distance approach. The system error of a multimodal biometric system is a combination of the FAR and the FRR from different biometric technologies. Unlike unimodal biometrics, the combination of several measurements makes it harder to analyze the accuracy of a multimodal biometric system.

The remainder of this paper is organized as follows: Section 2 describes related research in this field. Section 3 gives brief description of PCA, segmentation, normalization, feature encoding and Hamming distance as a pre processing technique. Section 4 discusses the preprocessing steps involved to recognize face, ear and iris images. Section 5 presents a method of combining the face matching score, the ear matching score and iris matching score. The proposed method has been tested on self created database. Experimental results have been analyzed and conclusion and future work has been discussed.

2. RELATED RESEARCH

Single biometric multiple representation fusion involves using multiple representations on a single biometric indicator. Several research papers were studied on multimodal biometrics. Ho et al. (2004) suggested a technique relevant to the identification problem in which a large number of classes (identities) are present. The fusion in this approach takes place at the matching stage and the classifiers report a similarity score for each class [8]. Cappelli et al. (2000) suggested fingerprint classification system that combines a structural classifier by integrating the scores generated by the two classifiers [9]. Jain et al (2003) used K nearest neighbor classifier and a set of 10 neural network classifiers to classify fingerprints. All the approaches presented (the highest rank method, the Borda count method and logistic regression)

Classification of PCG Signals: A Survey

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ABSTRACT

Heart sounds are multi component non-stationary signals characterized as the normal phonocardiogram (PCG) signals and the pathological PCG signals. PCG is a weak biological signal mixed with strong background noise susceptible to interference from noise. The noise may be added due to various sources. The PCG signal has specific individual characteristics which are considered as a physiological sign in a biometric system. Literatures suggest that the method on time-frequency analysis is known as the trimmed mean spectrogram (TMS). The abnormal murmurs in heart sound can be diagnosed. Another method in time-frequency domain is used in which features are extracted from the TMS containing the distribution of the systolic and diastolic signatures. Probability Neural Networks (PNNs) are used in feature extraction with the acoustic intensities in systole and diastole. These methods can detect accurately the heart disease depending on the applied PCG signal but the result obtained is not optimum. An adaptive neuro-fuzzy inference system (ANFIS) is suggested that can correctly detect the pathological condition of heart.

General Terms

PCG signal classification, ANFIS, Auscultation.

Keywords

PCG signal, Wavelet, Heart Sounds, Phonocardiogram, ANFIS, Time-Frequency analysis etc...

1. INTRODUCTION

When a patient visits the physician for auscultation, a heart murmur is the most common abnormal auscultatory NGs among findings of the physician. The auscultation is a technique in which a stethoscope is used to listen to the sounds of a body. The heart is divided into four chambers namely atrium and ventricles. The upper two chambers are known as atria while the lower two chambers are called as ventricles. Heart muscles squeeze the blood from chamber to chamber. During this squeezing process, the valves help the blood to keep flowing smoothly in and out of the heart. The structural defects of the heart are often reflected in the sounds produced by the heart. As an example, a very important type of abnormal sound is the "murmur", which is a sound caused by the turbulent flow of blood in the cardiovascular system. In case of murmur, the physician decides if it represents either a pathological or an innocent murmur. The ability of primary care physicians to diagnose a murmur is poor [1-3].

1.1 Phonocardiogram Signal

Heart sounds are weak acoustic signals in range from 10 Hz to 250 Hz [1]. The PCG signals are heart sound signals produced by the vibration of the heart sound and thoracic systems containing information related to the heart condition. The pitch and timing of a heart sound are very important used

in diagnosing various pathological conditions of the heart valves. The analysis of heart sounds using frequency spectra is referred as phonocardiography [4]. The PCG signal of normal case has two distinct activities, the first heart sound s1 and the second heart sound s2; whereas for an abnormal heart, many signal activities between the first and the second heart sound are present. These extraneous activities between s1 and s2 are called as two abnormal sound signals. Wavelet theory is used to find the accurate pathological condition of heart. Generally, multi-resolution decomposition, the thresholding, processing in wavelet domain and the modulus maxima method of the wavelet transform are employed. Several features such as entropy, energy, variance and standard deviation are considered for the detection of heart's pathological conditions [5]. The cause of abnormal heart murmurs is the congenital heart defects or acquired heart valve diseases. Mitral stenosis, aortic regurgitation, aortic stenosis, mitral regurgitation are among the most common pathological types of murmurs [3]. These can be seen in Fig. 1, Fig. 2, Fig. 3 and Fig. 4.

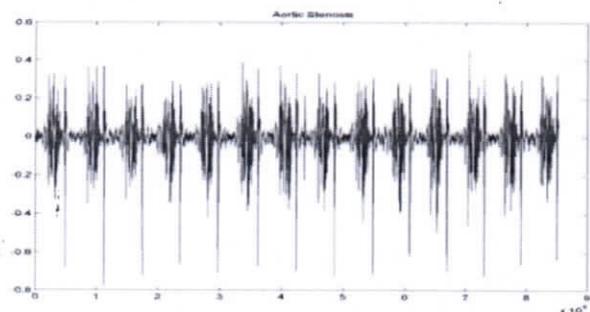


Fig 1: Aortic Stenosis

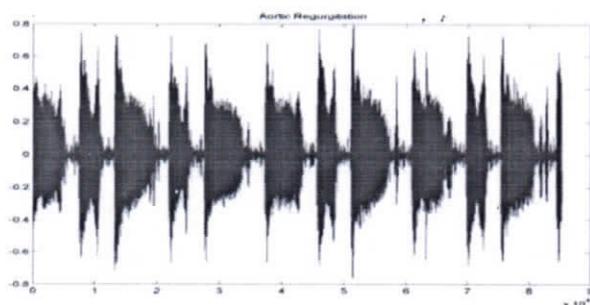


Fig 2: Aortic Regurgitation

Distributed Parallel Method for Efficient Fractal Image Encoding



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NCRAIT - Number 2

Year of Publication: 2014

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Akhilesh Kumar, G R Sinha and Vikas Dilliwar. Article: Distributed Parallel Method for Efficient Fractal Image Encoding. *IJCA Proceedings on National Conference on Recent Advances in Information Technology* NCRAIT(2):32-37, February 2014. Full text available. BibTeX

Abstract

Fractal image compression reduces amount of redundancy to great extent using suitable affine transformations. This requires less number of bits to encode the same image. However the process of encoding requires enormous computational processing to generate required fractal codes. A distributed parallel method is proposed to reduce computational time by portioning and distributing the input image among different computing nodes, as each computing node performs encoding and block matching individually; which results in significant reduction in processing time to generate fractal codes. This paper presents a review of different parallel algorithms and architecture that has been applied to enhance the speedup also can be used for fractal image encoding task.

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PCA based Multimodal Biometrics using Ear and Face Modalities

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Abstract— Automatic person identification is an important task in computer vision and related applications. Multimodal biometrics involves more than two modalities. The proposed work is an implementation of person identification fusing face and ear biometric modalities. We have used PCA based neural network classifier for feature extraction from the images. These features are fused and used for identification. PCA method was found better if the modalities were combined. Identification was made using Eigen faces, Eigen ears and their features. These were tested over own created database.

Index Terms— Biometrics, Principal Component Analysis (PCA), Eigen Faces, Eigen Ears, Euclidian Distance Hierarchical Matching, Calligraphic Retrieval, Skeleton Similarity

I. Introduction

An essential feature of new applications services employ each its own authentication method and use different credentials. Biometrics deals with identification of a person based on biometric traits such as face, fingerprint, iris etc. As a result, biometric recognition using a single biometric trait or modality may not be robust and it has a limited ability to overcome the problem due to spoofing. The biometric technologies can be combined to provide enhanced security over a single modal biometrics, which is called as multimodal biometric system [1]. A multimodal bio-metric system integrates multiple source of information obtained from different biometric sources. Multimodal biometrics system involves various levels of fusion, namely, sensor level, feature level, matching score level, decision level and rank level [2-4]. Identity management system is

challenging task in providing authorized user with secure and easy access to information and services across a wide verity of network system. Biometrics refers to the use of physiological or biological characteristics to measure the identity of an individual [5]. These features are unique to each individual and remain unaltered during lifetime. Many problems arise because of the variation in several parameters such as scale, lighting, poor illumination and other environmental parameters [6, 7]. Usually, biometric techniques are developed to give binary decisions that accept the authorized persons and reject the impostors or unauthorized entities. Mainly, there are two types of errors that occur in biometric systems namely false acceptance (FA) errors which let the impostor in, and false rejection (FR) errors that keep the authorized personnel out.

Fig. 1 shows a generalized block diagram of multimodal biometrics

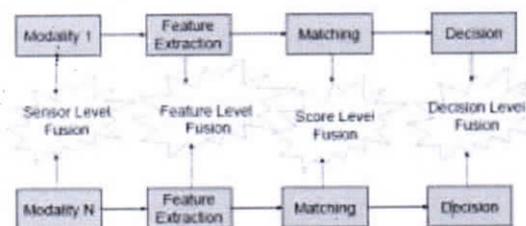


Fig. 1: Multimodal biometric system

In this paper, we evaluate and compare the false acceptance rate (FAR) and the false rejection rate (FRR) of multimodal biometric prototypes. The system error of a multimodal biometric system is a combination of the FAR and the FRR from different biometric technologies. Unlike in the case of a single biometric measurement, the combination of several measurements makes it

3-Level DWT Image Watermarking Against Frequency and Geometrical Attacks

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Abstract—This paper introduces a robust image watermarking technique for the copyright protection. The proposed method is based on 3-level discrete wavelet transform (DWT). Encoded secret image using spiral scanning is hidden by alpha blending technique in LL sub bands. During embedding process, secret image is dispersed within LL band depending upon alpha value. Encoded secret images are extracted and decoded to recover the original secret image. The experimental results demonstrate that the watermarks generated with the proposed algorithm are invisible and the quality of watermarked image and the recovered image are improved. The scheme is found robust to various image processing attacks such as JPEG compression, Gaussian noise, blurring, median filtering and rotation.

Index Terms—Image watermarking, 3-level DWT, wavelet transform, attacks, mean square error (MSE), peak signal to noise ratio (PSNR).

I. INTRODUCTION

The development of effective digital image copyright protection methods have recently become an urgent and necessary requirement in the multimedia industry due to the ever-increasing unauthorized manipulation and reproduction of original digital objects. The new technology of digital watermarking has been advocated by many researchers as the best method to such multimedia copyright protection problem [1]. It is expected that digital watermarking would have a wide-range of practical applications in digital cameras, medical imaging, image databases, and video-on-demand systems etc.

Digital watermarking deals with information hiding which is used to hide proprietary information in digital media like photographs, digital music, or digital video [2-3]. The ease with which digital content can be exchanged over the Internet has created copyright infringement issues. Copyrighted material can be easily exchanged

over peer-to-peer networks, and it has caused major concerns to content providers engaged in producing the contents.

For an efficient watermarking method, it should be robust to compression, filtering, rotation, scaling cropping, and collusion attacks among many other digital processing operations. The existing digital image watermarking techniques can be grouped into two major classes namely Spatial domain Watermarking and Transform Domain Watermarking techniques. In comparison with spatial domain techniques [4], transform-domain watermarking techniques (DWT) are generally more effective in terms of the imperceptibility and robustness requirements of digital watermarking algorithms [5-6]. A transform domain technique is proposed which shows greater robustness to common signal distortions. The main advantage of the proposed wavelet-based technique lies in the method used to embed the watermark in low frequency band using blending technique. Performance improvements in DWT-based digital image watermarking algorithms could be obtained by increasing the level of DWT.

II. RELATED WORK

This section highlights research works related to digital watermarking used for digital images. The existing contributions in terms of their findings and limitations have been reported.

Mistry [6] introduced digital watermarking methods-Spatial domain (like LSB) and transform domain (like DCT, DWT) methods. The spatial domain is the normal image space, in which a change in position in image directly projects to a change in position in space. Ex.-Least Significant bit (LSB) method. Transform Domain method produce high quality watermarked image by first transforming the original image into the frequency domain by the use of Fourier Transform, Discrete Cosine Transform (DCT) or Discrete Wavelet transforms (DWT). It was observed that that transform watermarking is



Abnormality Detection and Classification in Computer-Aided Diagnosis (CAD) of Breast Cancer Images

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This paper presents a new approach for abnormality detection and classification of tumour in mammographic breast cancer images. The detection of masses is achieved in terms of their size and shape that can greatly help in early detection of breast tumor in breast images. The objective of the work is to detect the abnormal tumor or tissue inside mammographic breast cancer images using three stages namely pre-processing, segmentation and post processing. Pre-processing is used to reduce the noise signal and then segmentation is applied to detect the masses or abnormalities. Finally, post processing helps to find out the benign and malignant tissue with the affected area in the breast cancer image. The occurrences of cancer nodules are identified clearly and classified too. The algorithm achieves 96.5% sensitivity, 89% specificity and 95.6% accuracy value as compared with the observation by a radiologist.

Keywords: Breast Cancer, Mammographic Image, Segmentation, Tumor, Sensitivity, Specificity, Accuracy.

1. INTRODUCTION

Breast cancer is developed in the tissues of the breast. According to Indian Council of Medical Research (ICMR), it is reported that one in 22 women in India is likely to suffer from breast cancer during her lifetime.^{1,2} Average amount of expenses for mammographic screening is \$100 per screening and additional \$33 is spent on evaluating possible false positive result.³ The highly sensitive infrared (IR) cameras provide high-resolution diagnostic images of the temperature and vascular changes of breasts. These images can be processed to emphasize hot spots that exhibit early and subtle changes owing to pathology.⁴ Computer-aided diagnosis (CAD) addresses both the issues namely screening and evaluation of result.

Mammography is the procedure of using low-dose X-rays to examine the human breast for the purposes of identifying breast cancer or other abnormalities. Accurate and efficient breast region segmentation technique still remains a challenging problem in digital mammography.⁵ Round and oval shaped masses with smooth and circumscribed margins usually indicate benign changes or masses; whereas malignant masses usually are characterized by speculated, rough and blurry boundary.⁶ Benign calcifications are usually larger and coarser with round and smooth contours.⁷ Masses appear as dense regions of different sizes and

shapes. Various shapes of abnormalities are shown in Figure 1. The pectoral regions of breasts are important because nearly 50% of all breast cancer cases is located in this region.⁸

The ill-defined and speculated borders have higher probability of malignancy as shown in Figures 1 and 2. A cancer cell is characterized from normal tissue cells observing the cell outline, shape, structure of nucleus and most importantly, its ability to metastasize and infiltrate. TNM (tumor, node and metastasis) is a staging system to provide more details about how the cancer looks and behaves.⁹ Primary tumor (T) categories are: Tx, primary tumor which is not assessed; T0, no evidence of primary tumor; Tis, carcinoma; T1, tumor is 2 cm (3/4 of an inch) or less; T2, tumor is more than 2 cm; T3, tumor is more than 5 cm; and T4, tumor of any size including inflammatory breast cancer.¹⁰ Breast cancer is a highly treatable disease, with 97% chance of survival if discovered early.¹¹

2. RELATED WORKS

Numerous segmentation methods have been developed in the field of medical image analysis and several of these methods have been used to segment masses in mammograms. Kom et al.¹² presented an approach to segment the suspicious mass regions by a local adaptive thresholding technique. However, lesion was not properly detected and it gives an empty area in the segmentation

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Role of Cloud Computing In Development of Rural Areas

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Abstract- The term "cloud computing" is a recent buzzword in the IT world. Though the term "Cloud Computing" is recent but the idea of centralizing computation and storage in distributed data centers maintained by third party companies is not new. Cloud computing is aimed at providing IT as a service to the cloud users on-demand basis with greater flexibility, availability, reliability and scalability with utility computing model. This new paradigm of computing has an immense potential in it to be used in the field of e-governance and in rural development perspective in developing countries like India. Rural areas has been ignored since several decades and the Cloud will bring the change that is required to bridge the divide between rural and urban areas and will improve the rural economy. This new information technology model is called "cloud computing". In this paper we analyze the study and application of Cloud computing on education, agriculture, healthcare and business in rural areas. It also enables people of rural areas to access the web based application of cloud computing with the help of tablets and mobile phones.

Keywords: Cloud computing, Rural areas

1. Introduction

India's 73% of population resides in the rural areas and villages. India's huge population has a great potential to make it an economic as well as an IT superpower but the major issue in getting delayed is the lack of infrastructure for the development of the technical know-how amongst the people living in the rural areas and the villages. With the introduction of the new cloud computing paradigm these problems can be easily eliminated because it doesn't require the end users to have any type of infrastructure, as all of them are delivered as services whether it could be infrastructure as a service (IaaS), Platform as a service (PaaS), Software as a service (SaaS) . Once a cloud is established, how its cloud computing services are deployed in terms of business models

can differ depending on requirements. The primary service models being deployed are commonly known as:

- **Software as a Service (SaaS):** Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud.
- **Platform as a Service (PaaS):** Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed.
- **Infrastructure as a Service (IaaS):** Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but it does not itself control the cloud infrastructure.

Also known are the various subsets of these models that may be related to a particular industry or market. Communications as a Service (CaaS) is one such subset model used to describe hosted IP telephony services. Along with the move to CaaS is a shift to more IP-centric communications and more SIP trunking deployments. With IP and SIP in place, it can be as easy to have the PBX in the cloud as it is to have it on the premise. In this context, CaaS could be seen as a subset of SaaS.

DATA EMBEDDING AND EXTRACTION METHODS BASED ON LSB AND TPVD BY USING STEGANALYSIS

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Abstract- The art and science of hiding information by embedding messages within other, seemingly harmless messages. Steganography works by replacing bits of useless or unused data in regular computer files (such as graphics, sound, text, HTML, or even floppy disks) with bits of different, invisible information. This hidden information can be plain text, cipher text, or even images. Steganography is used to supplement encryption. An encrypted file may still hide information using steganography, so even if the encrypted file is deciphered, the hidden message is not seen. A number of steganographic algorithms have been proposed based on this property of a steganographic system. This paper concentrates on integrating Tri way pixel value. a steganographic method for embedding message bits into a still image. In the LSB matching, the choice of whether to add or subtract one from the cover image pixel is random. The new method uses the choice to set a binary function of two cover pixels to the desired value. The embedding is performed using a pair of pixels as a unit, where the LSB of the first pixel carries one bit of information, and a function of the two pixel values carries another bit of information. Therefore, the modified method allows embedding the same payload as LSB matching but with fewer changes to the cover image. The experimental results of the proposed method show better performance than traditional LSB matching in terms of distortion and resistance against existing steganalysis.

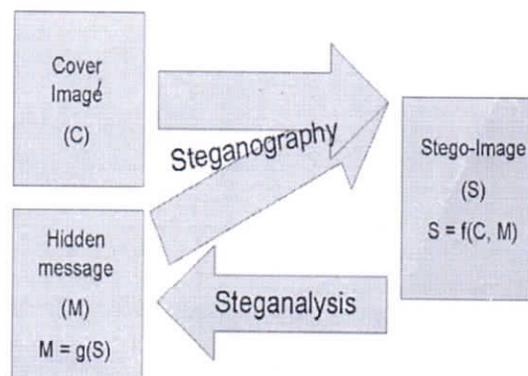
Keywords—LSB, LSBMR, Plain Text,, steganalysis, TPVD, eavesdropper, LSBM,BMP

1.Introduction

Steganography and steganalysis are important topics in information hiding. Steganography refers to the technology of hiding data into digital media without

drawing any suspicion, while steganalysis is the art of detecting the presence of steganography. Steganalysis is a relatively new branch of research. While steganography deals with techniques for hiding information, the goal of steganalysis is to detect and/or estimate potentially hidden information from observed data with little or no knowledge about the steganography algorithm or its parameters. It is fair to say that steganalysis is both an art and a science. The art of steganalysis plays a major role in the selection of features or characteristics a typical stego message might exhibit, while the science helps in reliably testing the selected features for the presence of hidden information. Steganalysis has gained prominence in national security and forensic sciences since detection of hidden messages can lead to the prevention of disastrous security incidents. Steganalysis is a very challenging field because of the scarcity of knowledge about the specific characteristics of the cover media (an image, an audio or video file) that can be exploited to hide information and detect the same. The approaches adopted for steganalysis also sometimes depend on the underlying steganography algorithm(s) used..

2.Related Work



An Efficient Approach to Improve Retrieval Rate in Content Based Image Retrieval Using MPEG-7 Features

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Abstract. Content Based Image Retrieval is a technique of automatic indexing and retrieving of images. In order to improve the retrieval performance of images, this paper proposes an efficient approach for extracting and retrieving color images. The block diagram of our proposed approach to content-based image retrieval (CBIR) is given first, and then we introduce Histogram Euclidean distance (L2 distance), Cosine Distance and Histogram Intersection which are used to measure the image level similarity. The combined features of finding a set of weights of different distances represented by mini-max algorithm is used to declare the best match to the query image. Query images are used to retrieve images similar to the query image. Comparison and analysis of performance evaluation for features and similarity measures for the retrieved images with ground truth are shown. This proposed retrieval approach demonstrates a promising performance. Experiment shows that combined features are superior to any one of the three.

Keywords: Content Based Image Retrieval, Edge Histogram Descriptor(EHD), L2 distance, Cosine Distance, Histogram Intersection mini-max algorithm, MPEG-7.

1 Introduction

Content-based image retrieval has become a prominent research topic because of the proliferation of video and image data in digital form. Fast retrieval of images from large databases is an important problem that needs to be addressed. Image retrieval systems attempt to search through a database to find images that are perceptually similar to a query image.

CBIR aims to develop an efficient Visual Content Based technique to search, browse and retrieve relevant images from large scale digital image collections. Low-level visual features of the images such as color and texture are especially useful to represent and to compare images automatically [1]. A reference is made to MPEG-7 standard, by using color histogram descriptor and edge histogram descriptor. Most proposed CBIR techniques automatically extract low-level features (e.g. color, texture, shapes and layout of objects) to measure the similarities among the images differences.

Role of Cloud Computing In Development of Rural Areas

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Abstract- The term "cloud computing" is a recent buzzword in the IT world. Though the term "Cloud Computing" is recent but the idea of centralizing computation and storage in distributed data centers maintained by third party companies is not new. Cloud computing is aimed at providing IT as a service to the cloud users on-demand basis with greater flexibility, availability, reliability and scalability with utility computing model. This new paradigm of computing has an immense potential in it to be used in the field of e-governance and in rural development perspective in developing countries like India. Rural areas has been ignored since several decades and the Cloud will bring the change that is required to bridge the divide between rural and urban areas and will improve the rural economy. This new information technology model is called "cloud computing". In this paper we analyze the study and application of Cloud computing on education, agriculture, healthcare and business in rural areas. It also enables people of rural areas to access the web based application of cloud computing with the help of tablets and mobile phones.

Keywords: Cloud computing, Rural areas

1. Introduction

India's 73% of population resides in the rural areas and villages. India's huge population has a great potential to make it an economic as well as an IT superpower but the major issue in getting delayed is the lack of infrastructure for the development of the technical know-how amongst the people living in the rural areas and the villages. With the introduction of the new cloud computing paradigm these problems can be easily eliminated because it doesn't require the end users to have any type of infrastructure, as all of them are delivered as services whether it could be infrastructure as a service (IaaS), Platform as a service (PaaS), Software as a service (SaaS) .Once a cloud is established, how its cloud computing services are deployed in terms of business models

can differ depending on requirements. The primary service models being deployed are commonly known as:

- **Software as a Service (SaaS):** Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud.
- **Platform as a Service (PaaS):** Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed.
- **Infrastructure as a Service (IaaS):** Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but it does not itself control the cloud infrastructure.

Also known are the various subsets of these models that may be related to a particular industry or market. Communications as a Service (CaaS) is one such subset model used to describe hosted IP telephony services. Along with the move to CaaS is a shift to more IP-centric communications and more SIP trunking deployments. With IP and SIP in place, it can be as easy to have the PBX in the cloud as it is to have it on the premise. In this context, CaaS could be seen as a subset of SaaS.

An Efficient key Search using different pattern

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Abstract— While recent web search techniques augment traditional text matching with a global notion of importance based on the linkage structure of the web, such as in Google's page rank algorithm. For More refined searches, this global notion of importance can be specialized to create personalized views of importance—for example, importance scores can be F1-measure of 82.5% in comparative question identification and 83.3% in comparable entity extraction. Both significantly out perform an existing state of the art method. So that the construction of personalized views from partial vectors is practical at query time. We present efficient dynamic programming algorithms for computing partial vectors, an algorithm for constructing personalized views from partial vectors and experimental results demonstrating the effectiveness and scalability of

Index Terms—Bayesian estimation; Extracting Data;

1. INTRODUCTION

General web search is performed predominantly through text queries to search engines. Because of the enormous size of the web, text alone is usually not selective enough to limit the number of query results to manageable size. The page rank algorithm among others has been proposed (and implemented in Google) to exploit linkage structure of the web to compute global importance for different users and queries, the basic page rank algorithm can be modified to create "personalized views" of the web query results that are important with respect to his bookmarked pages would be ranked higher. While experimentation with the use of personalized page rank has shown its utility and promise, the size of the web makes its practical realization extremely difficult. To see why, let us review the intuition behind the Page Rank algorithm and its extension for personalization. Any query results that are important with respect to his bookmarked pages would be ranked higher. While experimentation with the use of personalized Page Rank has shown its utility and promise, the size of the web makes its practical realization extremely difficult. To see why, let us review the intuition behind the Page Rank algorithm and its extension for personalization.

In the World Wide Web era, a comparison activity typically involves: search for relevant web pages containing information about the targeted products, find competing products, read reviews, and identify pros and cons.

In this paper, we focus on finding a set of

comparable entities gave a user. In general, it is difficult to decide if two entities are comparable or not since people do compare apples and oranges for various reasons. For example, "Ford" and "BMW" might be comparable as "car manufacturers" or as "market segments that their products are targeting"

□ **Comparative question:** A question that intends to compare two or more entities and it has to mention these entities explicitly in the question.

□ **Comparator:** An entity which is a target of comparison in a comparative question.

According to these definitions, Q1 and Q2 below are not comparative questions while Q3 is. "iPod Touch" and "Zune HD" are comparators.

Q1: "Which one is better?"

Q2: "Is Lumix GH-1 the best camera?"

Q3: "What's the difference between iPod Touch and Zune HD?"

The goal of this work is mining comparators from comparative questions. The results would be very useful in helping user's exploration of the fundamental motivation underlying Page Rank is the recursive notion that important pages are those linked-to by many important pages. A page with only two in-links, for example, may seem unlikely to be an important page, but it may be important if the two referencing pages are Yahoo! and Netscape The main contributions of this paper are as follows.

A method, based on new graph-theoretical results (listed next), of encoding PPV's as partial quantities, enabling an efficient, scalable computation that can be divided between pre computation time and query time in a customized fashion according to available resources and application requirements.

Three main theorems: The *Linearity Theorem* allows every PPV to be represented as a linear combination of basic vectors, yielding a natural way to construct PPV's from shared components. The *Hubs Theorem* allows basis vectors to be encoded as *partial vectors* and a *hubs*

FTDA: Functional Text Mining Based on Decision Tree and Artificial Neural Intelligence

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Abstract— Data mining is not particular statisticians have used similar manual approaches to review data and provide business projections for many years. Changes in data mining techniques, however, have enabled organizations to collect, analyze, and access data in new ways. The first change occurred in the area of basic data collection. Before companies made the transition from ledgers and other paper-based records to computer-based systems, managers had to wait for staff to put the pieces together to know how well the business was performing or how current performance periods compared with previous periods. As companies started collecting and saving basic data in computers, they were able to start answering detailed questions quicker and with more ease. This paper presents an innovative and Functional text mining based on decision tree, and artificial intelligence by using updating although they are powerful predictive modeling techniques and Decision trees are tree-shaped structures that represent decision sets for retrieve information. Substantial experiments on RCV1 data collection and TREC topics demonstrate that the proposed solution achieves encouraging performance.

Key words—Data mining; Text mining; Artificial neural networks; Decision trees.

I. INTRODUCTION

Data mining (the analysis step of the "Knowledge Discovery and Data Mining" process, or KDD),^[1] an interdisciplinary subfield of computer science,^{[2][3][4]} is the computational process of discovering patterns in large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics, and database systems.^[2] The overall goal of the data mining process is to extract information from a data set and transform it into an understandable structure for further use.^[2] Aside from the raw analysis step, it involves database and data management aspects, data pre-processing, model and inference considerations, interestingness metrics, complexity considerations, post-processing of discovered structures, visualization, and online updating.^[2]

The term is a buzzword,^[5] and is frequently misused to mean any form of large-scale data or information processing (collection, extraction, warehousing, analysis, and statistics) but is also

generalized to any kind of computer decision support system, including artificial intelligence, machine learning, and business intelligence. In the proper use of the word, the key term is *discovery*,^[citation needed] commonly defined as "detecting something new". Even the popular book "Data mining: Practical machine learning tools and techniques with Java"^[6] (which covers mostly machine learning material) was originally to be named just "Practical machine learning", and the term "data mining" was only added for marketing reasons.^[7] Often the more general terms "(large scale) data analysis", or "analytics" – or when referring to actual methods, artificial intelligence and machine learning – are more appropriate.

The actual data mining task is the automatic or semi-automatic analysis of large quantities of data to extract previously unknown interesting patterns such as groups of data records (cluster analysis), unusual records (anomaly detection) and dependencies (association rule mining). This usually involves using database techniques such as spatial indices. These

DATA EMBEDDING AND EXTRACTION METHODS BASED ON LSB AND TPVD BY USING STEGANALYSIS

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Abstract- The art and science of hiding information by embedding messages within other, seemingly harmless messages. Steganography works by replacing bits of useless or unused data in regular computer files (such as graphics, sound, text, HTML, or even floppy disks) with bits of different, invisible information. This hidden information can be plain text, cipher text, or even images. steganography is used to supplement encryption. An encrypted file may still hide information using steganography, so even if the encrypted file is deciphered, the hidden message is not seen. A number of steganographic algorithms have been proposed based on this property of a steganographic system. This paper concentrates on integrating Tri way pixel value. a steganographic method for embedding message bits into a still image. In the LSB matching, the choice of whether to add or subtract one from the cover image pixel is random. The new method uses the choice to set a binary function of two cover pixels to the desired value. The embedding is performed using a pair of pixels as a unit, where the LSB of the first pixel carries one bit of information, and a function of the two pixel values carries another bit of information. Therefore, the modified method allows embedding the same payload as LSB matching but with fewer changes to the cover image. The experimental results of the proposed method show better performance than traditional LSB matching in terms of distortion and resistance against existing steganalysis.

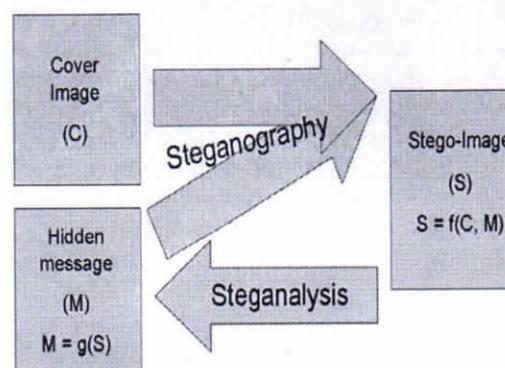
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Steganography and steganalysis are important topics in information hiding. Steganography refers to the technology of hiding data into digital media without

drawing any suspicion, while steganalysis is the art of detecting the presence of steganography. Steganalysis is a relatively new branch of research. While steganography deals with techniques for hiding information, the goal of steganalysis is to detect and/or estimate potentially hidden information from observed data with little or no knowledge about the steganography algorithm or its parameters. It is fair to say that steganalysis is both an art and a science. The art of steganalysis plays a major role in the selection of features or characteristics a typical stego message might exhibit, while the science helps in reliably testing the selected features for the presence of hidden information. Steganalysis has gained prominence in national security and forensic sciences since detection of hidden messages can lead to the prevention of disastrous security incidents. Steganalysis is a very challenging field because of the scarcity of knowledge about the specific characteristics of the cover media (an image, an audio or video file) that can be exploited to hide information and detect the same. The approaches adopted for steganalysis also sometimes depend on the underlying steganography algorithm(s) used..

2.Related Work





Distributed and Asynchronously Detection of Cut in Wireless Sensor Networks

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Abstract

Wireless sensor networks consist of multiple connected components, Due to multiple connected components, wireless sensor network gets break, which is called a cut. In this article we can detect this potential cuts, by consideration of remaining nodes, We have implemented an algorithm which allows (i) Every node to detect when the connectivity to a specially designated node has been lost, and (ii) one or more nodes (that are connected to the special node after the cut) to detect the occurrence of the cut. The algorithm used is distributed and asynchronous: every node communicates with only those nodes that are within its communication range. The algorithm is based on the iterative computation of a fictitious "electrical potential" of the nodes. The convergence rate of the underlying iterative scheme is independent of the size and structure of the network. We demonstrate the effectiveness of the proposed algorithm through simulations and a real hardware implementation.

1. INTRODUCTION

Wireless sensor networks (WSNs) are a promising technology for monitoring large regions at high spatial and temporal resolution. In fact, node failure is expected to be quite common due to the typically limited energy budget of the nodes that are powered by small batteries. Failure of a set of nodes will reduce the number of multi-hop paths in the network. Such failures can cause a subset of nodes – that have not failed – to become disconnected from the rest, resulting in a "cut". Two nodes are said to be disconnected if there is no path between them.

We consider the problem of detecting cuts by the nodes of a wireless network. We assume that there is a specially designated node in the network, which we call the *source node*. The source node may be a base station that serves as an interface between the network and its users. Since a cut may or may not separate a node from the source node,

we distinguish between two distinct outcomes of a cut for a particular node. When a node u is disconnected from the source, we say that a DOS (Disconnected from Source) event has occurred for u . When a cut occurs in the network that does not separate a node u from the source node, we say that CCOS (Connected, but a Cut Occurred Somewhere) event has occurred for u . By cut detection we mean

- i. Detection by each node of a DOS event when it occurs, and
- ii. Detection of CCOS events by the nodes close to a cut, and the approximate location of the cut. By "approximate location" of a cut we mean the location of one or more active nodes that lie at the boundary of the cut and that are connected to the source.

Nodes that detect the occurrence and approximate locations of the cuts can then alert the source node or the base station.

Detect and Discover Patterns in Text Mining with a Novel Technique

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Abstract:

Text clustering can greatly simplify browsing large collections of documents by reorganizing them into a smaller number of patterns in text documents manageable clusters. Text clustering is mainly used for a document clustering system which clusters the set of documents based on the user typed key term. Here we proposed a hybrid model which works on reduced dimensional dataset and similarity constraints. Feature based analysis is used for reducing dimension of huge dataset. We use the feature evaluation to reduce the dimensionality of high-dimensional text vector. The system then identifies the term frequency and then those frequencies are weighted by using the inverted document frequency method. Then this weight of documents is used for clustering. Feature clustering is a powerful method to reduce the dimensionality of feature vectors for text classification. This model will significantly improve the result of pattern discovery in text mining. And also here temporal text mining approach is introduced. The system terms of its capacity is evaluated to predict forthcoming events in the document. Here the optimal decomposition of time period associated with the given document set is discovered, where each subinterval consists of sequential time points having identical information content. Extraction of sequences of the events from new and other documents based on the publication times of these documents has been shown to be extremely effective in tracking past events.

Keywords: Text mining, Text classification, Pattern mining, Pattern deploying, Pattern evolving

1. INTRODUCTION

The process of discovery of interesting knowledge in the text documents is known as text mining. Finding accurate knowledge, from the text documents to satisfy users need is still big challenge. Many term-based methods are provided by Information Retrieval (IR) such as Rocchio and probabilistic models, support vector machine (SVM), rough set models and BM25. These methods are adventitious as they perform efficiently as well as they provide very well explained theories for term weighting. But these methods, suffers from the problem of polysemy(words having multiple meanings)and synonymy (multiple words having same meaning). The semantic meaning of the word is generally confusing and make it difficult to understand what exactly user wants. For many years, many have hypothesis that phrase-based approaches are performing quiet good as they are working on semantics, but the performance is not that much encouraging. There are several reasons behind it as phrases have statically inferior properties, low frequency of occurrence and many phrases are redundant and noisy. To avoid the drawbacks of phrase-based model, new model of sequential patterns is proposed which performing better as it is statistical similarities with terms. Pattern taxonomy model have been proposed which uses closed sequential as well as pruned nonplused patterns. However, these models are not performing as per the expectations when compared with term based approaches. There are two major issues for this behavior is low frequency and misinterpretation. So, obviously it is not adequate to evaluate the weights of terms based on their presence in documents as like methods are used in IR. To solve this problem, IPE PTM is developed but it is based on large dataset. Here, we proposed new hybrid model in which pattern evolving and deployment is performed on low dimensional dataset with similarity constraints.

Big Data Encryption A Retrospective Study

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Abstract: Data is exploding in our world and analyzing large data sets—so-called big data—has become key basis of competition. It is contributing dramatically in productivity growth, innovation, and consumer surplus, according to many researchers all over the world. Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things is fuelling exponential growth in data for the foreseeable future. Data have swept into every industry and business function and are now an important factor of production, alongside labor and capital. The technologies such as, Data Mining is limited, planer, simple, linear and constrained to a few relationships amongst people: what they do, where they go, who they know and so on. In contrast; Big Data is unbounded, spans all peoples and machines in all domains and activities with application to every aspect of life, business, industry, government and sustainability etc. It also takes into account the non-linear nature of relationships and events. Big data is offering considerable benefits to consumers as well as to companies and organizations. The opportunities and challenges vary from sector to sector. Sectors like IT, electronics, information, finance, insurance and government are poised to gain substantially from the use of big data. Several issues will have to be addressed to capture the full potential of big data. In addition to putting the right talent and technology in place organizations also need to work on structure workflows and incentives to optimize the use of big data. Accessing data is critical—companies will increasingly need to integrate information from multiple data sources, often from third parties, that's where security measures like data encryption comes into picture. It provides secure environment to access the exponentially growing data.

Keywords: Big data; encryption; growth of data;

I. Introduction

Data has become a torrent flowing into every area of the global economy. Companies capture trillions of bytes of data about their customers, suppliers and operations. They also store large volume of transactional data. Not only commercial companies but social media sites, Smartphone, PCs, laptops

and other consumer devices have allowed many individuals to contribute to the rapidly increasing amount of data globally. Affordability of systems, easy access to internet and multimedia content are the few factors which affects the growth of data exponentially.

The world is full of information. The growth of data due to communication, browsing, sharing searching and many more compelled the "big" to be added with data, but it is not the only factor involved in doing so. There are other factors such as Speed at which the data is growing. Amount of space it needs to store the data and most importantly the way data is analyzed. Big data offers storage, management and analyzing the data sets at a great speed. Other than these, data need to be secured as well.

Encryption algorithms can be used to provide high level security to the large amount of data. Using these, the data will be converted into cipher text using a special key and later can be converted back into original data using the same or different keys as per the chosen encryption algorithm. These algorithms provide security from unauthorized people or system. These protect data in transit and also protect the confidentiality of data. Encryption algorithms are broadly categorized into 2 parts: **First** is Symmetric Key algorithm and **Second** is Public or asymmetric Key algorithm.

In Symmetric key encryption the same key is used for encryption and decryption. So both the parties should agree on the same key before communication. For example: DES, AES. Where as in Public key encryption the plain text is encrypted with the public key which is easily accessible by the receiver from a trusted third party and decrypted with the private key of receiver. For example: RSA. Other than these algorithms some other techniques must be used for the protection of Integrity and Authenticity of the data. For example: MAC, HASHFUNCTION, DIGITALSIGNATURE, MD5, SHA-1 etc.

II. Importance of Big Data Encryption

Data is being generated by many different sources such as Digital sensors, Internet, local area networks etc. In other words, data is collected in either Structured or unstructured format. Thus the large amount of data consisting valuable and sensitive information give rise to many possibilities of unauthorized access and use, which ranges from financial, governmental to private sector. To prevent the integrity, authenticity and confidentiality of data, it needs to be secured. If the security issue is avoided or not acknowledged then it can make different organizations vulnerable and can also cause severe damage. Data encryption works absolutely fine in NOSQL environments. Traditionally used Relational database

Preparation, Micro structural characterization and Optical characterization of pure and Gd-doped ceria thin films

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Abstract- The growth of Gadolinium doped ceria thin films with controlled surface structure for device applications presents a significant problem for experimental investigation. In the present study pure Cerium oxide and gadolinium doped cerium oxide thin films were prepared by pulsed laser deposition [PLD] and were studied for their surface structure evaluation in relation to the optimized operating conditions during the stage of film preparation. The deposition was made with gadolinium concentration of 10mole% to ceria pellets. The films were deposited on quartz substrate in the presence of oxygen partial pressure of 1.5×10^{-3} torr using KrF Excimer laser with laser energy 220mJ at a substrate temperature of 700^o C. The effect of annealing temperature on undoped cerium oxide and 10mole% GDC thin film was investigated. The film thickness was measured by using AMBIOS make XP-1 stylus profiler. As prepared and annealed thin films were characterized for crystallinity, particle size and orientation by using G.I.XRD. The films were characterized using atomic force microscopy [AFM]. The AFM results gave a consistent picture of the evolution of GDC film surface morphologies and microstructures in terms of surface roughness, grain distribution and mean grain size. The optical transmittance spectra was used to determine the optical constants such as optical band gap, refractive index of as prepared and annealed thin films.

Index Terms- Cerium oxide, micro structure, optical band gap, Pulsed Laser Deposition, refractive index, substrate, surface roughness, thin film.

1 Introduction

Cerium oxide and Gadolinium doped cerium oxide thin films have been grabbing great interest in technological applications. Due to high refractive index, absorption of UV radiation, transparency in the visible and near-IR region which makes Cerium oxide thin films as an ideal UV blocker and excellent replacement for titanium oxide and zinc oxide in sunscreens[1],[2],[3],[4],[5]. Cerium oxide plays an important role in electro chromic devices[6], as substrate for high temperature superconductor[7], Silicon-on-insulator[SOI]structure[8-9], miniaturized capacitors[10],[11], counter electrode in smart windows due to its high transparency[12],[13]. Various techniques have been so far employed to prepare cerium oxide thin films such as sol gel method[14], Sputtering[15], Electron Beam evaporation[16], Metal organic chemical Vapor deposition[17], Atomic layer deposition[18], Spray Pyrolysis [19] and Pulsed Laser Deposition[PLD][20],[21],[22],[23]. Pulsed Laser Deposition is the best of all afore said techniques due to its sample uniformity, good stoichiometry and also free from contamination during the deposition process. It is the most effective method to prepare extremely pure

film. This method can be successfully adopted to prepare multi component material that is difficult to process in to thin film form by any other method. Cerium oxide is an electrical insulator with the fluorite structure and a lattice constant of 0.539nm. However ionic conductivity can be improved by an appropriate doping. It was reported in bulk form that the conductivity of ceria can be remarkably enhanced by increasing the concentration of oxygen vacancies after doping with Gadolinium at fixed doping concentrations. Among the rare-earth doped ceria, the radius of Gd dopant ion is the close to that of the host cation[24]. Hence, great attention has been focused on the doping of ceria by Gd to bring an improvement in its structural, morphological and optical properties.

2 Experimental Procedures

Cerium ammonium nitrate $Ce(NH_4)_2(NO_3)_6$ and Gadolinium nitrate $Gd(NO_3)_3$, 99.99% were used as starting precursors and citric acid, ethylene glycol were selected for the polymerization treatment. Nitrates were dissolved in de-ionized water separately and then the solutions were mixed in beaker. Citric acid was dissolved in de-ionized water and then added to the cation solution. The molar ratio of total nitrates: citric

Annealing Effect on Structural, Optical and Electrical Properties of V_2O_5 Thin Films by Dip Coating

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ABSTRACT

Vanadium pentoxide (V_2O_5) solution was synthesized by melt quenching method. Ultrasonically and chemically cleaned quartz substrates were dip coated with V_2O_5 solution by withdrawal speed of 2 cm min^{-1} and the films dry at Room Temperature (RT). The prepared films were subjected for annealing at different temperatures 473, 573 and 673 K for 1 h. The crystallinity of the V_2O_5 films was examined by X-ray Diffraction (XRD). XRD pattern of the V_2O_5 thin films confirmed the polycrystallinity of the film with orthorhombic structure with preferred orientation along (0 0 1) direction. Optical and electrical characteristics of the V_2O_5 thin films were studied by optical double beam UV-Visible spectrophotometry and two probe techniques. The optical results show that the optical bandgap (E_g) was found to decrease with increasing annealing temperature. The dependence of the crystallite size, optical bandgap (E_g) and activation energy (E_a) has been reported for V_2O_5 thin films.

Key words: V_2O_5 thin film, melt quenching, optical bandgap, activation energy

INTRODUCTION

Vanadium exhibits many phases with oxygen; these different phases of vanadium oxide show optical, electrical, structural and chemical properties. The different phases of vanadium oxides like VO, VO_2 , V_2O_3 and V_2O_5 depend on their structure. This influences the properties of the materials to the greater extent. Different forms of vanadium oxides can be obtained by changing the deposition conditions. Out of the above mentioned phases of vanadium oxide, vanadium pentoxide (V_2O_5) thin films were shown wide spread attention owing to their excellent applications in smart windows and information displays (Alamria and Joraid, 2011), gas sensors (Liu *et al.*, 2005), electro chromic devices (Shimizu *et al.*, 1992) and infrared detector (Kumar *et al.*, 2003). V_2O_5 thin films were synthesized by various chemical and physical methods, namely physical evaporation (Al-Kuhaili *et al.*, 2004), pulsed laser deposition (Ramana *et al.*, 2001), spin coating (Kumar *et al.*, 2011) and dip coating (Raj *et al.*, 2012). In the present investigation, the more advantageous and low cost dip coating method was used to prepare V_2O_5 thin films. The thin films obtained were annealed at different temperatures to study their structural, optical and electrical properties.

MATERIALS AND METHODS

V_2O_5 films were synthesized by dip coating method with melt quenched solution (El Mandouh and Selim, 2000). Three g of V_2O_5 (99.9% purity, Merck India) powder was taken in

Preparation and microstructural characterization of Si(100) $Ce_{1-x}Gd_xO_{2-\delta}$ thin films prepared by pulsed laser deposition technique

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Microstructural properties of $Ce_{1-x}Gd_xO_{2-\delta}$ ($x = 0$ to 0.3) thin films prepared by pulsed laser deposition technique were studied. The thin films were deposited on Si(100) substrate at a substrate temperature of 973 K at the oxygen partial pressure of 0.2 Pa using KrF excimer laser with energy of 220 mJ. The prepared thin films were characterized by X-ray diffraction, Raman spectroscopy and atomic force microscopy. X-ray diffraction analysis confirmed the polycrystalline nature of the thin films. Crystallite size, strain and dislocation density were calculated. The Raman studies revealed the formation of Ce-O with the systematic variation of peak intensity and full width half maxima depending on concentration of gadolinium dopant. The thickness of the films was estimated using Talystep profiler. The surface roughness was estimated based on AFM.

Keywords: cerium oxide; dislocation densities; gadolinium doped cerium oxide; microstructure; pulsed laser deposition; thin films.

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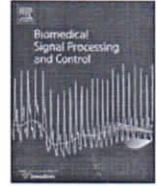
1. Introduction

Cerium oxide and gadolinium doped cerium oxide thin films are attracting great attention in technological applications. High refractive index, absorption of UV radiation, transparency in the visible and near-IR region, make cerium oxide thin films an ideal UV blocker and excellent substitute for titanium oxide and zinc oxide in sunscreens [1–5]. Cerium oxide plays an important role in electrochromic devices [6] as a substrate for high temperature superconductors [7], silicon-on-insulator (SOI) structures [8, 9], miniaturized capacitors [10, 11], counter electrode in smart windows due to its high transparency [12, 13]. Various techniques have been employed to prepare cerium oxide and gadolinium doped cerium oxide thin films, such as sol-gel method [14], sputtering [15], electron beam evaporation [16], metal organic chemical vapor deposition [17], atomic layer

deposition [18], spray pyrolysis [19] and pulsed laser deposition (PLD) [20–23]. Pulsed laser deposition is the most predominant method of all afore-said techniques as it produces layers with high uniformity, good stoichiometry as well as free from contamination, which could arise during the deposition process. It is the most effective method to prepare extremely pure film.

This method can be successfully adopted to prepare multi-component material that is difficult to process in a thin film form by any other method. Cerium oxide is an electrical insulator with the fluorite structure and a lattice constant of 0.539 nm. However, its ionic conductivity can be improved by an appropriate doping. It was reported that in a bulk form the conductivity of ceria can be remarkably enhanced by increasing the concentration of oxygen vacancies after doping with gadolinium at fixed doping concentrations. Among the rare-earth doped ceria, the radius of Gd dopant ion is close to that of the host cation [24]. Hence, great attention has been paid on the doping of ceria by Gd to

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Singularity detection in human EEG signal using wavelet leaders

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ARTICLE INFO

Article history:

Received 25 March 2014

Received in revised form 1 June 2014

Accepted 2 June 2014

Keywords:

Singularity

Lipschitz exponent

Wavelet transform

Wavelet maxima

Receiver operating characteristics (ROC) curve

ABSTRACT

A proliferation of signal processing community, the dynamic behavior and the singularity detection are key steps, because dynamics and singularities carry most of signal information. Wavelet zoom is very good at localization of singularities. The Lipschitz Exponent (LE) is the most popular measure of the singularity characteristics of a signal. The singularity, by mean of an LE of a function, is measured by taking a slope of a *log-log* plot of scale *s* versus *wavelet transform modulus maxima* (WTMM). In this paper, we measured the singularity using WTMM, Inter Scale Wavelet Maximum (ISWM) and Wavelet Leaders (WL) by adding white Gaussian noises to the human EEG signal. The statistical performances are assessed (Mean, Standard Deviation (SD), Skewness, SD/Mean, Number of singular points (NSP)) and compared by means of non-parametric hypothesis test (Mann–Whitney *U*-test). Highly significant differences have been found between WTMM, ISWM and WL using Receiver Operating Characteristics (ROC) curve. WL method provides good performance of singularity measure when the more prominent noise influenced the EEG signal. The result of experiments demonstrated that a Wavelet leader is more-precise and robust.

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1. Introduction

The electroencephalography is a noninvasive tool for measuring the electrical activity in the brain. Singularities are signal parts in which discontinuities of some regularity occur. Dynamic behavior refers to descriptions of changes over time in signals. If the singularities and dynamics are present in the EEG signal, they provide important information about the health of the central nervous system (CNS), particularly in the human brain. In clinical aspects, detection of the singularity points in human EEG signal was commonly performed inefficiently by the doctor's eye inspection. Time and Frequency domain methods were introduced subsequently for the detection of singularities. Singularities often carry the most useful information in signals, from electrocardiogram to radar signal; the interesting information is given by transient phenomena such as peaks. In physics, it is also important to study the singularities to infer properties about the underlined physical phenomena [1–3].

In 1980, the singularity was measured at the asymptotic decay of its Fourier Transform. Given a pure sinusoidal signal, the Fourier

transform gives a unique frequency characterization. This method is global and provides a description of the overall regularity of a signal. However, when confronted with signals with different frequencies in two adjacent time intervals, the Fourier transform runs into a problem: it obtains several different frequencies without any knowledge of when each frequency changes or occurs (i.e. the singularities). Due to this, the Fourier transform is not well adapted for finding the location and the spatial distribution of singularities. Consequently, we need a time–frequency characterization of a signal.

In 1992, Mallat and Hwang proved in [4] that by decomposing a signal into elementary building blocks that are well localized both in time and frequency, the wavelet transform can characterize the local regularity of signals. In mathematics, the regularity is usually measured with Lipschitz exponent (LE). It is a real number that can characterize the local regularity or smoothness in a signal. The definition of LE is given in [4]. This furthered and proposed to estimate the LE regularity by tracing its WTMM curves across scales inside the so-called 'Cone of Influence' (COI). On the other hand, a widely used method to characterize the dynamic behavior of a signal is using fractal dimensions [5]. Fractal dimensions are very useful to represent non-stationary (transient) behavior, e.g., distinguishing noise from chaos, and finding a degree of freedom of chaotic systems [6–8].

The multifractal formalism, originally introduced for singular measures, to fractal signals. Even though the structure function

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Global Journal of Computer Science and Information Technology (GJCSIT 2014)

A Survey of Edge Detection Techniques for Image Segmentation

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Abstract

Due to the advent of computer technology image-processing techniques have become increasingly important in a wide variety of applications. Image segmentation is a classic subject in the field of image processing and also is a hotspot and focus of image processing techniques. Several general-purpose algorithms and techniques have been developed for image segmentation. Since there is no general solution to the image segmentation problem, these techniques often have to be combined with domain knowledge in order to effectively solve an image segmentation problem for a problem domain. This paper presents a comparative study of the basic Block-Based image segmentation techniques.

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Keywords: Image processing; Image segmentation; Image engineering; Image analysis; Image understanding.

(1) Introduction

Figure-ground segmentation referred as a target or foreground other part is called background is an important problem i.e., extract and separate them in order to identify and analyze object, in image processing [2, 3].

Segmentation is the process that subdivides an image into its constituent parts or objects [1...22]. The level to which this subdivision is carried out depends on the problem being solved, i.e., the segmentation should stop when the objects of interest in an application have

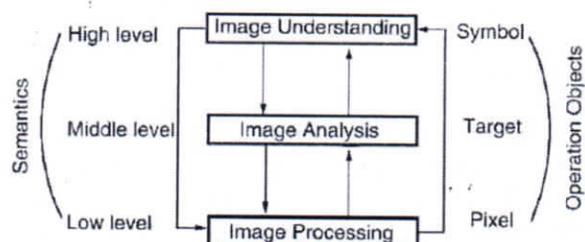


Fig.1 image engineering [3]

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Peer-review under responsibility of Universal Society for Applied

Research doi:10.1016/j.procs.2014.09.027

Embedded Patient Monitoring System

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Abstract

ICU stands for Intensive Care Unit, a place in the hospital where patients are monitored very closely. Typically, the patient-staff ratio is very low and the LIFE-SAVING EQUIPMENT used is very advanced. Generally ICU is a hospital facility for provision of intensive nursing and medical care of critically ill patients, characterized by high quality and quantity of continuous nursing and medical supervision and by use of sophisticated monitoring and resuscitative equipment. The patients in the ICU need a constant monitoring of their temperature and heart beat. This paper presents a working model, which incorporates sensors to measure important parameters namely the temperature, respiratory temperature and heart beat. The sensors are interfaced to a microcontroller, so that the condition of a patient can be analyzed by doctors in any part of the hospital wherever they are.

Whenever there is an abnormality felt by the patient, the particular patient will give an alarm signal, by which the doctor can rush to the patient. Even when the patient is in an unconscious condition, all the parameters will be sensed and doctor will be cautioned.

This is a working model which incorporates sensors to measure parameters like heart beat and temperature. The patient condition can be analyzed by doctors in LCD. - Thus it reduces doctor's workload and also gives more accurate results.

This system also incorporates a monitoring system which gives an alarm when the saline bottle is about to empty.

1. Introduction

This is a wireless technique to transmit information between sensors and monitoring control center. The free space of patients is enlarged, and the efficiency of the modern management of hospitals is

improved. The core of wireless medical monitoring system is the design of wireless monitoring terminal, and the development of system software.

The monitoring terminal generally consists of three modules: the sensor module, the control module, and the wireless communication module. The sensor module is used for acquiring patient's physical conditions like temperature and heart beat. These parameters are then converted into digital signals using Micro controller section. The control module compares the digital signals with the threshold values stored in the brain of monitoring terminal. If the digital values exceed the threshold values, this control module sends the information to the doctor. The wireless communication module mainly deals with the wireless transmission of information. This system detects and transmits heart beat rate and body temperature with high accuracy. If the parameters exceed the threshold levels, it alerts doctor immediately using GSM modem.

2. Overview of the System

The system uses AT-Mega Micro controller, the temperature sensor LM35, and the heart beat sensor LM385 as the principal parts. The temperature sensor and the heart beat sensors send the patient's physical conditions as analog signals. These analog signals are taken by the Micro controller and its in-built ADC converts these analog signals into digital information and the results are displayed on LCD screen and simultaneously to the GSM modem which are interfaced with the Micro controller. Then the GSM modem gives the information to the respective doctor.



IJCAE, Vol.4 Issue 3, September 2013, 91-99

ISSN NO: 0988-0382E

RESEARCH ARTICLE

PERFORMANCE EVALUATION OF DFT-OFDM AND DWT OFDM IN THE PRESENCE OF HPA USING RAPP MODEL

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ABSTRACT

This paper investigates performance degradation of conventional Orthogonal Frequency Division Multiplexing (OFDM) and Discrete Wavelet Transform based OFDM (DWT-OFDM) systems when the signals are passed through a nonlinear High Power Amplifier (HPA). In the case of DWT-OFDM, several wavelets such as Daubechies, Symlet and Biorthogonal are evaluated. Simulation results show that DWT-OFDM – specifically Haar (db1) – is more robust against nonlinearity in comparison to DFT-OFDM. And To achieve more output power, transmission power should be increased, which in turn causes the HPA to operate in saturation region.

Optimum Design of Steel Moment Resisting Frames Subjected to Seismic Excitation

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Abstract: The main aim of this project is to develop an interior penalty function (IPF) based algorithm to multi-storey steel frames for minimum weight of frames. The frames are intended for resisting lateral sway due to seismic loading along with gravity forces. Many structural systems are used for resisting seismic (lateral) forces; however steel moment resisting frames (MRF) are considered for the present work. The design methodology incorporates codal provisions of IS 800-2007, thereby obtains the frames with optimum weight for in-plane moments with lateral support of beam elements. Strength and buckling criteria are considered as behaviour constraints along with side constraints in formulating optimization problem. A computer program is developed that uses an interior penalty function (IPF) for weight minimization of two-dimensional moment resisting steel framed structures. The program uses MATLAB, performs one dimensional search, and structural design in an iterative procedure. The design examples have shown that the proposed algorithm provides an efficient tool for the practicing structural engineers. The program is applied to 6 and 9 storey (4 bays) moment resisting frames (MRFs). The program demonstrated its capability of optimizing the weight of two medium size frames. To obtain member forces in frames an analysis procedure has to be applied. In the present work Equivalent Lateral Force procedure (ELF) and material nonlinear time history analysis (NTH) are applied and optimum values obtained from both the analyses are compared.

Keywords: Text detection, Inpainting, Morphological operations, Connected component labelling.

I. INTRODUCTION

Design of steel structures for seismic loads generally allows for structural damage during severe seismic events. The distinctive design objective is to limit material yielding to specific zone and to provide enough ductility in the system to prevent collapse of the structures under seismic loads. Such a design is achieved through moment resisting frames. Another design objective is to obtaining cost advantage, which is to be achieved by using appropriate optimization technique. In this study a new optimization technique is developed as per Indian code for design of steel structures incorporating with interior penalty function method. This technique is applied to steel building lateral force resisting frames; that is rigid beam-column connected frame system, called Moment Resisting Frames (MRF). A proper structural analysis procedure has to be selected to obtain design forces in structural elements of frames under consideration. American Society of Civil Engineering (ASCE 7-10) requires the proper structural analysis method is selected from different procedures. The present work uses Equivalent Lateral Force (ELF) Procedure to analyse frames under consideration. Tremblay et al. (2006). This symmetric hysteretic behaviour provides improved ductility over traditional braces and moment resisting frames (MRFs) which are limited by poor post-buckling resistance to compressive loads.

The present work develops a new optimization technique considering post-buckling yield strength of material. The developed technique is applied to moment resisting frames (MRFs). These are conventional vertical frame systems in which the frames resist 100% of the required seismic force and are not enclosed or adjoined by components (that are more rigid and will prevent the frames from deflection) when subjected to seismic forces.

A STATISTICAL MODEL FOR GIST GENERATION: A CASE STUDY ON HINDI NEWS ARTICLE

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ABSTRACT

Every day, huge number of news articles are reported and disseminated on the Internet. By generating gist of an article, reader can go through the main topics instead of reading the whole article as it takes much time for reader to read the entire content of the article. An ideal system would understand the document and generate the appropriate theme(s) directly from the results of the understanding. In the absence of natural language understanding system, it is required to design an appropriate system. Gist generation is a difficult task because it requires both maximizing text content in short summary and maintains grammaticality of the text. In this paper we present a statistical approach to generate a gist of a Hindi news article. The experimental results are evaluated using the standard measures such as precision, recall and F1 measure for different statistical models and their combination on the article before pre-processing and after pre-processing.

KEYWORDS

Natural language understanding, precision, recall, F1 measure, sentence selection model, text model, informative word selection model, statistical model.

1. INTRODUCTION

In today the people are being exposed to more information available on the Internet, to select about what to read and what not to read or skip. The selection of information would be done based on two points; namely; Keywords and Bullet points. Based on this, a user can decide that whether a document to read, to skip or to scan. As explained in [1], gist is used to give the reader a sense (s) of what to expect from the following text in terms of form and content. Additionally, gist work as "intellectual and aesthetic controls [1]" by attracting the attention of the reader, and keeping them focused on the main theme(s).

It is unfortunate that automatic generation of themes has been a neglected issue in the field of text processing. Over the past decades, text processing studies have addressed many issues in text analysis, such as text categorization, automatic indexing, automatic abstracting, but automatic theme generation did not receive enough attention, even though it is strongly related to the above studies. The objective behind automatic indexing, automatic, abstracting and automatic gist

PTEA algorithm for Wireless P2P Networks in the presence of cooperative cache

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Abstract— *Improving the performance of p2p networks such as Ad Hoc networks and Mesh Networks is nontrivial. Many algorithms proposed to improve the performance of Ad Hoc networks in the presence of cooperative cache. We propose a novel dynamic algorithm to improve asymmetric cooperative cache, where the data requests are transmitted to the cache layer on every node, but the data replies are only transmitted to the cache layer at the intermediate nodes that need to cache the data. Novel algorithm 'PTEA' Which Efficiently calculates the Optimized path between nodes in network and determines the optimized node to Cache the data.*

Keywords— Ad Hoc Networking, Cooperative Caching, PTEA.

1. INTRODUCTION

Ad Hoc network is an autonomous system of mobile hosts connected by wireless links, the union of which forms a communication network modelled in the form an arbitrary communication graph. A MANET environment is characterised by energy-limited nodes, bandwidth-constrained, variable-capacity wireless links and dynamic topology, leading to frequent and unpredictable connectivity changes. The main aim of our work is to reduce the overhead of node calculation as they are energy-limited and Bandwidth Constrained.

If the nodes in the networks are able to cooperative with each to cache and share the data then power can be saved and bandwidth can be utilized properly. For example, in a battlefield, a wireless P2P network may consist of several commanding officers and a group of soldiers. Each officer has a relatively powerful data center, and the soldiers need to access the data centers to get various data such as the detailed geographic information, enemy information, and new commands. The neighbouring soldiers tend to have similar missions and thus share common interests. If one soldier has accessed a data item from the data center, it is quite possible that nearby soldiers access the same data some time later. Cooperative Caching has implemented in [2],[6],[8],[11] which allow sharing and coordination of cached data among multiple nodes. But these [2], [6], [8], [11] did not specify the efficient bandwidth utilization.

There have been many implementations of wireless ad hoc routing protocols. In [3], Royer and Perkins suggested modifications to existing kernel code to implement AODV. In [10], the authors explored several system issues regarding the design and implementation of routing protocols for ad hoc networks. Dynamic Source routing (DSR) [4] implemented by Monarch project in FreeBSD. This implementation was entirely in the kernel and made extensive modification in the kernel IP packet. However none of them looked into bandwidth utilization and route discovery in the presence of cooperative cache. Security is extremely important for the deployment of a Mobile Ad-hoc Networks (MANET) due to its openness to attackers, the absence of an infrastructure, and the lack of centralized administration. Most research efforts have been focused on secure routing protocols [7]. Secure auto configuration and public-key distribution [1], namely the SAPKD scheme in this paper. It guarantees the uniqueness of IP address allocation. At the same time, it distributes the public key of the new node to all (or most) members in the MANET. In the ideal situation, all the nodes will receive the binding of the public key and IP address from the new node.

Although cooperative caching has been implemented by many researchers [5], [9], these implementations are in the web environment, and all these implementations are at the system level. As a result, none of them deals with on-demand nature of the ad hoc routing protocols. To realize the benefit of cooperative cache [2], intermediate nodes along the path need to check every passing by packet to see if the cached data match the data request.

We study the traffic and utilization of band width between the nodes in the presence of cooperative cache. Since in the MANET environment Nodes are free to move arbitrarily with different speeds; thus, the network topology may change randomly and at unpredictable times. So it is effective to have alternative paths from source to destination. When a data request comes to the data center then the data center selects the optimized route to the source and finds the optimized node along the path to cache the data to server further requests.

A Novel Incremental Information Extraction Using Parse Tree Query Language And Parse Tree Databases

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Abstract: — Mining is nothing but retrieving the information from various resources. We have different approaches to retrieve these information one of them is traditional pipeline approach. As of increasing technologies it became more complicated to workout with these traditional approach the main drawback in these pipeline approach is if any modifications are done or any module is developed newly then we have to reapply the extraction. So we are developing the different approach for data mining in this paper is through database queries. These are optimized by databases that make this as efficient approach.

Index Terms: Text mining, query languages, information storage and retrieval.

I. INTRODUCTION

In this paper, we propose an effective and adjustable optimization of queries is critical in database management systems and the complexity involved in finding optimal solutions has led to the development of heuristic approaches. Answering data mining query involves a random search over large databases. Due to the enormity of the data set involved, model Simplification is necessary for quick answering of data mining queries. In this paper, we propose a hybrid model using rough sets and genetic algorithms for fast and efficient query answering. Rough sets are used to classify and summarize the datasets, whereas genetic algorithms are used for answering association related queries and feedback for adaptive classification. Here, we consider three types of queries, i.e., select, aggregate and classification based data mining queries. The field of information extraction (IE) seeks to develop methods for fetching structured information from

natural language text. Examples of structured information are the extraction of entities and relationships between entities. IE is typically seen as a one-time process for the extraction of a particular kind of relationships of interest from a document collection. IE is usually deployed as a pipeline of special-purpose programs, which include sentence splitters, tokenizers, named entity recognizers, shallow or deep syntactic parsers, and extraction based on a collection of the development of frameworks such as UIMA and GATE, providing a way to perform extraction by defining workflows of components. This type of extraction frameworks is usually file based and the processed data can be utilized between components. In this traditional setting, relational databases are typically not involved in the extraction process, but are only used for storing the extracted relationships. While file-based frameworks are suitable for one-time extraction, it is important to notice that there are cases when IE has to be performed repeatedly even on the same document collection. Consider a scenario where a named entity recognition component is deployed with an updated ontology or an improved model based on statistical learning. Typical extraction frameworks would require the reprocessing of the entire corpus with the improved identity recognition component as well as the other unchanged text processing components. Such reprocessing can be computationally intensive and should be minimized. For instance, a full processing for information extraction on 17 million Medline abstracts took more than 36 K hours of CPU time using a Single-core CPU with 2-GHz and 2GB of RAM. Work by, addresses the needs for efficient extraction of evolving text such as the frequent content updates of web documents but

Load Balancer Scheduling Over Streaming Data in Federated Databases

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Abstract

The project includes a streaming data warehouse update problem as a scheduling problem where jobs correspond to the process that load new data into tables and the objective is to minimize data staleness over time. The proposed scheduling framework that handles the complications encountered by a stream warehouse: view hierarchies and priorities, data consistency, inability to pre-empt updates, heterogeneity of update jobs caused by different inter arrival times and data volumes among different sources and transient overload. Update scheduling in streaming data warehouses which combine the features of traditional data warehouses and data stream systems. The need for on-line warehouse refreshment introduces several challenges in the implementation of data warehouse transformations, with respect to their Execution time and their overhead to the warehouse processes. The problem with this approach is that new data may arrive on multiple streams, but there is no mechanism for limiting the number of tables that can be updated simultaneously.

Keywords: Online Scheduling, Data Warehouse, Data Modules, Web Database.

1. Introduction

Data mining is the process of analyzing data from different perspectives and summarizing it into useful information that can be used to increase revenue, cuts costs, or both. Data mining software is one of a number of analytical tools for analyzing data. It allows users to analyze data from many different dimensions or angles, categorize it, and summarize the relationships identified. Technically, data mining is the process of finding correlations or patterns among dozens of fields in large relational databases. Traditional data warehouses are updated during downtimes and store layers of complex materialized views over terabytes of

historical data. On the other hand, Data Stream Management Systems (DSMS) support simple analyses on recently arrived data in real time. Streaming warehouses such as Data Depot combine the features of these two systems by maintaining a unified view of current and historical data. This enables a real-time decision support for business-critical applications that receive streams of append-only data from external sources.

Applications include:

- Online stock trading, where recent transactions generated by multiple stock exchanges are compared against historical trends in nearly real time to identify profit opportunities;
- Credit card or telephone fraud detection, where streams of point-of-sale transactions or call details are collected in nearly real time and compared with past customer behavior;
- Network data warehouses maintained by Internet Service Providers (ISPs), which collect various system logs and traffic summaries to monitor network performance and detect network attacks.

A load balancer can be used to increase the capacity of a server farm beyond that of a single server. It can also allow the service to continue even in the face of server down time due to server failure or server maintenance. A load balancer consists of a virtual server which, in turn, consists of an IP Address and port. This virtual server is bound to a number of physical services running on the physical servers in a server farm. A client sends a request to the virtual server, which in turn selects a physical server in the server farm and directs this request to the selected physical server. Load balancers are sometimes referred to as "directors"; while originally a marketing name chosen by various companies, it also reflects the load balancer's role in managing connections between clients and servers. We then propose a scheduling framework that handles the complications encountered by a stream warehouse: view hierarchies and priorities, data consistency,



ISSN 22773061

E-Library using the Mobile OPAC

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ABSTRACT

In the today's Communication world, mobile and its applications are the most emerging trends. Mobile applications are the exact replacements of web based applications. Based on this statistics we are planning to migrate web based application of college library to mobile application.

In most of the college website we see applications like latest news, Attendance, Login and Registrations, EBooks, Forums, Results, Chat application, Web Mail, etc.. Based on the same we would do the same thing in a mobile application. The reason behind the work is that the mobile applications do not need any third party browsers, or they don't need any domain registration. So in order to take the advantages of all this limitations we are planning to develop the mobile applications. Now the main important modules that I want to implement on my mobile application is OPAC (Online Public Access Catalogue) for a library account.

Using OPAC mechanism in mobile one can just access the library account of his/her from anywhere using his mobile device, So that they can check the availability of books in the library instead of going to library. They can even check the number of books that are taken in their account and its submission date, fine to be paid in case.

KEY TERMS

Mobile application, Web Application, OPAC Systems, Information retrieval.

Council for Innovative Research

Peer Review Research Publishing System

Journal: INTERNATIONAL JOURNAL OF COMPUTERS & TECHNOLOGY

Vol 10, No 5

editor@cirworld.com

www.cirworld.com, member.cirworld.com

The Study of Heat Generation and Viscous Dissipation on Mhd Heat And Mass Diffusion Flow Past A Surface

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Abstract: The present work is devoted to the numerical study of magneto hydrodynamic (MHD) natural convection flow of heat and mass transfer past a plate taking into account viscous dissipation and internal heat generation. The governing equations and the associated boundary conditions for this analysis are made non dimensional forms using a set of dimensionless variables. Thus, the non dimensional governing equations are solved numerically using finite difference method Crank-Nicolson's scheme. Numerical outcomes are found for different values of the magnetic parameter, Modified Grashof number, Prandtl number, Eckert number, heat generation parameter and Schmidt number for the velocity and the temperature within the boundary layer as well as the skin friction coefficients and the rate of heat and mass transfer along the surface. Results are presented graphically with detailed discussion.

Key Words: MHD, heat generation, free convection, viscous dissipation, finite difference method.

I. Introduction

The buoyancy force induced by density differences in a fluid causes natural convection. Natural convection flows are frequently encountered in physical and engineering problems such as chemical catalytic reactors, nuclear waste materials etc. Transient free convection is important in many practical applications, such as furnaces electronic components, solar collectors, thermal regulation process, security of energy systems etc. when a conductive fluid moves through a magnetic field and an ionized gas is electrically conductive, the fluid may be influenced by the magnetic field. Magnetohydrodynamic free convection heat transfer flow is of considerable interest in the technical field due to its frequent occurrence in industrial technology and geothermal application, liquid metal fluids and MHD power generation systems etc. The change in wall temperature causing the free convection flow could be a sudden or a periodic one, leading to a variation in the flow. In nuclear engineering, cooling of medium is more important safety point of view and during this cooling process the plate temperature starts oscillating about a non-zero constant mean temperature. Further, oscillatory flow has applications in industrial and aerospace engineering. Viscous mechanical dissipation effects are important in geophysical flows and also in certain industrial operations and are usually characterized by the Eckert number. Many practical heat transfer applications involve the conversion of some form of mechanical, electrical, nuclear, or chemical energy to thermal energy in the medium. Such mediums are said to involve internal heat generation. For example, a large amount of heat is generated in the fuel elements from atomic reactors as a result of atomic fission that serves as the heat source for the nuclear power plants. The heat generated in the sun as a result of fusion of hydrogen into helium makes the sun a large nuclear reactor that supplies heat to the earth. Possible heat generation effects may modify temperature distribution and, therefore, the particle deposition rate.

In the literature, extensive research work is available to examine the effect of natural convection on flow past a plate. Examples of this include Vedhanayagam et.al. [1], Kolar et. al. [2] and Li et. al. [3]. Transient free convection flow past an isothermal vertical plate was first reported by Siegel [4] using an integral method. The experimental confirmation of these results was discussed by Goldstein et. al. [5]. A review of transient natural convection presented by Raithby et.al [6] wherein a large number of papers on this topic were reviewed. In this review, the meaning of transient convection has been explained systematically. They have defined the conduction regime and the steady state regime and that which lies between these two regimes as the transient regime. Other studies dealing with transient natural convection are by Das et.al. [7] and Saeid [8]. Simultaneous heat and mass transfer in laminar free convection boundary layer flows over surface can be found in Lin et. al. [9] and Mongruel et.al. [10].

Fewer studies have been carried out to investigate the magnetohydrodynamic free convection flow in the presence of viscous dissipation. In all the investigations mentioned above, viscous mechanical dissipation is neglected. A number of authors have considered viscous heating effects on Newtonian flows. Isreal-Cookey et.al. [11] investigated the influence of viscous dissipation and radiation on unsteady MHD free convection flow

RESEARCH ARTICLE

OPEN ACCESS

Mhd Free Convection Flow Of Dissipative Fluid Past An Exponentially Accelerated Vertical Plate

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ABSTRACT

Aim of the paper is to investigate the hydromagnetic effects on the unsteady free convection flow, heat and mass transfer characteristics in a viscous, incompressible and electrically conducting fluid past an exponentially accelerated vertical plate by taking into account the heat due to viscous dissipation. The problem is governed by coupled non-linear partial differential equations. The dimensionless equations of the problem have been solved numerically by the unconditionally stable finite difference method of Dufort – Frankel's type. The effects of governing parameters on the flow variables are discussed quantitatively with the aid of graphs for the flow field, temperature field, concentration field, skin-friction, Nusselt number and Sherwood number.

Key words: MHD, free convection, viscous dissipation, finite difference method, exponentially accelerated plate, variable temperature and concentration.

I. INTRODUCTION

Free convection flow involving coupled heat and mass transfer occurs frequently in nature and in industrial processes. A few representative fields of interest in which combined heat and mass transfer plays an important role are designing chemical processing equipment, formation and dispersion of fog, distribution of temperature and moisture over agricultural fields and groves of fruit trees, crop damage due to freezing, and environmental pollution. Hydromagnetic flows and heat transfer have become more important in recent years because of its varied applications in agricultural engineering and petroleum industries. Recently, considerable attention has also been focused on new applications of magneto-hydrodynamics (MHD) and heat transfer such as metallurgical processing. Melt refining involves magnetic field applications to control excessive heat transfer rate. Other applications of MHD heat transfer include MHD generators, plasma propulsion in astronautics, nuclear reactor thermal dynamics and ionized-geothermal energy systems.

Pop and Soundalgekar [1] have investigated the free convection flow past an accelerated infinite plate. Singh and Soundalgekar [2] have investigated the problem of transient free convection in cold water past an infinite vertical porous plate. An excellent summary of applications can be found in Hughes and Young [3]. Takar et al. [4] analyzed the radiation effects on MHD free convection flow past a semi-infinite vertical plate using Runge-Kutta-Merson quadrature. Samria et al. [5] studied the hydromagnetic free convection laminar flow of an

elasto-viscous fluid past an infinite plate. Recently the natural convection flow of a conducting visco-elastic liquid between two heated vertical plates under the influence of transverse magnetic field has been studied by Sreehari Reddy et al. [6].

In all these investigations, the viscous dissipation is neglected. The viscous dissipation heat in the natural convective flow is important, when the flow field is of extreme size or at low temperature or in high gravitational field. Such effects are also important in geophysical flows and also in certain industrial operations and are usually characterized by the Eckert number. A number of authors have considered viscous heating effects on Newtonian flows. Israel-Cookey et al. [7] investigated the influence of viscous dissipation and radiation on unsteady MHD free convection flow past an infinite heated vertical plate in a porous medium with time dependent suction. Zueco Jordan [8] used network simulation method (NSM) to study the effects of viscous dissipation and radiation on unsteady MHD free convection flow past a vertical porous plate. Suneetha et al. [9] have analyzed the effects of viscous dissipation and thermal radiation on hydromagnetic free convection flow past an impulsively started vertical plate. Hitesh Kumar [10] has studied the boundary layer steady flow and radiative heat transfer of a viscous incompressible fluid due to a stretching plate with viscous dissipation effect in the presence of a transverse magnetic field. Recently The effects of radiation on unsteady MHD free convection flow of a viscous incompressible electrically conducting fluid past an

Algorithm for Clustering with Intrusion Detection Using Modified and Hashed K – Means Algorithms

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Abstract. The k-Means clustering algorithm partition a dataset into meaningful patterns. Intrusion Detection System detects malicious attacks which generally include theft information. It can be found from the studies that clustering based intrusion detection methods may be helpful in detecting unknown attack patterns compared to traditional intrusion detection systems. This paper presents modified k-Means by applying preprocessing and normalization steps. As a result the effectiveness is improved and it overcomes the shortcomings of k-Means. This approach is proposed to work on network intrusion data and the algorithm is experimented with KDD99 dataset and found satisfactory results.

Keywords: Intrusion Detection System, K-Means clustering Algorithm, AIM.

1 Introduction

The collection of a set of similar data objects with respect to a particular (set of) characteristic(s) is said to be a cluster. Cluster Analysis is the name given to a diverse collection of techniques that can be used to classify objects. The classification has the effect of reducing the dimensionality of a data. It is a statistical technique given by US Psychologist Robert Choate Tyron (1935). Cluster analysis identifies and classifies individual objects or variables on the basis of the similarity of the characteristics they possess. It seeks to minimize within-group variance and maximize between-group variance. The result of cluster analysis is a number of heterogeneous groups with homogeneous contents: There are substantial differences between the groups, but the individuals within a single group are as similar as possible. Various clustering algorithms have been designed for various data mining problems.

The K-means algorithm was proposed by Mac Queen in 1967. Modified k-means is given by Alsabti (1998). In k-means, partition the items into k initial clusters, randomly take a set of k- vectors each consisting of p- components as initial centroids, then compute the distance between each object and the k-vectors determined and assign them to the cluster corresponding to minimum distance. Proceed through the list of items assigning an item to the cluster whose centroid is nearest. Recompute the cluster centroids until the cluster centroids stabilize upto a desired level of approximation.



Power Reduction in OFDM based Cognitive Radio Systems

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Abstract— The increasing demand for wireless communication introduces efficient spectrum utilization challenge. To address this challenge, cognitive radio has emerged as the key technology, which enables opportunistic access to the spectrum. The main potential advantages introduced by cognitive radio are improving spectrum utilization and increasing communication quality. In this paper, we consider the high peak-to-average power ratio (PAPR) problem of orthogonal frequency division multiplexing (OFDM) signals in cognitive radio systems. A high PAPR can lead to saturation in the power amplifier (PA) of secondary users (SUs) and consequently increase spectral spreading, and cause interference to adjacent primary users (PUs). Simulation results illustrates the performance of the system under Additive White Gaussian Noise (AWGN) and further evaluation is done for comparing the proposed companding technique with previous techniques. The power spectral density (PSD) and bit error rate (BER) are evaluated at the output of the nonlinear PAs to provide a realistic performance comparison.

Keywords- Cognitive radio; Orthogonal frequency division multiplexing; Additive White Gaussian Noise.

I. INTRODUCTION

Orthogonal Frequency Division Multiplexing (OFDM) has significant ability to support high data rates for wide area coverage, robustness to multipath fading, immunity to impulse interference [1,2]. Due to the rapid development of wireless communications in recent years, the demand on wireless spectrum has been growing dramatically, resulting in the spectrum scarcity problem. Works have shown that the fixed spectrum allocation policy commonly adopted today suffer from the low spectrum utilization problem. However one of the major drawbacks of OFDM signal is its large envelope fluctuation, likely resulting in large peak-to average power ratio (PAPR), which distorts the signal if the transmitter contains the non-linear components such as power amplifiers and these may causes deficiencies such as inter modulation, spectral spreading and change in signal constellation. Cognitive radio, with the capability to flexibly adapt its parameters, has been proposed as the enabling technology for unlicensed secondary users to dynamically access the licensed spectrum owned by legacy primary users on a negotiated or an opportunistic basis.

The paper is organized as follows: the PAPR problem in OFDM is briefly reviewed in section II. Section III, presents

OFDM based CR to reduce the PAPR. In Section IV, the performance of proposed algorithm is compared with existing techniques. In Section V, we conclude.

II. PAPR IN OFDM

Let $X(0), X(1), \dots, X(N-1)$ represent the data sequence to be transmitted in an OFDM symbol with N subcarriers. The basic OFDM transmitter and receiver are shown in fig.1. The baseband representation of the OFDM symbol is given by:

$$x(t) = \frac{1}{\sqrt{N}} \sum_{n=0}^{N-1} X(n) e^{j2\pi n t / N}, 0 \leq t \leq T \quad (1)$$

where $x(t)$ is OFDM symbol at time t , T is the duration of the OFDM symbol.

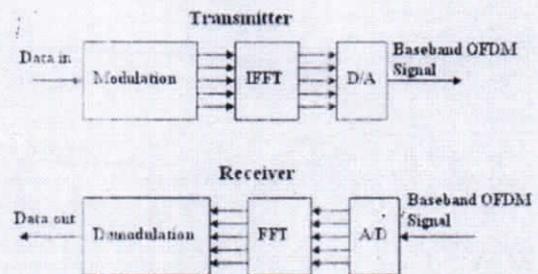


Figure 1. Basic OFDM Transmitter and Receiver

The input information symbols are assumed to be statistically independent and identically distributed, According to the central limit theorem, when N is large, both the real and imaginary parts of $x(t)$ becomes Gaussian distribution, each with zero mean and a variance of $E[|x(t)|^2]/2$, The amplitude, or modulus, of OFDM signal is given by

$$x_r = \sqrt{\text{Re}^2\{x_r\} + \text{Im}^2\{x_r\}} \quad (2)$$

The power of OFDM signal can be calculated as

$$|x_r|^2 = \frac{1}{N} \sum_{m=0}^{N-1} \sum_{k=0}^{N-1} X_m X_k \frac{\exp(j2\pi(m-k)t)}{N} \quad (3)$$

Improvement of Pull-in Voltage for RF MEMS Switch Based on NiTi Actuator

V. Prithvirajan, P. Venkata Krishnan, A. Punitha

Abstract – This paper presents the design and RF characterization of low voltage series Micro-Electro Mechanical (MEMS) switch using Shape Memory Alloy (SMA). Nitinol (NiTi) was used as SMA material in this work for its thermo mechanical properties of super elasticity and shape memory effect. The simulation result shows that the use of a SMA beam to actuate switching allows the excitation voltage to be relatively much lower compared to that needed for electrostatic actuation. The displacement versus voltage characteristics was obtained using Intellisuite software. The RF performance of the switch was carried out using Ansoft High Frequency Structural Simulator (HFSS) and electrostatic analysis was done using Intellisuite. The RF Performance of the switch results in an insertion loss of -0.0002dB and an isolation of -25.78dB. The pull down voltage has been reduced into 6V and switching speed is 10.71μs.

Keywords – MEMS, RF Switch, SMA, NiTi (Nitinol), INTELLISUITE.

I. INTRODUCTION

MEMS have been identified as the most significant enabling technologies in developing miniaturized, low-cost and low-energy RF components and systems [1]. Radio-Frequency (RF) Micro-electromechanical system (MEMS) has the potential to provide a major impact on existing RF architectures in sensor (radar) and communications by reducing weight, cost, size and power dissipation [2-3]. Key MEMS devices for current RF architectures are switches in radar systems and filter in communication systems. The literature shows more than 32 different types of RF MEMS with a variety of actuation mechanisms (electrostatic, magnetostatic, piezoelectric or thermal), and circuit implementation (shunt or series) [4]. Electrostatic actuation is the most used actuation scheme in RF MEMS [6-10]. The major disadvantage of this method is the high actuation voltage. The paper focuses on the design of RF MEMS switch using Shape Memory Alloy such as Nitinol (SMA). Shape memory alloys are thermally activated. Heating of SMA actuator is based on joule's heating effect and the voltage needed could be around 4 V, which makes it superior to the low driving voltage [5, 11]. In this paper SMA based RF MEMS series switch is proposed for RF applications. In section 2 a cantilever based SMA RF MEMS switch is presented. In section 3 electrostatic performance of the switch is discussed and section 4 presents the RF performance of the switch.

II. ACTUATION TECHNIQUES

An RF MEMS cantilever switch with SMA actuator is shown with different views in figure 1 to figure 3. Table 1 shows the dimensions of respective switch.

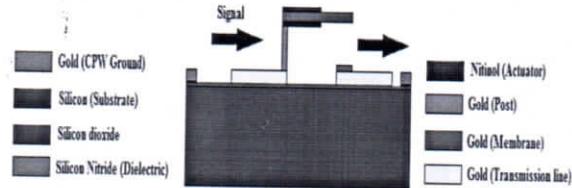


Fig.1. SMA actuated RF MEMS switch.

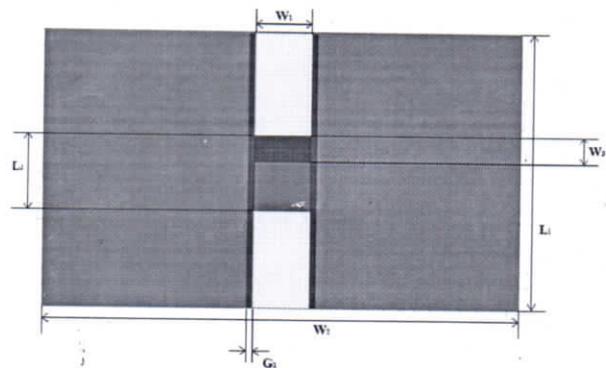


Fig.2. Top view of structure

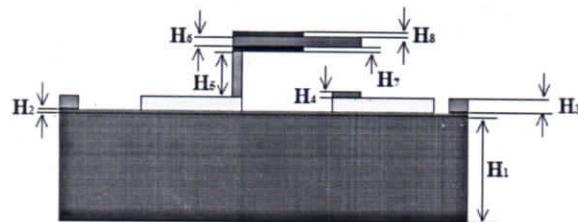


Fig.3. Cross sectional view

Table 1: Structural parameters of SMA actuated Cantilever based RF MEMS Switch

Name	Value(μm)	Name	Value(μm)
W1	180	H2	0.4
W2	1540	H3	2
W3	85	H4	0.2
L1	870	H5	3 (For upstate) 0.2 (For downstate)
L2	240	H6	2
G1	20	H7	0.1
H1	400	H8	0.1

The switch is of series type which basically consists of a free end cantilever Au beam and Nitinol pads [11]. We have chosen Nitinol as the SMA material in our model since it is the most used SMA material for actuation purposes. Two Nitinol pads are attached to the cantilever as shown in figure 1 to figure 3 Shows the cross sectional views of the switch with all the dimensions.



GLOBAL JOURNAL OF RESEARCHES IN ENGINEERING
ELECTRICAL AND ELECTRONICS ENGINEERING
Volume 13 Issue 11 Version 1.0 Year 2013
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4596 & Print ISSN: 0975-5861

Optimum Utilization of Spectrum Holes in Cognitive Radio Networks using Opportunistic Spectrum Band Allocation Policy for Handoff Prioritization

By Sudha Arvind, Dr. V. D. Mytri & Archana Hoskhande

Guru Nanak Dev Engineering College, India

Abstract - Two main problems in wireless communications are, limited available spectrum and inefficiency in the spectrum allocation policy. These problems lead to the blocking of both initial and hand-off calls. Cognitive radio (CR) offers solution by utilizing the spectrum holes in space without introducing an unacceptable fear of harmful interference for the primary user and also solves the spectrum inefficiency and spectrum scarcity problem. Spectrum allocation scheme is proposed in two phases. In the first phase, a collision between two calls for spectral band allocation is resolved. In second phase, spectral band allocation among a number of calls is considered. The main objective is to minimize the forced termination of hand-off calls and to achieve opportunistic spectrum channel allocation by assigning different priority levels to different calls.

Keywords : cognitive radio networks, wireless communication, spectrum allocation policy, hand-off.

GJRE-F Classification : FOR Code: 890405, 090699



Strictly as per the compliance and regulations of :



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Research Paper

A NEW ALGORITHM FOR JITTER CONTROL IN WIRELESS NETWORKS FOR QUALITY OF SERVICE

B Santosh Kumar^{1*}, D Sreekanth² and G Rajitha²

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In wireless networks Jitter is a quality of service parameter that has to be reduced at switches. The jitter is classified into two: Delay jitter and Rate Jitter. The Delay jitter bounds the maximum difference in the total delay of different packets whereas the Rate jitter bounds the difference in packet delivery rates at various times. The paper analyses two algorithms namely off-line and on-line algorithms and proposes a new algorithm for reducing the rate jitter at low buffer sizes. The new algorithm, tolerance based jitter control algorithm has been compared to on-line algorithm and proved that it gives a better performance than the on-line algorithm presented in.

Keywords: Rate jitter, Buffer size, Inter departure time, Process delay

INTRODUCTION

Jitter measures the variability of delay of packets in the given stream, which is an important property for many applications (for example, streaming real-time applications). Ideally, packets should be delivered in a perfectly periodic fashion; however, even if the source generates an evenly spaced stream, unavoidable jitter is introduced by the network due to the variable queuing and propagation delays, and packets arrive at the destination with a wide range of inter-arrival times. The jitter increases at switches along the path of a

connection due to many factors, such as conflicts with other packets wishing to use the same links, and non-deterministic propagation delay in the data-link layer. Jitter is quantified in two ways. One measure, called delay jitter, bounds the maximum difference in the total delay of different packets (assuming, without loss of generality, that the abstract source is perfectly periodic). This approach is useful in contexts such as interactive communication (e.g., voice and video tele-conferencing), where guarantees on the delay jitter can be translated to the maximum buffer size needed

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Power Reduction in OFDM based Cognitive Radio Systems

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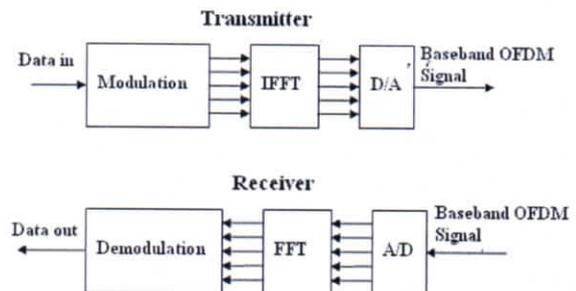


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Applications of Fiber Bragg Grating Sensors for Measuring Extreme High Temperatures

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Abstract: Fiber Bragg gratings have found many application in sensor systems, e.g. for temperature, strain measurements. Recently, high temperature stable gratings based on regeneration techniques and femtosecond infrared laser processing have shown promise for use in extreme environments such as high temperature, pressure or ionizing radiation. Such gratings are ideally suited for energy production applications where there is a requirement for advanced energy system instrumentation and controls that are operable in harsh environments. This paper will present the measuring of extreme high temperatures using FBG wave analyzer. Because of their small size, passive nature, immunity to electromagnetic interference, and capability to directly measure physical parameters such as temperature and strain, fiber Bragg grating sensors have developed beyond a laboratory curiosity and are becoming a mainstream sensing technology.

Keywords: fiber Bragg grating sensor, optical sensing, high environment sensing

INTRODUCTION

Sensing technologies based on optical fiber have several inherent advantages that make them attractive for a wide range of industrial sensing applications. They are typically small in size, passive, immune to Electromagnetic interference, resistant to harsh environments and have a capability to perform distributed sensing. Because of their telecommunication origins, fiber optic-based sensors can be easily integrated into large scale optical networks and communications systems.

Although developed initially for the telecommunications industry in the late 1990's, fiber Bragg gratings (FBGs) are increasingly being used in sensing applications and are enjoying widespread acceptance and use. The FBG is an optical filtering device that reflects light of a specific wavelength and is present within the core of an optical fiber waveguide. The wavelength of light that is reflected depends on the spacing of a periodic variation or modulation of the refractive index that is present within the fiber core. This grating structure acts as a band-rejection optical filter passing all wavelengths of light that are not in resonance with it and reflecting wavelengths that satisfy the Bragg condition of the

core index modulation. The Nobel Laureate Sir William Lawrence Bragg established the Bragg law in 1915, describing with a simple mathematical formula how X-Rays were diffracted from crystals. The Bragg condition, when applied to fiber Bragg gratings, states that the reflected wavelength of light from the grating is $\lambda_B = 2 n_{eff} \Lambda_G$ where n_{eff} is the effective refractive index seen by the light propagating down the fiber, and Λ_G is the period of the index modulation that makes up the grating. A diagram of an FBG is shown in Figure 1. Typically, the modulation of the core refractive index is created by photo imprinting a hologram in the photosensitive glass core of the fiber. Like a photographic film, the core of standard telecommunication optical fiber was found by researchers at the Communications Research Centre Canada to be photosensitive [1]. They found that Germanium, the element that is commonly used to raise the refractive index of silica in the core region of an optical fiber, when exposed to high intensity visible or ultraviolet (UV) light, further increased the core refractive index. By modulating the high intensity light along the length of the fiber core, a modulated change in the refractive index of the fiber core was realized. Typically, this spatial modulation of the writing beam is realized by transmitting the UV light through a special transmission diffraction grating that is precisely etched to null the transmitted zero order [2]. This diffraction grating is often referred to as a 'phase mask'. The light exiting the mask is mostly coupled into the resulting ± 1 orders. The interference of these transmitted orders causes a spatial modulation of the beam that is photo-imprinted along the length of the core of the optical fiber.

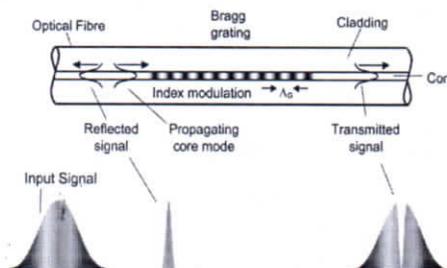


Fig1. Schematic diagram of an FBG having an index modulation of spacing λ_G inside a single-mode optical fiber

ANALYSIS OF PCG SIGNALS USING DAUBECHIES WAVELET FAMILY

By

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ABSTRACT

The authors have analyzed a Bio-medical system for normal and abnormal heart sound identification using Discrete Wavelet Transform (DWT) which is very useful in diagnosis of heart diseases. Due to the presence of sampling frequency components, the wavelets have a different decomposition level and therefore for better performance for a particular heart sound, DWT (Daubechies family) is applied up to 10 levels to extract the features for the individual heart signal. One dimensional feature extraction is obtained by evaluating the search parameters such as maximum energy, maximum variance, maximum entropy, and the analysis using these parameters provide best wavelet for determining suitable features of phonocardiogram (PCG) signals.

Keywords: Electrocardiogram (ECG), Phonocardiogram (PCG), Aortic Stenosis (AS), Aortic Regurgitation (AR), Mitral Stenosis (MS), Mitral r (MR), Discrete Wavelet Transform (DWT), Normal Heart Sound (NHS).

INTRODUCTION

The heart is one of the vital centers of human body. Deaths due to heart diseases have been ranked second worldwide, right after those from brain infarction. The relation between the volume, the pressure, and flow of the blood in the heart determine the opening and closing of cardiac valves. Normal heart sounds occur at closing of the valves (Santos, M.A.R. & Souza, M.N., 2001). The sounds, coming from flow of the blood inside the heart and vessels, are components of the heart sounds. Heart sounds and murmurs come in general from the movements of myocardial walls, opening and closing of valves, as well as from the flow of blood in and out of chambers. The sound emitted by a human heart during a single cardiac cycle consists of two dominant events, known as the first heart sound S1 and second heart sound S2. While S1 comes from closing of mitral and tricuspid valves, the S2 comes from closing of aortic and pulmonary valves. For the analysis of heart sounds, heart is divided into four regions namely mitral, tricuspid, pulmonary and aortic regions. The 3rd heart sound (S3) is heard in the mid diastole due to the blood that fills the ventricles. The 4th heart sound (S4), also known as atrial heart sound, occurs when the atrium contracts and pumps blood to the ventricles. S4 appears with a low energy and is almost never heard by the stethoscope. These regions are not the anatomical locations of the heart

valves, but the direction of blood flow through these valves. Comparing the sounds coming from each region with those coming from other regions, troubled region and reason for the related trouble are attempted to be identified. In this study, using heart sounds obtained from mitral and pulmonary regions, mitral stenosis and pulmonary stenosis diseases have been diagnosed. Abnormalities in the structure of the heart are mostly reflected in the heart sounds. In order to identify the abnormalities in the structure of the heart, physicians listen to mitral, tricuspid, pulmonary, and aortic sections. Nowadays, the most common method being used by physicians in diagnosing cardiac diseases is listening via stethoscope. Listening to the voices, coming from the cardiac valves via a stethoscope, upon the flow of the blood running in the heart, physicians examine whether there is any abnormality with regard to the heart. The required experience and skill are achieved as a result of the consultations made for long years (Say, O., Dokur, Z. & Olmez, T., 2002), (Debbal, S.R. & Bereksi-Reguig, F., 2008), (Debbal, S.R., Agzarian, J. & Abbott, D., (2001).

The major PCG clinical drawback is that it does not present information on frequency of heart sounds and their components. In this paper we address the PCG signals (Phonocardiogram) and different parameter for feature extraction of PCG signal. In recent years wavelet transform

PERFORMANCE ASSESSMENT FOR ALAMOUTI CODING TECHNIQUE FOR RAYLEIGH FADING CHANNEL

By

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ABSTRACT

In the Space-Time Coding (STC) which transmits and receives information at higher data rates with more reliability by using multiple antennas at both sides. In this paper, Multiple-Input-Multiple-Output (MIMO) systems with reduced complexity and the space-time block coding, for communication over Rayleigh fading channels using multiple transmit antennas have been considered. We have tested the performance of Alamouti coding technique for the Rayleigh channel. The signals on the transmit (Tx) antennas at one end and the receive (Rx) antennas at the other end are "combined" in such a way that the quality (bit-error rate or BER) or the data rate (bits/sec) of the communication for each MIMO user are improved. The simulation results are used to analyze and compare the performance.

Keywords: BER, MIMO System, Signal to Noise Ratio (SNR), STC.

INTRODUCTION

MULTI-antenna systems have recently gained a significant attention due to their ability to mitigate fading. Moreover, multi-antenna systems offer significant channel capacity gains. Space-Time Block Codes (STBCs) have been developed for such systems and space time coding to ensure reliable wireless communication over the fading multipath channel encountered by these systems. The space-time coding is a technique that exploits the combination of spatial and temporal diversity. Tarokh et al. (1998) presented a research work that was the very first implementation to derive performance criteria for designing such codes [1]. Next, Alamouti (1998) came up with a bright idea and put forward a linear block code for a MIMO system with two transmit and an optional number of receive antennas which could also achieve the maximum diversity order and due to its simple orthogonal structure, had a simple Maximum Likelihood (ML) decoding that required only linear processing at the receiver [2]. Despite its inferiority to space time trellis codes in performance, its linear decoding characteristic and ease of implementation placed it at the focal point of attention. This fundamental work was shortly consummated by Tarokh et al. (1999) where it was elegantly generalized the topic of

orthogonal space-time block codes for both real and complex constellations and for any number of transmit antennas [3]-[5]. The aim of the present work is to evaluate the performance of the STBCs for two transmit antennas and receive antennas.

Since 1998 with the idea of Space Time Coding, significant progress has been made in code design for achieving better diversity and code rate over multiple wireless communication channels. Space Time Coding (STC) system is one of the compromising scheme to meet the fast growing challenges for reliable and high data rate communication over Multiple Input Multiple Out (MIMO) channels. The design of different classes of STC codes was done for achieving maximum diversity and full rate. However to counter the problem of unfeasibility/ impracticability of having multiple receiver antennas at end users has put the researchers on work for alternates [2], [3]-[6]. It was shown that code rate cannot be greater than one. In fact even the maximum diversity and full rate codes do not exploit high efficiency. Such type of scheme outperforms to its counterpart STBC having multiple antennas at both transmitter and receiver, but in contrary it was shown that the decoding of such a scheme does not work well if the numbers of receiver antennas are less than

EFFICIENT FRACTAL IMAGE COMPRESSION USING PARALLEL ARCHITECTURE

By

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ABSTRACT

Digital representations of images usually require a very large number of bits. It is important to consider techniques for representing an image with fewer bits. In this context, we present a survey of Fractal image compression with parallel encoding scheme. The Fractal image compression (FIC) is a novel technique in the field of image compression that utilizes the existence of self symmetry of the image. The unique feature of the fractal image compression technique is its very good compression ratio, high decompression speed, high bit-rate and resolution independence. However, this technique of image compression requires large encoding time.

We propose a parallel computing architecture to reduce the computational cost that is associated with encoding phase. We have discussed fractal image compression, Iterative function system and different encoding schemes along with their reviews. We have also suggested the concept of parallelization to be applied in compression methods for efficient implementation.

Keyword: Fractal Image Compression, Iterative Function System, Java Parallel Processing Frame Work etc.

INTRODUCTION

In the present scenario, the necessity for the storage and transmission of large numbers of high quality images is increasing, it is important to consider techniques for representing an image with less size. By eliminating redundant or unnecessary information from the digital image we can achieved better image compression. Image compressions techniques have been applied in several areas of image and video processing such as TV transmission, video conferencing, portable video telecommunication and mobile based web communication.

The choice of compression algorithm involves several conflicting considerations. These include degree of compression, speed of operation and size of compressed file versus quality of decompressed image. The digital image compression can be classified as lossless and lossy image compression. Lossless compression works by reducing the redundancy in the image. The decompressed image is an exact copy of the original, without any loss. The example of lossless compression algorithms includes Huffman Encoding. Lossy compression

sacrifices exact reproduction of image for better compression. It removes redundancy and creates an approximation of the original image. The JPEG standard is currently the most popular method of lossy image compression. Fractal image compression is also a lossy image compression method [1].

The French mathematician Benoit B. Mandelbrot first coined the term fractal in 1975. He derived the word from the Latin fractus, which means "broken", or "irregular and fragmented". The Fractal image compression techniques were proposed by Barnsley et al. (1988) as a compression method [1] for binary images, and applied to gray-scale images [2,3].

Liu et al. (2005) implemented parallel fractal image compression. they included the iterated function system theory and reviews the different techniques that can be applied in parallelize the compression algorithm [4]. Ching et al. (2006) proposed fractal image compression technique is improved with TIES (Two pass Improved Encoding Scheme). Their proposed algorithm is a two-pass scheme, whereby the first-pass involves extracting the domain pool (as in the original FIC algorithm), and

SEGMENTATION OF BRAIN MRI IMAGES FOR TUMOR DETECTION BY OPTIMIZING C-MEANS CLUSTERING METHOD

By

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ABSTRACT

Magnetic Resonance Imaging (MRI) is one of the best technologies currently being used for diagnosing brain tumor. Tumor detection and segmentation from MRI image is very important in medical imaging but apart from time taken in diagnosis accuracy of detection is also poor. For segmentation of medical images, clustering techniques such as kmeans and c-means clustering methods are widely used. The authors have implemented c-means clustering method and optimized its performance by using genetics algorithm. The combined approach resulted in improvement of segmentation efficiency and higher value of true positive pixels belonging to tumor region.

Keywords: MRI, Brain Tumor, Segmentation, C-Means Clustering, Genetic Algorithm.

INTRODUCTION

The incidence of brain tumors is increasing rapidly, particularly in the older population as compared to younger population. Brain tumor is a group of abnormal cells that grows inside the brain or around the brain. Tumors can directly destroy all healthy brain cells. It can also indirectly damage healthy cells by crowding other parts of the brain and causing inflammation, brain swelling and pressure within the skull. MRI is the noninvasive and very much sensitive imaging test of the brain in routine clinical practice. Magnetic Resonance Imaging (MRI) is a noninvasive medical test that helps physicians to diagnose and treat medical conditions [1, 2]. MR imaging uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of organs, soft tissues, bone and virtually all other internal body structures. It does not use ionizing radiation (x-rays) and provides detailed pictures of brain and nerve tissues in multiple planes without obstruction by overlying bones. MR imaging also provides clear images of the brain stem and posterior brain, which are difficult to view on a CT scan. Brain tumor segmentation is a recent research in field of biomedical application which is the process of partitioning an image into different clusters [3]. The goal of image segmentation is a domain independent decomposition of an image into distinct regions such as color, intensity, brightness, textures etc. An important step in segmentation is to extract the by

region of area in which they are interested in. Clustering is a technique which classifies patterns in such a way that true positive pixels of same group who actually belongs to cancer than false positive pixels who does not belong to tumor. A brain tumor, is any intracranial mass created by abnormal and uncontrolled cell division [4].

Brain tumors are classified into two main types as primary brain tumor and secondary brain tumor. An automated diagnosis system for brain tumor detection consists of multiple phases including noise removal, brain image segmentation and brain tumor extraction. This paper presents a fuzzy clustering approach combined with genetic algorithm and watershed algorithm for brain tumor detection. They extract tumor by using three phases, preprocessing and genetic algorithm combined with fuzzy clustering means with watershed algorithm and post processing.

1. Related Research

Various segmentation methods have been studied in the literature for improving the segmentation processes and for introducing maximum possible reliability, for example: Dr. M. Karnan et al (2010) proposed Image segmentation based on the Hybrid Parallel Ant Colony Optimization (HPACO) with Fuzzy C-Means (FCM) Algorithm to find out the optimum label that minimizes the Maximizing a Posterior (MAP) estimate to segment the image [4]. K. Selvanayaki et

LICENSE PLATE LOCALIZATION USING NOVEL RECURSIVE ALGORITHM AND PIXEL COUNT METHOD

By

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ABSTRACT

The detection of license plate location is the most important part of a vehicle license plate recognition process. This paper compares the performance of various methods for detecting license plate. We have introduced a novel recursive algorithm for labeling and finding the regions and detected the plate location on the basis of the pixel count method after calculating the area of the regions and removing those region that are not likely to be license plate. Experiment results give better performance and achieved up to 100 percent localization accuracy.

Keywords: Licence Plate, Novel Recursive Algorithm, Pixel Count Method.

INTRODUCTION

In recent years many research papers on Intelligent Transport System (ITS) have been reported. License Plate Recognition (LPR) is the key stage in ITS [1]. The LPR system based application provides access for entering car parking with the registered specification and time [2, 3] depots and restricted area which have necessary related security [4] and can also be applied in automating fuel filling system [5], traffic law enforcement [6], congestion pricing [7] and automatic toll collection [8]. The LPR system can be used in traffic control management for recognizing vehicles that violate traffic rules such as: entering restricted area without permission, occupying lanes reserved for public transport, crossing red light, breaking speed limits etc. Because of the above mentioned benefits, road transport department of Government of India proposed that all the vehicle's number plate should highly be secured with the national logo. The number plate should not be placed by the owner but by the transport department with permitted designed number plate. The numbering and character style should be uniform and no derivation can be allowed. By reviewing all the situations, the road transport department has taken a decision to implement a high security number plate which will be very soon in effect and will be applicable to all types of vehicles. High security number plate will be of aluminum made and the

plate size for two-wheelers and three-wheelers will be 200 mm length and 100 mm width. In cars, plate size will be 340 mm length and 200 mm width. In the similar manner in buses, trucks and heavy vehicles the plate size will be 500 mm length and 120 mm width. The color will be same as before and the numbers will be in black on white background. On the left hand side of plate 'IND' will be written which will be one fourth of number plate in size [9].

1. Literature Review

We have categorized the literature survey in accordance with the type of methods. Edge statistics, mathematical morphology based and block based LP (License Plate) detection methods reported as under.

The approaches work on four steps: vertical edge detection, edge statistics analysis, hierarchical based LP location and morphology based LP extraction. Finding an edge (vertical or horizontal) plays a vital role in LP detection algorithms. There are various edge detection techniques like sobel, canny, and Laplace presented in [10]. In the case of noisy images Sobel works well, canny is better than classic Laplacian while LOG works better than perwitt [11-16]. Analysis of edge statistics is done by various methods like gradient based, first order and second order derivatives, CCA (Connected Component based Analysis) and region with high edge magnitude and high edge variance. The calculation can also be

Mass Segmentation and Feature Extraction Mammographic Images of Breast Cancer in Computer Aided Diagnosis (CAD) System

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Abstract

Breast cancer is second leading cause of death among women in the world. Mammography is used as an effective tool for early detection and diagnosis of breast cancer. The most common breast abnormalities indicating breast cancer are masses and calcifications. The abnormalities can be defined with extensive range of features such as size, shape, texture and area. The features may be misinterpreted or overlooked by radiologists during mammographic screening due to short viewing time and large amount of data. Computer-aided diagnosis (CAD) algorithms are used to augment the diagnosis accuracy by the physicians. This paper attempts to improve the classification performance of shape and texture in analyzing ROI for mammographic images. An adaptive threshold approach is introduced to detect ROI by combining edge and region criteria. Performance of the proposed method is evaluated in terms of sensitivity and specificity. The sensitivity of the proposed method is 83.79% and specificity is 83.19% with accuracy of 83.48%. Size of affected mass or tumor is also calculated and classification stage of breast cancer is identified.

Keywords- Breast Cancer, Mass, CAD, Region of interest, Segmentation, Feature extraction.

Broad Area- Computer Engineering and Information Technology.

Sub-Area- Medical Image processing.

1. Introduction

Breast cancer cases are increasing for last few years in India as well as the world. The number of women who died of breast cancer every year has also been steadily rising. Despite the lower incidence of breast cancer in India than in the US, the number of women detected at an advanced stage

of breast cancer is higher here. This is due to lack of awareness among women for breast screening and examination [1]. Mammography is the procedure which uses low-dose X-rays to examine the human breast for identifying breast cancer or other abnormalities. For each patient that undergoes a mammogram, there is at least one X-ray image and one textual report written by a radiologist.

The radiologist interprets the features either seen or otherwise in medical images. If an abnormality or suspicious area is found, the patient may undergo a diagnostic mammogram or biopsy resulting in additional reports. Detection and diagnosis of breast cancer in its early stage increases the chances for successful treatment and complete recovery of the patient. Finding an accurate and efficient breast region segmentation technique still remains a challenging problem in digital mammography [2]. Masses do have different density (fat containing masses, low density and high density), different margins (circumscribed, micro-lobular, obscured, indistinct and speculated) and different shape (round, oval, lobular, irregular). Round and oval shaped masses with smooth and circumscribed margins which generally indicate benign changes. On the other hand, a malignant mass usually has a speculated, rough and blurry boundary [3]. Calcifications are deposits of calcium in breast tissue. Benign calcifications are usually larger and coarser with round and smooth contours. Malignant calcifications are clustered, small, varying in size and shape, angular, irregularly shaped and branching in orientation [4]. Masses appear as dense regions of different sizes and properties. Various types of masses are shown Fig 1. Depending on the morphology, the masses have dissimilar malignant property [5, 6]. The ill-defined and speculated borders have higher probability of malignancy as shown in Fig. 1. Fig. 2 shows various masses of different shapes and borders.

AADHAAR, an Example of Multimodal Biometrics: Deployment and Challenges

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Abstract

Biometrics deals with identification of persons exploiting unique biometric modalities or biometric traits for identification purposes; such as fingerprints, retina and iris patterns, faces, and many more. Biometrics utilizing single modality is called as unimodal biometrics. Multimodal biometric system utilizes more than one biometric modalities to improve the performance of biometric systems. AADHAAR cards, bearing a unique 12 digit number are issued to the citizens of India by Unique Identification Authority of India (UIDAI) with the objective of providing a unique identity to each citizen. On the basis of this number, a citizen can not only avail various schemes of Government of India but also use this number as an identity proof in banks, post offices, etc. AADHAAR card uses face, fingerprint and iris as biometric modalities and hence is an example of multimodal biometrics. Designing a unique identity number for a population of more than 1.2 billion people in India poses a number of challenges. This paper reports few major challenges in its usage, deployment and implementation. The paper suggests few recommendations that can greatly help the UIDAI initiatives in providing services to people of the country through AADHAAR cards.

Keywords- Biometrics, AADHAAR, Multimodal biometrics, UIDAI.

Broad Area- Information and Computer Technology.

Sub-Area- Digital Image Processing and Biometrics.

1. Introduction

The word **biometrics** is derived from the Greek words, *bios* and *metric* that mean life and measurement, respectively and therefore biometrics is used to recognize human beings by measuring various features of a person and comparing them. Biometrics deals with recognition of

individuals on the basis of their physical or behavioral characteristics. Biometric technologies are very important for identification and verification of persons and are used in various applications such as in law enforcement, health and social service activities, etc. Biometric technologies exploit unique biometric modalities or biometric traits for identification purposes. The traits considered for recognition include fingerprints, retina and iris patterns, facial features, hand geometry and many more. Unique characteristics of individuals are captured and then the unique identity is verified based on comparison of the record of biometric characteristics present in the database (Sinha et al., 2013). A very simple and commonly used example of biometrics can be seen in Figure 1 which illustrates biometric based attendance system. Few modalities of the individuals are recorded and stored in the template database after subjecting the biometric trait to suitable training process. At the time of testing, again the templates are generated and compared against the databases and the individual is authenticated and his/her attendance is monitored.

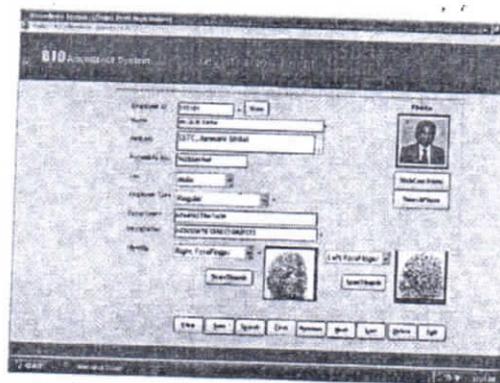


Figure 1. Simple biometric for Employee attendance system.

An extensive research survey of unimodal biometrics dealing with single biometric trait suggests that no single modality can provide a robust solution for biometric security. Therefore, a biometric system involving multiple



Power Reduction in OFDM based Cognitive Radio Systems

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Abstract— The increasing demand for wireless communication introduces efficient spectrum utilization challenge. To address this challenge, cognitive radio has emerged as the key technology, which enables opportunistic access to the spectrum. The main potential advantages introduced by cognitive radio are improving spectrum utilization and increasing communication quality. In this paper, we consider the high peak-to-average power ratio (PAPR) problem of orthogonal frequency division multiplexing (OFDM) signals in cognitive radio systems. A high PAPR can lead to saturation in the power amplifier (PA) of secondary users (SUs) and consequently increase spectral spreading, and cause interference to adjacent primary users (PUs). Simulation results illustrates the performance of the system under Additive White Gaussian Noise (AWGN) and further evaluation is done for comparing the proposed companding technique with previous techniques. The power spectral density (PSD) and bit error rate (BER) are evaluated at the output of the nonlinear PAs to provide a realistic performance comparison.

Keywords- Cognitive radio; Orthogonal frequency division multiplexing ; Additive White Gaussian Noise.

I. INTRODUCTION

Orthogonal Frequency Division Multiplexing (OFDM) has significant ability to support high data rates for wide area coverage, robustness to multipath fading, immunity to impulse interference [1,2]. Due to the rapid development of wireless communications in recent years, the demand on wireless spectrum has been growing dramatically, resulting in the spectrum scarcity problem. Works have shown that the fixed spectrum allocation policy commonly adopted today suffer from the low spectrum utilization problem. However one of the major drawbacks of OFDM signal is its large envelope fluctuation, likely resulting in large peak-to average power ratio (PAPR), which distorts the signal if the transmitter contains the non-linear components such as power amplifiers and these may causes deficiencies such as inter modulation, spectral spreading and change in signal constellation. Cognitive radio, with the capability to flexibly adapt its parameters, has been proposed as the enabling technology for unlicensed secondary users to dynamically access the licensed spectrum owned by legacy primary users on a negotiated or an opportunistic basis.

The paper is organized as follows: the PAPR problem in OFDM is briefly reviewed in section II. Section III, presents

OFDM based CR to reduce the PAPR .In Section IV, the performance of proposed algorithm is compared with existing techniques. In Section V, we conclude.

II. PAPR IN OFDM

Let $X(0), X(1), \dots, X(N-1)$ represent the data sequence to be transmitted in an OFDM symbol with N subcarriers. The basic OFDM transmitter and receiver are shown in fig.1. ,The baseband representation of the OFDM symbol is given by:

$$x(t) = \frac{1}{\sqrt{N}} \sum_{n=0}^{N-1} X(n) e^{j2\pi n t / N}, 0 \leq t \leq T \quad (1)$$

where $x(t)$ is OFDM symbol at time t , T is the duration of the OFDM symbol.

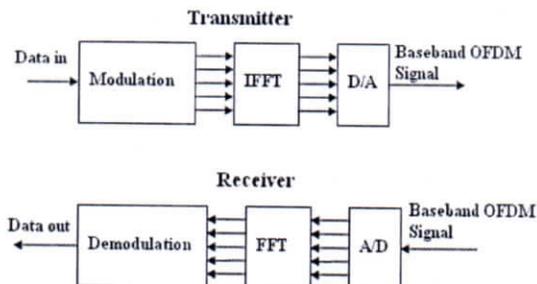


Figure 1. Basic OFDM Transmitter and Receiver

The input information symbols are assumed to be statistically independent and identically distributed. According to the central limit theorem, when N is large, both the real and imaginary parts of $x(t)$ becomes Gaussian distribution, each with zero mean and a variance of $E[|x(t)|^2]/2$, The amplitude, or modulus, of OFDM signal is given by

$$x_t = \sqrt{\text{Re}^2\{x_t\} + \text{Im}^2\{x_t\}} \quad (2)$$

The power of OFDM signal can be calculated as

$$|x_t|^2 = \frac{1}{\sqrt{N}} \sum_{m=0}^{N-1} \sum_{k=0}^{N-1} X_m X_k \frac{\exp(j2\pi(m-k)t)}{N} \quad (3)$$

COMFORTING DISSEMINATED ACCOUNTABILITY FOR DATA SHARING IN THE CLOUD

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Abstract—The use of computing resources which are distributed as a service over a network is a cloud computing. There are plentiful outstanding beneficial and individual cloud computing services to date. A novel way to complement the present consumption and delivery model for IT services is presented by cloud computing which is based on the Internet and provides vigorously scalable and frequently virtualized resources as a service over the Internet. Exceptionally scalable services are easily consumed over the Internet which are made possible by cloud computing. Users' data are typically processed indistinctly, as in unknown machines users do not operate is a main feature of the cloud services. An important obstacle to the wide adoption of cloud services can become user's fear of losing control of their own data. A new exceptionally decentralized information liability framework is proposed to keep track of the authentic usage of the users' data in the cloud. An object-centered approach is proposed so that it facilitates by including our logging method together with users' data and policies. To ensure that any access to users' data will trigger validation and automatic logging local to the java archives (JARs) and we persuade the JAR programmable abilities to both create a dynamic and traveling object. We also provide distributed auditing methods to reinforce user's control.

Keywords: Disseminated, Accountability, Data Sharing, Internet, Scalable Services, JARs, Cloud Computing, Object Centered Approach.

1. INTRODUCTION

Cloud computing presents an inventive way to equilibrium the present spending and delivery model for IT services based on the Internet and also provides vigorously scalable and often virtualized resources as a service over the Internet [1] [2]. There are a number of renowned beneficial and individual cloud computing services to date. The given service details are abstracted from the users who no longer need to be experts of technology infrastructure. Moreover, the machines which actual process and host their data are not known by the users [4]. Users also start distressing about losing

control of their own data while enjoying the ease brought by this new technology [3] [5].

Foremost to a number of issues related to accountability, including the procedure of individually dedicated information, the data processed on clouds are often outsourced. To an extensive acceptance of cloud service such doubts are becoming a considerable obstacle [6]. To monitor the usage of user's data in the cloud, it is necessary to provide an effectual mechanism for them which is shown in Fig 1.

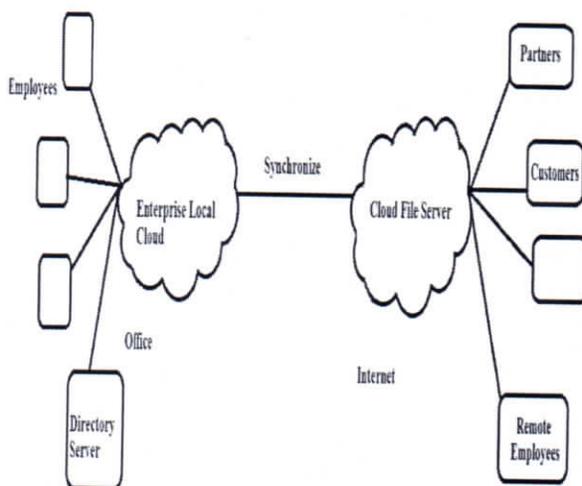


Figure 1: Example of Data Sharing in Cloud Computing

Due to the following features characterizing cloud environments, conventional access control approaches developed for closed domains in spread environments are not suitable. First, by the direct cloud service provider (CSP) the data handling can be outsourced to other entities in the cloud and these entities can also entrust the tasks to others. Second, in a flexible manner the entities are allowed

Symmetric Key Cryptography Algorithm Using Complement For Small Data Security

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Abstract

During data transmission between the source and the destination in computer network, the data is exposed to external modifications with malicious intentions. In today's world, most of the means of secure data and code storage and distribution rely on using cryptographic schemes such as certificates or encryption keys. Cryptography is widely used to protect sensitive data from unauthorized access and modifications while on transit. There are two basic types of cryptography: i. Symmetric key and ii. Asymmetric key algorithms. Symmetric algorithms are the quickest and most commonly used type of encryption. Here, a single key is used for both encryption and decryption. There are few well-known symmetric key algorithms i.e. DES, IDEA, AES, RC2, RC4 etc. In this paper, a new symmetric key algorithm is proposed. The advantages of this new algorithm are also explained.

Keywords: Information Security, Encryption, Decryption, Symmetric key, Cryptography, Confidentiality, Integrity.

1. Introduction

During this time when the Internet provides essential communication between tens of millions of people and is being increasingly used as a tool for commerce, security becomes a tremendously important issue to deal with. There are many aspects to security and many applications, ranging from secure commerce and payments to private communications and protecting passwords.

One essential aspect for secure communications is that of Cryptography. The concept of securing messages through cryptography has a long history. Indeed, Julius Caesar is credited with creating one of the earliest

cryptographic systems to send military messages to his generals.

Cryptography is the science of using mathematics to encrypt and decrypt data. Cryptography enables you to store sensitive information or transmit it across insecure networks (like the Internet) so that it cannot be read by anyone except the intended recipient. While cryptography is the science of securing data, cryptanalysis is the science of analyzing and breaking secure communication. Classical cryptanalysis involves an interesting combination of analytical reasoning, application of mathematical tools, pattern finding, patience, determination, and luck. Cryptanalysts are also called attackers. Cryptology embraces both cryptography and cryptanalysis.

A cryptographic algorithm, or cipher, is a mathematical function used in the encryption and decryption process. A cryptographic algorithm works in combination with a key—a word, number, or phrase—to encrypt the plaintext. The same plaintext encrypts to different ciphertext with different keys. The security of encrypted data is entirely dependent on two things: the strength of the cryptographic algorithm and the secrecy of the key. A cryptographic algorithm, plus all possible keys and all the protocols that make it work comprise a cryptosystem.

2. Brief History of Cryptography

Cryptography, the science of encrypting and decrypting information, dates as far back as 1900 BC when a scribe in Egypt first used a derivation of the standard hieroglyphics of the day to communicate.[2] There are many notable personalities who participated in the evolution of Cryptography. For example, "Julius Caesar (100-44 BC) used a simple substitution with the normal alphabet (just shifting the letters by 3 positions) in government communications", [2] and later, Sir Francis Bacon in 1623, who described a cipher is known today as a 5-bit binary encoding. He advanced it as a steganographic device by using variation in type

A FUZZY CHARACTERISTIC SELECTION AND EXTRACTION FOR TEXT CATEGORIZATION

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Abstract—The dimensionality of the characteristic vector is generally enormous in text classification. Such high dimensionality can be a ruthless obstacle for classification algorithms. To reduce the dimensionality of feature vectors for text classification a powerful method called feature clustering is used. A fuzzy similarity-based self-constructing algorithm for feature clustering is proposed in this paper. Based on similarity test the words in the feature vector of a document set are grouped into clusters. Words that are related to each other are grouped into the same cluster. Each cluster is distinguished by a membership function with statistical mean and divergence. A desired number of clusters are formed automatically when all the words have been fed in and we have one extracted feature for each cluster. The extracted feature which is equivalent to a cluster is a weighted combination of the words contained in the cluster. By this algorithm, the resulting membership functions match closely with and describe properly the real sharing of the training data. Besides, for determining the appropriate number of extracted features which can then be avoided as the user need not specify the number of extracted features in advance, and trial-and-error. Our simulation results show that our technique can run faster and attain better extracted features than other methods

Keywords: Dimensionality, Clustering, Feature Selection, Text Classification, High Dimensional, Data Sets.

1. INTRODUCTION

To reduce the dimensionality of feature vectors for text classification a powerful method called feature clustering is used. Such high dimensionality can be a ruthless obstacle for classification algorithms [1] [2]. Feature reduction approaches are applied before document classification tasks are performed to improve this difficulty. Feature selection and feature extraction are two major approaches which have been

proposed for feature reduction [3] [4]. Usually, characteristic extraction approaches are more efficient than feature selection techniques, but are more computationally excessive. Therefore, establishing scalable and well-organized feature extraction algorithms is extremely required for dealing with high-dimensional document data sets. Standard feature extraction methods aim to convert the illustration of the original high-dimensional data set into a lower-dimensional data set by an analytical process through algebraic transformations [6] [7]. To improve the computational complexity, several scalable online linear feature extraction algorithms have been proposed. Moreover, the complexity of these approaches is still high [5].

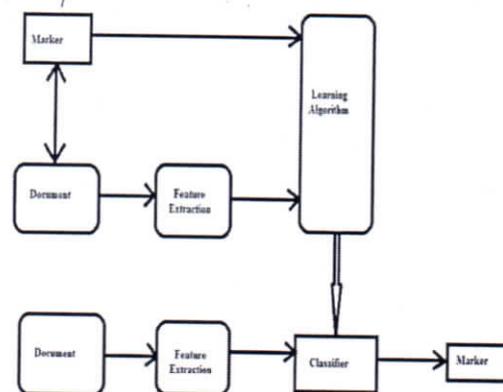


Fig 1. Text Classification Description Diagram

One of effective techniques for feature reduction in text classification is shown in Fig 1 is feature clustering. To group the original features into clusters with a high degree of pair wise semantic relatedness is the main idea of feature clustering [8] [9]. Each cluster is treated as a single new characteristic and thus, feature dimensionality can be significantly reduced. The first feature extraction method based on feature clustering was proposed and was derived from the “distributional clustering”. To produce a well-organized

EFFECTS OF CHEMICAL REACTION ON UNSTEADY
MHD HEAT AND MASS TRANSFER FLOW PAST A SEMI
INFINITE VERTICAL POROUS MOVING PLATE IN THE
PRESENCE OF VISCOUS DISPATION

K. Bhagya Lakshmi*

G. S. S. Raju**

N. V. R. V. Prasad***

ABSTRACT

This paper deals with the effects of inclined magnetic field and heat and mass transfer on unsteady two dimensional laminar flow of a viscous incompressible electrically conducting fluid past a semi infinite moving vertical porous plate under the influence of a uniform transverse magnetic field with temperature dependent heat generation, viscous dissipation and homogeneous first order chemical reaction. The analytical expressions for the velocity, temperature and mass concentration are obtained. The effects of inclined magnetic field and material parameters like Grashof number for heat transfer, Grashof number for mass transfer, Prandtl number, Magnetic parameter, permeability parameter, Schmidt number and chemical reaction parameter on velocity, temperature and mass concentration are discussed through graphs. In addition, the expressions for skin friction and rate of heat and mass transfer coefficients are derived and discussed numerically.

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Unsteady Mhd Flow of a Non-Newtonian Fluid Down and Open Inclined Channel with Naturally Permeable Bed

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Abstract:

This paper deals with unsteady MHD flow of a Walters fluid (Model B') an open inclined channel of width "2a" and depth 'd' under gravity, with naturally permeable bed, the walls of channel being normal to the surface of the bottom, under the influence of a uniform transverse magnetic field. The free surface is exposed to atmospheric pressure. A uniform tangential stress is applied at the free surface in the direction of flow. The naturally permeable bottom of the channel is taken at an angle β with the horizontal. Flow of fluid both in porous medium and in free fluid region is studied with the same pressure gradient. The exact solution of velocity distribution has been obtained by using Laplace transform and finite Fourier sine transform techniques. We have evaluated the velocity distribution and the flux of the fluid in different cases of time dependent pressure gradient $g(t)$ viz., i) constant, ii) exponentially decreasing function of time and iii) cosine function of time. The effects of magnetic parameter 'M', viscoelastic parameter ' K_0 ', permeable parameter 'K', Reynolds number 'R' and time 't' on velocity distribution 'u' and flux ' C_f ' in three different cases are investigated.

Key words: Non-Newtonian fluid, Open inclined channel, Porous medium, Magnetic field.



ORIGINAL ARTICLE

Method development and validation of Guanfacine in rat plasma by liquid chromatography–tandem mass spectrometry: Application to a pharmacokinetic study

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Received 6 December 2012; accepted 27 April 2013

Available online 27 June 2013

KEYWORDS

Guanfacine;
LC–ESI–MS/MS;
Rat plasma;
Liquid–liquid extraction;
Pharmacokinetic study

Abstract A selective, sensitive and high-throughput liquid chromatography–tandem mass spectrometry (LC–ESI–MS/MS) method has been developed and validated for the quantitation of Guanfacine in rat plasma. Sample clean-up involved liquid–liquid extraction (LLE) and 100 μ L of rat plasma was used. YMC BASIC column (50 mm \times 2.0 mm, 3.5 μ m) was used. Mobile phase used was 10 mM ammonium formate (pH 4.0):acetonitrile (70:30, v/v) at a flow rate of 0.3 mL/min. The parent \rightarrow product ion transitions for the drug (m/z 246.0 \rightarrow 159.0) and IS (m/z 252.0 \rightarrow 161.1) were monitored on a triple quadrupole mass spectrometer, operating in the multiple reaction monitoring (MRM) and positive ion mode. The method was validated over the concentration range of 50.00–10,000.00 μ g/mL for Guanfacine. The method was successfully applied into a pharmacokinetic study in rat plasma.

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Peer review under responsibility of Xi'an Jiaotong University.



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1. Introduction

Guanfacine is a centrally acting antihypertensive with α_2 -adrenoceptor agonist properties in a tablet form for oral administration. The chemical name of Guanfacine hydrochloride is N-Amidino-2-(2,6-dichlorophenyl) acetamide monohydrochloride (Fig. 1) and its molecular weight is 282.55 [1]. Guanfacine principal mechanism of action appears to be stimulation of central



ORIGINAL ARTICLE

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