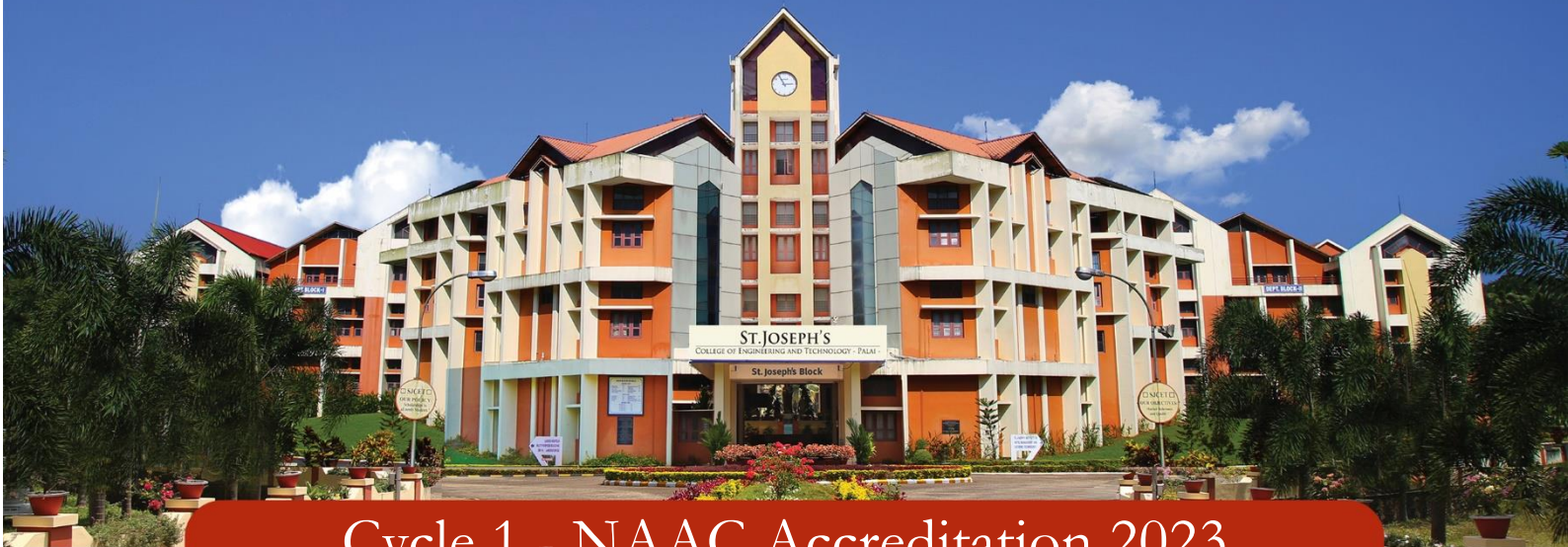




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PERFORMANCE EVALUATION OF BAMBOO REINFORCED CONCRETE BEAM

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ABSTRACT

Traditionally steel is used as a reinforcement in concrete. But because of cost and availability, replacement of steel with some other suitable materials as reinforcement is now a major concern. Though bamboo has been used as a construction material, especially in developing country, until today its use as reinforcement in concrete is very limited due to various uncertainties. Since bamboo is a natural, cheap and also readily available material, it can be a substitute of steel in reinforcing of concrete. In this paper, aptness of bamboo as reinforcement in concrete will be evaluated. To assess this, tensile strength test of bamboo having three and five nodes are performed. In bamboo sticks of varying cross sections are used in this test. Also flexural strength test of bamboo reinforced beam is done to characterize the performance of bamboo as reinforcement. Singly and double bamboo reinforced beams of 750 mm length having 150 mm width and depth are compared with plain concrete beam to carry out in this test

Keywords: Bamboo Reinforcement; Tensile Strength; Flexural Strength; Deflection.

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1. INTRODUCTION

Concrete is a widely used construction material for its various advantages such as low cost, availability, fire resistance etc. But it cannot be used alone everywhere because of its low tensile strength. So, generally steel is used to reinforce the concrete. Though steel has a high tensile strength to complement the low tensile strength of concrete, use of steel should be limited since it is very costly and also so much energy consuming in manufacturing process. Thus a suitable substitute of this with a low cost, environmental friendly and also a less

Mid-Storey Isolation In Vertical Irregular Buildings

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Abstract: Practical, technical and economical difficulties in adopting base isolation created interest in study of mid-storey isolation, in which flexible isolators are installed at any intermediate storey of a building. Since vertical irregularities are increasing in the present architecture, a study to understand structural behaviour of these buildings under seismic loading is essential for proper design and better performance. This paper presents the time-history analysis of a stiffness and mass irregular building of G+20 stories and their seismic responses when incorporated with isolators at intermediate stories. The effect of change in isolation level in the seismic performance of the building is studied. The structural analysis software SAP2000 is used for the analysis process. Base shear, storey shear deviation and energy absorption of the high rise structures are plotted.

Keywords: High rise structures, Mid-storey isolation, SAP2000, Seismic isolation, Vertical irregularity

I. INTRODUCTION

Seismic isolation method was developed to prevent injury to the occupants and other components by isolating the building, thereby reducing the earthquake forces acting on it. Mid-storey isolation is a type of partial isolation in which only a part of the total building mass is isolated at an intermediate storey level, unlike isolating the total mass as in base isolation. These isolation devices absorb energy thus reducing the energy input on structures.

Irregular buildings are a major concern as it is becoming common now. According to IS 1893 (Part 1): 2016, a soft storey is one which has the lateral stiffness less than the storey above; while a mass irregularity occurs when the seismic weight of a floor increases to more than 150 percent of the floors below [10]. Here, this study consists of time history analysis of two buildings, a stiffness irregular and a mass irregular building, on both fixed and middle storey isolated conditions. Variation in results on changing the level of isolation has also been checked. Change in base shear, storey shear, energy dissipation, occurrence of peak values of storey shear and acceleration are compared and plotted. SAP 2000 software has been used for the study.

II. AIM

To find the effect of mid-storey isolation in the seismic responses of vertical irregular high rise buildings.

III. MODEL DESCRIPTION

Building model used is of G+20 stories with plan dimension 30 x 16 m. Each story is of 3.5m height. Beams used are 0.35 x 0.4 m and columns are 0.4 x 0.6 m. Stiffness irregularity is created in the second model by increasing the bottom storey height to 4.5m. Mass irregularity is created by increasing the seismic weight of storey 10 to about 181% than the adjacent storeys. This is done by increasing the weight of structural components and an addition of a superimposed dead load of 10 kN/m².

Isolator used in common is high damping rubber bearing with an effective horizontal stiffness of 3.27 kN/mm and vertical stiffness 2796 kN/mm. It has a maximum vertical load capacity of 9596 kN, which is larger than the maximum axial load occurring in the considered structures. There are a total of 35 bearings installed, each with a height of 136 mm and 10% damping. The properties of isolators used in this study are taken from actually developed isolation devices. These are installed in the middle of columns in different storey locations to study the effect of varying the isolation interface along the height of the building. The 1940 El Centro earthquake is used for the time history analysis.



Experimental Study on the Stabilization of Soil using Eggshell Powder and Coir Fibres as a Sustainable Alternative

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Abstract

Stabilization of soil can be done by using natural and waste materials instead of synthetic materials for sustainable development which will reduce the impact on the environment. This research paper deals about the experimental study on the stabilization of soil using organic waste and coir fibres of varying lengths. The organic waste taken into consideration was eggshell powder. Basic properties of virgin soil like Atterberg's limits, Unconfined compressive strength, compaction characteristics, California bearing ratio, were determined. The soil samples were treated with varying percentages of eggshell powder and the optimum percentage of eggshell powder for the stabilization soil was determined. The CBR and UCC values showed a considerable increase in strength attainment due to the presence of Calcium Oxide in the eggshell powder. The soil was then treated with an optimum percentage of eggshell powder and varying percentages of coir fibres of different lengths (L=1cm, 1.5cm). It was observed that the soil showed considerable strength improvement with the combination of eggshell powder and coir fibre than that with eggshell powder alone. The effective use of locally available materials like eggshell powder and coir fibres and their experimental combination for the improvement of soil makes the study relevant and feasible.

Keywords: Eggshell powder (ESP), Coir Fibres(CF), Atterbergs limits, CBR, UCC.



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Energy Expenditure Calculation with Physical Activity Recognition Using Genetic Algorithms

[Y. Anand](#)  & [P. P. Joby](#)

Conference paper | [First Online: 02 January 2019](#)

1459 Accesses

Part of the [Lecture Notes in Computational Vision and Biomechanics](#) book series (LNCVB, volume 30)

Abstract

Physical health is associated with physical activity, physical activity also ensures the wellbeing of the humans, physical activity is recognized using body worn sensors, and three Inertial Measurement units (IMU) are used to capture the data from the sensors. The activity recognition chain consists of Data Acquisition, Preprocessing, segmentation, Feature extraction, and Classification. Different levels of

Enrolment and Matching of Fingerprints using Minutiae Tree

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Abstract: Automated fingerprint matching is considered as the most challenging phase of fingerprint recognition since it can be affected by a variety of factors such as noise, skin condition, rotation, distortions and displacements. When there is a large database, the search time to get a matching fingerprint will be relatively high. To reduce the searching time in the database, we have proposed a minutiae tree based indexing method in this paper. The database is represented in the form of a minutiae tree and the fingerprint matching is done by visiting the nodes in the tree where the local configuration of the minutiae is stored. By using this tree structure it is found that the search time or matching time can be considerably reduced and the matching time is independent of the number of fingerprints enrolled in the database. Our framework is scalable and the experiments conducted explores its ability to find correct matches with minimal search time.

Keywords: Minutia, Fingerprint Matching, Minutiae Tree, Binning, Indexing

Introduction

Fingerprint verification and fingerprint identification are the two different modes of operations of a fingerprint based biometric system. Fingerprint verification is considered as a simple process of 1:1 matching whereas fingerprint identification is a complex process of 1:N matching (Jain *et al.*, 2010). In both the modes fingerprint matching is an important step. In verification the acquired image is matched with the stored image. The matching algorithm will find the correspondence between the two images and gives a positive result if they are significantly similar. In identification the given probe image is matched with all the images in the dataset to generate a degree of similarity. The algorithm returns the name of the person who has a highest degree of similarity. Fingerprint matching is very challenging since two images acquired at different time exactly under same conditions need not be exactly the same. The difficulty in matching is due to several reasons (Sheng *et al.*, 2007). The translation and rotation of the fingerprint images, application of a poor feature extraction algorithm, displaced, false and missing minutiae and the non linear deformations of the images are some of the reasons. To overcome these variations a powerful matching algorithm is needed. So the matching algorithm should be invariant to translation and rotation of the images. It should return the correct result while comparing fingerprints from the same finger even the feature

extractor has missed some features or even when the fingerprint images are affected by non linear distortions.

The fingerprint matching algorithm can generally be classified into three different classes:

- Correlation based matching algorithms (Hatano *et al.*, 2002; Lindoso *et al.*, 2007) which use superimpose two fingerprint images to find the correlation among pixels for different displacement and rotation
- Minutiae based matching algorithms (Jiang and Yau, 2000; Luo *et al.*, 2000) which use the extracted minutiae of two fingerprints to find the matching pairs of minutiae
- Non minutiae based matching algorithms (Yang and Park, 2008; Nanni and Lumini, 2009) which use the orientation, shape or frequency of ridges to perform matching between two fingerprints

Among the three classes minutiae based algorithms are the most common and minutiae based matching is considered as a point pattern matching problem.

Our goal is to develop a fingerprint matching algorithm which can reduce the database search time during matching. Towards this goal a minutiae tree based algorithm is proposed in this paper, which enrol the fingerprints at the leaf node of the tree and the matching is done by comparing the values related to each minutia at each node. A minutiae tree based indexing

Detection of Murmur from Time Domain Features of Heart Sounds – an Investigation

P. Careena, M. Mary Synthuja Jain Preetha, **P. Arun**

ABSTRACT— Automated identification of valve disorders from heart sounds is a competent task in cardiology. Time domain features like variance (μ), standard deviation (SD), entropy (E), peak amplitude (PA), RMS, crest factor (CRF), impulse factor (IF), shape factor (SHF), energy and clearance factor (CLF) are extensively used in Artificial Intelligence (AI) to reflect the physical attributes of signals. Time domain features are analytically simple and easy to compute. In this paper, the reliability of employing time domain features for the detection of murmur from heart sound is investigated. It is found that energy of the signal is able to detect the murmur from PCG signal with an accuracy of 98.87 %, sensitivity of 99.70 % and specificity of 98.09 %.

Index Terms— energy, heart abnormality, murmur, PCG signal, statistical significance, type of heart signal, time domain features.

I. INTRODUCTION

The feature extraction is the primary step involved in any artificial intelligence system. Signal processing techniques employed for extracting the features plays an important role in systems meant for automated analysis. This mainly involves fault diagnosis of mechanical/electrical systems using their vibration data, detection of diseases by analyzing various biological signals etc., From the features, extracted via suitable signal processing techniques, problems can be detected, accurately traced and even their type can be recognized. Moreover, the features selected via the appropriate feature extraction technique should be statistically significant and computationally efficient. The features extracted will be of time domain, frequency domain or Time–Frequency (TF) domain. Out of these, time domain features are simpler and computationally viable than features in transformed domain because they do not involve complex domain transformation.

A few methods that incorporates time domain features to identify problems of numerous sectors are presented in the literature. For diagnosing bearing defect, Hu et al. [1] proposed a method by utilizing the ensemble averaging of the largest amplitude impact transients of bearing vibration data. The proposed method was able to differentiate normal or faulty bearing with 91.20% accuracy. Carrasco et al. [2] introduced a method for predicting the solar activity by using the relationship between the solar maximum

amplitude and max–max cycle length of solar cycle. Selamtzis et al. [3] introduced a method to detect the dysphonia by computing the sample entropy of excerpted vowels of 31 different subjects (accuracy 89%). Li et al. [4] put forth a method to obtain the failure probability in structural reliability analysis via the maximum entropy of the random samples. To improve the input image recognition performance, Shi et al. [5] computed the entropy orthogonality loss of the penultimate layer of the convolutional neural networks (CNN). Wang et al. [6] proposed a system by considering the mean value of RR intervals, the standard deviation of RR intervals and the square root of mean squared differences of successive RR intervals of the Electrocardiograph (ECG) signal to investigate the heart rate changes. The features were input into the support vector machine (SVM) classifier and reported a mean sensitivity, specificity and accuracy of 91.31%, 90.04% and 90.95%, respectively. Rapalis et al. [7] proposed a technique for estimating the blood pressure and heart beat variability. For estimating the blood pressure variability, standard deviation of normal-to-normal (NN) and RR interval, square root of mean squared differences of NN intervals of the ECG signal was utilized. The heart beat variability was estimated by measuring the pulse arrival time of ECG and photoplethysmogram (PPG) signal by hilbert transform after preprocessing and amplitude normalization. Ibrahim et al. [8] explored a technique to help in the diagnosis of epilepsy and autism spectrum disorder (ASD) by estimating the shannon entropy of the preprocessed electroencephalography (EEG) signal. The features were given into various classifiers and reported a classification accuracy of 94.6%. Wang et al. [9] proposed a scheme for the diagnosis of epilepsy by estimating the Teager energy operator of EEG signal. Ma et al. [10] introduced a technique to detect the roller element bearing fault using the Teager energy operator of the intrinsic mode functions (IMF) of the preprocessed bearing vibration data. Khan and Ali [11] presented a procedure for the detection of seizure by analyzing the preprocessed EEG signal. The ratio of signal energy concentrated along the time axis and the frequency axis with the total signal energy was estimated and were given as input into the SVM classifier (Accuracy 98.25%). Mahapatra and Horio [12] proposed a system for the classification of interictal and ictal EEG. Initially, the empirical mode decomposition (EMD) was employed for decomposition of EEG into IMFs. The RMS frequency of the IMFs after hilbert transform was estimated and used as

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Detection of Murmur from Non-Stationarity of Heart Sounds

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Early diagnosis of heart diseases bears a major role in saving lives. Presence of spurious extra-frequency components, termed as murmurs within the phonocardiography record may be indicative of valvular disorders like stenosis, lesions or regurgitation. It is difficult to identify the subtitle spectral components of murmurs through subjective audition. In this paper, a technique is proposed to detect the presence of murmur from the heart signal by analyzing their non-stationarity behavior by using autocorrelation based features namely, Standard Error (SE) of Auto-Correlation Function (ACF) and absolute deviation of SE from the reciprocal of the square root of number of samples ($\hat{\alpha}$). The selected features corresponding to normal and murmur differ with a 'P' value of 1.80×10^{-14} (dataset 1) and 2.20×10^{-76} (dataset 2) for SE and $\hat{\alpha}$, respectively. It is found that SE and $\hat{\alpha}$ could effectively distinguish normal and murmur with 100% accuracy, sensitivity, and specificity.

Keywords: Autocorrelation, heart abnormality, murmur, non-stationarity, PCG signal, type of heart signal, time domain features.

Cardiovascular diseases (CVDs) are one of the major causes of death worldwide. As per the report of world health organization, the annual death rate due to CVDs is more than from any other diseases [1]. In 2015, around 17.7 million people died because of CVDs. Of these deaths, an estimated 7.4 million were due to coronary heart disease. Hence, early detection and diagnosis of heart diseases play a major role in saving lives. Presence of spurious extra-frequency components, termed as murmurs within the phonocardiography (PCG) records, or heard

during the routine auscultation with steth, may be indicative of valvular disorders like stenosis, lesions or regurgitation. But it is difficult to detect the presence of murmur in the heart signal through subjective audition. Hence an automated method to detect the presence of murmur in the heart sound has its own importance to find out the heart abnormalities.

Few methods dealing with the computerized detection and characterization of heart murmurs are available in the literature [2-18]. Kang *et al.* [2] developed a system for automatic

An Innovative Video Searching Approach using Video Indexing

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Abstract- Searching for a Video in World Wide Web has augmented expeditiously as there's been an explosion of growth in video on social media channels and networks in recent years. At present video search engines use the title, description, and thumbnail of the video for identifying the right one. In this paper, a novel video searching methodology is proposed using the Video indexing method. Video indexing is a technique of preparing an index, based on the content of video for the easy access of frames of interest. Videos are stored along with an index which is created out of video indexing technique. The video searching methodology check the content of index attached with each video to ensure that video is matching with the searching keyword and its relevance ensured, based on the word count of searching keyword in video index. The video searching methodology check the content of index attached with each video to ensure that video is matching with the searching keyword and its relevance ensured, based on the word count of searching keyword in video index. Video captions are generated by the deep learning network model by combining global local (glocal) attention and context cascading mechanisms using VIST-Visual Story Telling dataset. Video Index generator uses Wormhole algorithm, that ensure minimum worst-case time for searching a key with a length of L. Video searching methodology extracts the video clip where the frames of interest lies from the original huge sized source video. Hence, searcher can get and download a video clip instead of downloading entire video from the video storage. This reduces the bandwidth requirement and time taken to download the videos.

Keywords- Video Indexing, Video Searching, Visual Story Telling, Wormhole, glocal, VIST

1. Introduction

Video is one of the main active medium to convey messages effectively. Consequent to the development in computer networking technology, video is now accessible to everyone through various social media networking platforms. Video is more effective than text or audio messages because it grabs the attention of people very easily, engage the targeted viewers and it is easy to memorize. In addition, video can embrace all the other forms of information including text, audio, music, photographs, links etc.

Prediction based on current CISCO Visual Networking Index (VNI), shows that global IP traffic would increase by three times in 2022 compared to that in 2017[1] According to the forecast, the IP video which include Internet video, IP VoD, Video file exchanged through file sharing, video-streamed gaming and conferencing, will continue to be in the range of 80 to 90 percent of total traffic. Globally, IP video traffic will account for 82 percent of traffic by 2022.

This remind the significance of managing the Video traffic by reducing the downloads only to the intended specific part of video.

Video indexing formulate a technique of indexing a video as in the text books. When a download request with a search keyword is raised, the relevant part of video is found by checking the word density using the video index and transfer that video clip only. This avoid the transfer of entire video and thus reduces the video traffic drastically.

2. Related work

Works on video searching based on video content is not seen reported in the literature so far. Most of the proposed algorithms are based either on textual content or audio content.

An Efficient Video Similarity Search Algorithm is introduced in [2] for the convenience of content-based video retrieval in large storage devices. Spatial-temporal

Content Based Video Retrieval System Using Video Indexing

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Abstract- Searching for a Video in World Wide Web has augmented expeditiously as there's been an explosion of growth in video on social media channels and networks in recent years. At present video search engines use the title, description, and thumbnail of the video for identifying the right one. In this paper, a novel video searching methodology is proposed using the Video indexing method. Video indexing is a technique of preparing an index, based on the content of video for the easy access of frames of interest. Videos are stored along with an index which is created out of video indexing technique. The video searching methodology check the content of index attached with each video to ensure that video is matching with the searching keyword and its relevance ensured, based on the word count of searching keyword in video index. Video captions are generated by the deep learning network model by combining global local (glocal) attention and context cascading mechanisms using VIST-Visual Story Telling dataset. Video Index generator uses Wormhole algorithm, that ensure minimum worst-case time for searching a key with a length of L. Also, Video searching methodology extracts the video clip where the frames of interest lies from the original huge sized source video. Hence, searcher can get and download a video clip instead of downloading entire video from the video storage. This reduces the bandwidth requirement and time taken to download the videos.

Keywords- Video Indexing, Video Searching methodology, VIST- Visual Story Telling dataset

I. INTRODUCTION

Video is one of the main active medium to convey messages effectively. Consequent to the development in computer networking technology, video is now accessible to everyone through various social media networking platforms. Video is more effective than text or audio messages because it grabs the attention of people very easily, engage the targeted viewers and it is easy to memorize. In addition, video can embrace all the other forms of information including text, audio, music, photographs, links etc.

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Video indexing formulate a technique of indexing a video as in the text books. When a download request with a search keyword is raised, the relevant part of video is found by checking the word density using the video index and transfer that video clip only. This avoid the transfer of entire video and thus reduces the video traffic drastically.

This paper is organised as Introduction in section I, describes an overview of work proposed in this paper. In section II, various works already done related with this area described. It also ensured that no similar works has been done as presented in this paper. The proposed work described in detail with the support of block diagram in Section III. Results of the implementation of this proposed work described in section IV. Section V describes the conclusion and future scope of this proposed system.

II. RELATED WORK

Works on video searching based on video content is not seen reported in the literature so far. Most of the proposed

An innovative methodology for automated ATM surveillance system using skeleton-based action recognition neural networks and IoT

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Abstract— The criminal offences in the ATM kiosk are happening very commonly in recent days. A fully automated ATM surveillance system is the need of present era intended for detecting suspicious actions in the surveillance system and to trigger the proactive steps before the incident to occur. An innovative methodology proposed in this paper, which deals an automation of video surveillance in ATM kiosk and detect any type of potential criminal activities. In this system, an innovative methodology is proposed for automated ATM surveillance System using skeleton-based action recognition neural networks and IoT sensors. Multiple layers of detection techniques used to confirm the activity as suspicious. Skeleton-based action recognition by part-aware graph convolutional networks is used for detecting suspicious human action using the NTU RGB-D data set. Aadhar enabled finger print scanner which is integrated with ATM is used to fetch the demographic information from aadhar server. IoT proximity sensor is used to recognize any trial to block the vision of surveillance camera. Similarly, any physical attack made on ATM will be identified using IoT pressure/gas sensors. Suspicious sound generating during the criminal offence is also considered to confirm the activity as suspicious. Once, the activity is confirmed as suspicious, demographic information of the suspect will be fetched from aadhar server maintain by unique identification authority of India (UIDAI) and initiate the proactive steps and warning procedures.

Keywords—ATM, part-aware graph, convolutional networks, NTU RGB-D data set, Surveillance System

I. INTRODUCTION

Automated Teller Machines (ATM) today have become areas of target due to their easy and readily available cash at everyone's convenience. The attacks on ATM's are steadily rising and this is a serious problem for law enforcement and banking sectors. So there has to be a system developed and put into place that will make sure the ATM is safeguarded and also gives customers the confidence when using the ATM. There are a variety of ATM attacks because it is such an attractive target for burglars. Basically, there are three basic types of ATM attacks which can be as follows.

- 1) Physical attack: Brute force attack to ATM machines with intention of gaining access to cash within the safe
- 2) ATM Fraud: Theft of bank card information
- 3) Software Attack: Theft of sensitive information

An innovative approach is proposed to address the Physical attack in ATM kiosk in this work. No effective technics realized for real time recognition of such criminal offences and trigger the proactive steps before the incident to occur. In this paper, an State-of-the-art techniques are proposed for

Automated ATM Surveillance System in which Skeleton-based action recognition neural networks is used for recognizing any suspicious human action by analyzing the video content and audio content. Various IoT sensors (pressure sensor, and Gas sensor) are used for recognizing any ATM Brute force attack to ATM machines with intention of gaining access to cash within the chamber and IoT proximity sensor is used for recognizing any trial to block the vision of surveillance camera. Immediately after the confirmation from the control unit, it is possible to disable the unlocking facility in the door of ATM kiosk itself. Aadhar enabled finger print scanner is also integrated with ATM to fetch the demographic information from the Aadhar server maintain by Unique Identification Authority of India (UIDAI) and can initiate the procedure to freeze further movements of the suspect. Since, aadhar is linked with the mobile number, it is easy to track and locate the suspect by using the mobile tower location, Also, the face image can be send to various public transport key stations to freeze his further schedules.

Artículos

An Automated method for the analysis of bearing vibration based on spectrogram pattern matching

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An Automated method for the analysis of bearing vibration based on spectrogram pattern matching

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Abstract:

As a mean for non-intrusive inspection of bearing systems, the scope of predicting their condition from the acoustic vibrations liberated during their operation, utilizing signal processing methods, has been of extensive research, over decades. Vibration being highly non-stationary, time domain as well as spectral features cannot characterize its behavior. Even though spectrogram is a time-frequency domain feature extraction technique, its interpretation is tedious and perhaps, subjective. In the proposed method, the spectrogram images of the normal vibration data is compared with that of the contextual vibration, using Structural Similarity Index Metric (SSIM). It is hypothesized that the pattern similarity between the contextual spectrogram and baseline is low when the bearing is faulty. The SSIM between the spectrogram image of normal bearing vibration data and the baseline is different from those between the baseline and vibration data corresponding to Inner Race Failure (IRF), Roller Element Defect (RED) and Outer Race Failure (ORF). Via the proposed method of spectrogram pattern matching based on SSIM, the subjectivity in the comparative interpretation of spectrogram is eliminated fully. The SSIM corresponding to the vibrations acquired from normal and faulty bearings differ with a P value of 4.43693×10^{-16} . The technique can distinguish defective bearings with, 95.74% sensitivity, 96% accuracy and 100% specificity, without dismantling or open intervention.

Keywords:

Bearing fault, pattern matching, spectrogram, structural similarity index metric, vibration.

1. INTRODUCTION

Bearings are one of the prominent components in most of the machines in process industries. They establish free rotational or linear movement, by reducing friction. Bearings may turn faulty due to heavy loading, insufficient lubrication and ineffective sealing. Several studies have stated that the major cause of failure of rotating machines is due to bearing failure (Li, Jiang, Hu, *k* Peng, 2016; Li, Jiang, Wang, *k* Peng, 2016). Unexpected failure of the

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Automated detection of microaneurysms using Stockwell transform and statistical features



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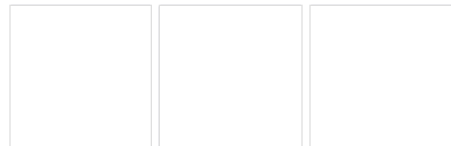
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Abstract and Figures

Microaneurysms (MAs) are the earliest pre-eminent indicators of diabetic retinopathy (DR) and are hard to distinguish for ophthalmologists on standard fundus images. This paper proposes a method based on discrete orthonormal Stockwell transform and statistical features for discriminating between normal and diseased retinal images. Feature extraction by the two different approaches are consolidated and a total of 24 features are extracted for classifier models. Training and testing of the proposed method has been accomplished using 1140 retinal colour photographs. A comparative study using eight best known classifiers is showcased for detection of microaneurysms and performance of the classifiers are evaluated using retinal images by performing 10-fold cross validation procedure. Simulation results demonstrate the efficiency and adequacy of the proposed method which mainly characterize the textural features. The proposed method is compared with existing algorithms and the results show that the algorithm detects DR with high veracity. With the high accuracy and positive prediction, the proposed system assures promising results in early diagnosis of DR.



Retinal images (a) Normal retinal... the proposed... Flow diagram of the proposed... Classifier evaluation usin...

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PROCEEDINGS PAPER

Grey Relation Approach in Abrasive Jet Machining Process

Lijo Paul, [J. Babu](#)[+ Author Information](#)**Paper No:** MSEC2019-2852, V002T03A043<https://doi.org/10.1115/MSEC2019-2852>**Published Online:** November 2, 2019**J. Babu**

St. Joseph's College of Engineering and Technology, Kottayam, India

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Abstract

Micro machining of conducting and non-conducting materials with high accuracy has great demand in industries especially in machining of ceramic, brittle materials. Abrasive Jet Machining (AJM) has shown tremendous application especially in machining of hard and brittle materials. In the present paper drilling of soda lime glass has been carried out to determine the machinability under different controlling parameters. A set of L_9 series experiments were carried out by varying process parameters such as Stand Off Distance (SOD), Silicon carbide abrasive particles mesh sizes and jet pressure. Material Removal Rate (MRR) and Radial Over Cut (ROC), were taken as the output responses and are optimised with multi objective optimisation.

Volume Subject Area: [Processes](#)**Keywords:** [abrasive jet machining](#), [heat affected zone](#), [gray relational analysis](#), [design of experiments](#)**Topics:** [Machining](#)

INTERNAL DRIVERS THAT INFLUENCE THE ADOPTION OF GREEN PRODUCT INNOVATION PRACTICES AND ITS IMPACT ON MANUFACTURING FIRMS

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Professor, School of Management Studies, Cochin University of Science and Technology (CUSAT)

ABSTRACT

Ecological and environmental issues are playing a larger role in corporate and manufacturing strategies. In today's modern world, people's lifestyle has started to change in the attitude of buying and using green products/services in order to save the world for future safety and future generation. As a result of that an increased demand has been placed on the manufacturing industries to be more responsible to their environment with respect to their product and processes. This demand is due to various antecedent factors driving green innovation practices in manufacturing firms. Academicians and regulators pay increasing attention to environmental innovations for their so-called double dividend: reducing environmental impacts and simultaneously benefiting the industry. Due to fierce competition in the marketplace, globalization and an explosion of technology in recent years, innovation and differentiation are considered as a necessity for every company (Tajeddini & Trueman, 2008a). The concern of firms is not only because of the environmental value but also due to the impacts of the environmental initiative on the performance of these firms. Manufacturing industries account for a significant part of the world's consumption of resources and generation of waste. Worldwide energy consumption of manufacturing industries grew tremendously and accounts for nearly a third of today's global energy usage. Likewise, they are responsible for 36% of global carbon dioxide (CO₂) emissions (IEA, 2007). The aim of this study is twofold: (i) to propose a comprehensive framework that encompasses the internal drivers which influence the adoption of green product innovation practices and (ii) the impact of green product innovative practices on manufacturing firms.

Key words: Environment Performance, Environmental Drivers, Green Product Innovative Practices.

INTRODUCTION

Sustainability and environmental management have become one of the most critical management issues facing by the companies. The excessive use of natural resources occasioned by rapid economic growth has damaged the environment and raised many environmental concerns. "Going green" has been one of the important ways that companies have dealt with environmental issues. Methods of acquiring green capabilities and conducting green practices have drawn increased attention and prompted discussion for the last two decades. To facilitate the adoption of green innovations, companies must consider the important drivers and antecedents in their businesses. These include the concerns of customers, the preferences of business owners, the capabilities of

suppliers, government regulations etc. Therefore, it is important to acquire a holistic view of the effects of each stakeholder in a company on establishing green innovation capabilities and practices. Comparing managers are interested in knowing the key drivers of establishing green innovation practices. Hence this study would like to identify the key internal drivers which influence the manufacturing firms to adopt certain green product innovative practices and its impact.

CONCEPTUAL MODEL:

The theoretical model developed relies on the premise that the environmental performance of an industrial facility results from actions undertaken to improve or maintain this performance. Based on the literature review such actions are undertaken depends on the pressure perceived or exercised by various internal

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A Novel Approach to Find Author's Research Areas of Interests Using Graph Database

Soumya George (Department of Computer Applications, Cochin University of Science and Technology, Kochi, India), M. Sudheep Elayidom (Division of Computer Engineering, Cochin University of Science and Technology, Kochi, India), and T. Santhanakrishnan (Govt. of India, Ministry of Defense, NPOL, Thrikkakkara, Kochi, India)

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Abstract

Research areas of interests reveal the area of expertise of an author or the field in which the author has in-depth knowledge. This is one of the core components of an author profiles of any academic search engine that can be efficiently utilized by other authors or researchers to identify all authors who have proficiency in a specified field. This article proposes a graph-based approach for automatic creation of author profile by finding the author's area of interests in research using subject classification of their published papers. Classification accuracy of the author's research areas of interest also tested manually for 415 authors by comparing classified areas of interests of each author with areas of interests given in Google scholar profile. Total mismatch occurs only for 37 others. Results showed that accuracy could be improved by adding more papers.

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
KNOWLEDGE GRAPH BASED SUBJECT CLASSIFICATION OF SCHOLARLY ARTICLES

 **Soumya George**, M. Sudheep Elayidom, T. Santhanakrishnan

Abstract

Subject Classification of scholarly articles is a pertinent area in the field of research. Proper classification of journal articles is an essential criterion for academic search engines to facilitate easier search and retrieval of journal papers based on user preferred research areas. Subject classification is equally important for search engines to find appropriate reviewers to review submitted papers based on area. It also helps to implement an efficient paper recommendation system to recommend similar articles to users based on their areas of interest. The widely used approach for subject classification is to use metadata of journal papers like title, abstract, paper keywords etc. to classify articles or by insisting users to use some classification system to specify the subject area of their article. This paper proposes an efficient graph based subject classification of journal articles using a pre-indexed classifier model by means of full text indexing approach. Journal contents are indexed using Sequence Word Graph model to classify any journal article into its relevant research areas and sub areas based on actual keyword or key phrase embedding in the journal contents. This automatic classification approach enables efficient search of scholarly articles by means of subject categories or by sub areas. The subject classification accuracy is tested using arXiv subject classified papers set of total 1307 papers and accuracy yields 91%.

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Semantic Desktop Search Engine using Graph Database

Soumya George, M. Sudheep Elayidom, T. Santhanakrishnan

Abstract: *The rise of big data with advancement in technology leads to an ever-increasing demand for a personalized search engine to search the huge amount of data residing in personal computers. A desktop search engine is used to search files or data in a user's personal systems. This paper proposes a graph based semantic desktop search engine, GSDSE that uses the Word Sequence Graph model to store the file details and contents inside a graph database using full text indexing approach. The main features of GSDSE include content-based query autosuggestion based on entire query term sequence, link based page ranking, the semantic search of different query combinations and generation of content based valid search snippet view. To prove the efficiency and reliability of GSDSE, we conduct a comparison study between Copernic Desktop search engine and GSDSE, and the results proved that the proposed system is efficient concerning efficiency and reliability.*

Index Terms: *Desktop search engine, Graph database, Word sequence graph model, Semantic search engine.*

I. INTRODUCTION

The era of big data increases the amount of data that each user handles. Besides this, advancements of technology lead to new personalized systems with immense storage capacity. All these leads to a high demand for reliable desktop search engine that can search vast amount of data files and folders in a fast and efficient manner. Wide varieties of desktop search engines are available with different features like Copernic, Lookeen, etc. [1]. This paper proposes a graph based semantic desktop search engine, GSDSE based on Word Sequence Graph model, WSG that uses a full text indexing approach to store document or file details and contents inside graph database [2]. Users have the option to filter their search results by file type, folder name, etc. The main features of GSDSE include graph based query autosuggestion based on entire query term sequence - GQAS, page ranking, graph based semantic search of different query combinations - GSSQC and generation of content based valid search snippet view. Graph based document representation enables fast search and retrieval efficiently and reliably by utilizing index free adjacency feature of a graph database.

GSDSE is based on Word Sequence Graph model that uses

a graph of word approach where each sentence in each document is stored as a graph of word model by creating a unique node for each document and each unique non-stop word term. Each Document was connected to first non-stop word term of each sentence by an edge of type "contents" and an edge of type "next_seq" was used to connect adjacent non-stop word terms in each sentence. All stop words including symbols and punctuation marks between adjacent non-stop words were concatenated into one string and store in the edge in between as "stop_word" property. Other edge properties include sentence number, sequence id which is the unique document node id, case of succeeding node represented as 'U,' 'S' or 'N' for upper case, sentence case and lower case or no case respectively. All terms in sentence case or upper case were converted to lower case and others will be stored as such. Document node stores properties such as file name, folder name, file type, full path of the file, date, etc. [2].

Tika's AutoDetect Parser was used to parse all types of document files to a plain text format which is then converted to graph based representation of files [3]. Stanford JavaNLP API was used for sentence splitting which in turn converted into words to represent as a sequence of word graph model [4]. This graph based full text indexing approach enables user to search files by contents, and it can be of any length where the main advantage of WSG model lies. Entire file system with all folders and subfolders were indexed. The simple design of index construction of desktop file system is illustrated in Fig.1.

Search engine interface consists of total five panels as shown in Fig. 2. Users can enter their search queries in the text field at panel (1). Users have the options to filter their search results by folder (2) or by file type (3). Matching results will be displayed in the result panel at (4). Search snippet view of matching sentence will also be displayed along with file type icon and file path. Panel (5) is the preview panel used to display search snippet view of the matching sentences of the currently selected file in the result panel with all correct matches highlighted in red color. Clicking a file in the result panel displays its preview details in the preview panel. Double clicking a result or its preview opens the file.

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PROCEEDINGS PAPER

Grey Relation Approach in Abrasive Jet Machining Process 

Lijo Paul, J. Babu



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+ Author Information

Paper No: MSEC2019-2852, V002T03A043<https://doi.org/10.1115/MSEC2019-2852>**Published Online:** November 2, 2019**J. Babu**

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[This Site](#)[PubMed](#)[Google Scholar](#)**Abstract**

Micro machining of conducting and non-conducting materials with high accuracy has great demand in industries especially in machining of ceramic, brittle materials. Abrasive Jet Machining (AJM) has shown tremendous application especially in machining of hard and brittle materials. In the present paper drilling of soda lime glass has been carried out to determine the machinability under different controlling parameters. A set of L_9 series experiments were carried out by varying process parameters such as Stand Off Distance (SOD), Silicon carbide abrasive particles mesh sizes and jet pressure. Material Removal Rate (MRR) and Radial Over Cut (ROC), were taken as the output responses and are optimised with multi objective optimisation.

Volume Subject Area: [Processes](#)**Keywords:** [abrasive jet machining](#), [heat affected zone](#), [gray relational analysis](#), [design of experiments](#)**Topics:** [Machining](#)

SENTIMENT ANALYSIS ON TEXTUAL REVIEWS

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Abstract. These days there is an expansion in review websites. It has turned out to be considerably more intricate to mine fundamental data from survey sites and take proper choice. Using Natural Language Processing, there is a need to identify sentiment of content or document. In this paper Sentiment Analysis is done in view of Rule based mechanism and machine learning approach. Both of these strategies are analyzed and discovered that machine learning is most appropriate for Sentiment Analysis in light of the exactness measurement. Sentiment Vader and Senti word net are the Rule based algorithms utilized and LDA analysis on Naive Bayes is the machine learning strategy used.

1. INTRODUCTION

Sentiment Analysis is a forthcoming exploration progressing field that is becoming important because of utilization of different applications. Supposition Analysis is additionally called as sentiment mining. Audits are given by individuals in an unstructured way in type of forums, blogs etc. Then preprocessing of surveys is done and seen if the survey is certain, negative or nonpartisan. Order approaches like vocabulary and machine learning based methodologies are utilized for Sentiment Analysis. Vocabulary based approach is of word reference based approach and corpus based approach. Machine learning strategies are most broadly used to group and anticipate supposition as either positive or negative conclusion. Machine learning calculations are for the most part named directed or unsupervised approach. Regulated approach takes named dataset where each preparation set has effectively allotted its supposition. Unsupervised approach takes unlabelled dataset where audit isn't characterized with its mark. Assessment investigation alludes to the undertaking of recognizing supposition from surveys.

1.1. Applications and challenges of sentiment analysis

The primary utilization of assumption investigation is in this manner giving the clients the possibility and suggestion in selection of products. A client is normally pulled in to certain part



Review on Energy Harvesting and Data Collection

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Abstract. Energy harvesting is important in the case of recharging or repay of battery. Energy harvesting means that energy is derived from external sources like solar energy, thermal energy, kinetic energy and wind energy. Two or more sensors are attached to a body forms Body Sensor Networks (BSNs). BSN s are mainly focused in healthcare domain. it allows patients, physicians, caregivers, scientists, etc. It useful for continuous monitoring of patients (Diagnosis patients, treatment of chronic obstructive pulmonary disease patients and other health conditions). Doctors made interaction between the data collected body sensors and personal digital assistant (PDA). Disadvantage of existing system is batteries cannot be easily replaced, met must be near a transmitter, expensive, etc. Energy Harvesting and Data Collection (EHDC) focuses two types of energy harvesting techniques such that solar and thermal energy harvesting and two types of data collections are used :indoor and outdoor data collection. Harvested energy can be predicted by using Kalman Filter. EHDC provide mobile healthcare services and does not need recharging .

1. Introduction

Body Sensor Networks (BSNs) are cyber-bodily sensor structures which can be able to amassing, processing, and speaking physiological statistics from the body and environmental statistics from the region surrounding it. BSN overcome the weakness of traditional remote hospital system. Recent technology provide full continuous monitoring of patients beyond the clinic and also overcome the drawback of limited battery life time or must be replace or recharging battery [26]. power harvesting is vast answer for the limited battery life time of body sensor community Three stages of healthcare monitoring system are sensors, data hub and hospital system. Although there are many applications for BSNs such as tracking, scientists, remote patient monitoring in healthcare system [27]. Researchers have necessity methods of separate magnanimous supervise such as self-restrained unmixed-relate and abode hardiness technologies to vestige symptoms and become recommendations to patients or to occur when inevitable. sometimes, patient self-report tends to be imprecise because it can be difficult for patients to accurately represent their own symptoms. BSN network provide an alert message to the hospital system ,if due any changes in vital parameter.

Automatic recognition of daily living activities can be primarily classified in two -wearable and non-wearable system. This paper focused on two types of energy harvesting technique- solar and thermoelectric energy harvesting. Data collection are done both indoor and outdoor condition [27].



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A Review on Cybersecurity Threats and Statistical Models

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Abstract. Data generated in past two years is more than previous history tutorials with the help of evolution of technology. Big data is a term using for abundant structured and unstructured data, it becomes difficult to process, store, analyze and visualize using on hand database system tools. This big data systems are facing attack targets. Some statistical models are helps to find out problems of the cybersecurity. In this paper studied on Big data, cybersecurity, categories of cybersecurity threats, main challenges of cybersecurity, and study on statistical models for vulnerability prediction.

1. Introduction

Big data systems are very essential part of this modern organisations, because now a days we are living in digital world so every 60 seconds millions of data is getting generate. This abundant data just beyond the technology's. As little as 5 years ago almost people only thinking how to store tens to hundred of gigabytes data in our personal computer? but today people thinking how to store tens to hundred of terabytes data?

IBM survey provided that every day 2.5 quintillion bytes of knowledge square measure created most that 90% of the info within the world nowadays has been created within the last 2 years [1]. Intels Infographic reveals each sixty seconds, 639,800GB of worldwide information is transferred, One minute of net time, 204 million e-mails sent. on-line denizens read twenty million photos on Flickr. Twitter processes 100,000 new tweets and 320 new Twitter accounts are created [2].

At the same time of data collection need to improve cyber security. This paper mainly focus on cyber security threats and statistical models. The survey Paper starts with Big data, Cyber security, Threats, Challenges and Statistical models for vulnerability prediction.

2. CONCEPT OF BIGDATA

Bigdata is collection of structured, semi structured and unstructured data. It's so large and complex to manage with traditional systems.



Security mechanisms and Vulnerabilities in LPWAN

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Abstract. The count of Internet of things (IoT) devices getting connected to internet are exponentially growing and is proposed to be 75 billion by 2025. IoT devices uses Low Power Wide Area Network (LPWAN) that are precisely build to operate at a lower cost with greater power efficiency and long range connectivity than traditional wireless networks. LPWAN are inherently prone to security threats since they are also wireless communication network. Secure communication is essential for LPWAN and most LPWAN technologies uses simple cryptography methods. Despite of this security mechanisms, LPWAN is vulnerable to wide range of attacks. In this paper Network architecture and Security mechanisms of LPWAN technologies (LoRa, Sigfox, NB-IoT and DASH7) are discussed and are compered in terms of IoT factors. As a case study, vulnerabilities of LoRa is also being analyzed.
Keywords: LPWAN, Wireless network, LoRa, IoT.

1. Introduction

Internet of things (IoT) is defined as a network of devices or physical objects with electronics, sensors, software and network connectivity that enables them to exchange information and communicate with each other. IoT applications can be used for smart homes, smart metering, factory monitoring, agriculture, smart buildings etc. In IoT wireless technologies such as Bluetooth, WiFi, ZigBee etc. are used to meet the communication requirements, but they can offer only a short range connectivity. In order to overcome the limitations of short range protocols Low Power Wide Area Networks (LPWAN) are introduced, which offer a long range connectivity in the order of kilometers. LPWAN [1] is getting wide acceptance in industrial and research communities due to its low power long range characteristics. LPWAN [2] can offer long range connectivity up to 2 to 50 km depending upon rural and urban areas. Long battery life is one of the key feature of LPWAN technologies. The data rate offered by LPWAN is from 100 bps to 250 kbps and data rate is selected based on range requirements. LPWAN is suitable for IoT applications since it need to send only small amount of data to a long range. There are many LPWAN technologies and among them LoRa, Sigfox, NB-IoT and DASH7 are getting wide acceptance now a day which have many technical differences.

The paper is organized as follows: the first section discusses various LPWAN network architecture. In second section, since security is an essential requirement of wireless communication technologies, how



Survey on Encryption Approaches for Secure Face Biometrics

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Abstract. Biometric system is twisting up logically basic since they give strong moreover, compelling techniques for character affirmations. The face recognition is the most trademark methods for biometric conspicuous verification and give versatile biometric affirmation and is a development prepared for serving an extensive variety of security application. This paper deals with the examination of different encryption approaches like AES, DES, and RSA that can be used for go up against face recognition security suggests and moreover analyze DNA cryptography. With the examination of these systems, AES gives sublime security while considering face affirmation.

Keywords: Biometric, Face Recognition, AES, DES, RSA, DNA cryptography.

1. Introduction

The multiplication of security issues identified with the validness of the people, there is a solid requirement for confirmation and validation frameworks. Today human confirmation can be classified as What you know, e.g secret key, individual check number; What you have, for example, a token, smart card and so forth and What you are, biometrics.

The initial two classifications are less secure techniques when contrasted with the biometrics. Brute compel assaults, Shoulder surfing, and phishing assaults are influenced by the passwords and individual check numbers. The initial two verification classes are shared among the collaborators and gatherings, which influence the security levels of the framework.

Biometric verification outperforms What you know and what you have. Biometric depends on the inherent parts of the human. Exact distinguishing proof, responsibility, simple and safe for utilize and remarkable individual ID are the principle advantages of biometric validation and assuming control conventional passwords and Id card confirmation. In light of the special highlights and about difficult to produce, individual to be distinguished to be physically present for the purpose of the confirmation. Physically, the individual to be distinguished at the present purpose of the check procedure. This trademark eases the confinement of utilizing a secret word or token that can't separate between an honest to goodness client and a gatecrasher. Also, biometric highlights are an effective weapon against the dismissal of a proposition or thought.



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A Study of Next Generation Sequencing Data, Workflow, Application and Platform Comparison

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Abstract

DNA sequencing determines the precise order of nucleotides within a DNA molecule. Next generation Sequencing (NGS) is an efficient parallel high throughput DNA Sequencing Technology which revolutionizing the genomic research. Earlier methods that are quite expensive give rise to different sequence comparison techniques. NGS used for faster detection of variants in human genome and give rise to accelerated response to disease detection like cancer, hepatitis etc. In this paper work flow of data analysis part of NGS are clearly discussed. The different NGS platforms, its applications and different sequencing comparison techniques are also mentioned here.

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A Study on Packet Loss Reduction methods and Node Registration methods in AODV for MANET

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Abstract. Mobile Ad-hoc NETWORK (MANET) is a restless self-forming, infrastructure-less network of mobile nodes in a wireless connection. As there is a high hike in the use of mobile devices and wireless networks over past years, MANET has become one of the vital networks used for communication. A routing protocol is used for distributing information that allows selecting routes between two nodes in a network. Ad-hoc on-demand distance vector (AODV) protocol is widely used protocol for routing in mobile ad-hoc network. Packet loss is one of the significant problems that happen in the mobile ad-hoc networks while routing. A packet consists of the unit of data which is routed between source and destination in a network. Packet loss happens when one or more packets across devices in a network drop before reaching the destination node. A node density method is proposed in this study to alleviate the packet loss problem to an extent. Due to network infrastructure of MANET dynamically changes, mobile ad-hoc network is very vulnerable to attacks. As for the security purpose, we also propose a bloom filter method, which can be used to register the mobile nodes that are participating in a network in-order to restrict attacker nodes or foreign nodes to participate in the packet transmission.

Keywords- Bloom-filter, mobile ad-hoc network, routing protocol, neighbor node.

1. Introduction

Usage of mobile nodes these days has increased and the communication enhancement in its network becomes crucial. Ad hoc networks are generally used by military, rescue teams, personal electronic device networking, maritime communications etc. These users cannot rely on the centralized network [10]. The main factors affected in ad-hoc networks are routing and the characteristic of wireless communication. In ad hoc, a node can communicate only with nodes in its area and to communicate with other nodes uses a routing algorithm. [10]. Mobile Ad-hoc network (MANET) is a collection of mobile nodes that constitute a network with no central admin [1]. A MANET can change location and is a kind of ad-hoc network. MANET has its property that it can configure itself. The advantage of a decentralized network is that they are more robust than centralized networks due to its multi-hop pattern.

Packet loss in transmission is one of the major limitations in the mobile ad-hoc network. As one node moves away from the network, the connection gets lost and the packet drop may happen and also because of congestion packet loss happens. Congestion happens when many



An Approach of RDD Optimization in Big Data Analytics

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Abstract. We live in the information age and new information is produced in each and every second. The information can be worlds data which is responsible for major technological changes that can bring new ways in decision making. Keeping this data for further analysis and computation is a difficult task. Several studies are done in this arena, making it effective for future figuring. Processing or analysing such huge amount of data is a challenging task. All the existing technologies contain certain bottlenecks and performance overheads, diverse challenges like scalability. Spark is the commonly used data analysis framework. Map Reduce is a computing paradigm and a popular model for distributed data analysis. This paper gives a survey about some enormous information technologies, how it will deal with huge data, and the difficulties in existing advances, and has additionally learned about a portion of the execution bottlenecks and preventive techniques, and the concentration at that point moves to the Resilient Distributed Dataset (RDD), and how it is optimized.

1. Introduction

The new media age has witnessed the growing of today's enterprises in an exponential rate day by day, along with the explosion of data and the databases, this has caused a big data problem faced by the industries due to its inability to manage or process this data within the time limit. Data is generated through several social networking sites, as a result of several transactions. The amount of data generated can be structured as well as unstructured [1]. Processing or analysing such huge amount of data is a challenging task. The blowing up of data has created a major challenge in the field of science and engineering. Data sets are fast growing and the conventional methods lack solutions to manage easily. Existing solutions use files or some based on storing in databases still fails in handling and analysing data properly and to make it use in future. As data sets exceed the capacity of the system, its analysis gets difficult and performance also gets limited. Data analysis is done by evaluating certain attributes and necessary data is extracted and transformed, types of data varying from simple to complex ones are extracted and perform multiple complex joins to these datasets. Explosion of data size makes it inefficient to store and



A Performance Improvement Inference Method For Link Prediction in Social Graphs

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Abstract. Social network analysis has turned into a conspicuous field in link prediction. The precise social network models are additionally address a few downsides. Since the link forecast in Social network analysis confront a few threats, for example, the in partially correct rules. An ideal inference mechanism should scale up towards vast scale information. The inference methods uses probabilistic evidence data since it can easily predict the vulnerabilities. There are diverse responses for Social network analysis have suggested over years. In this approach develop a model to predict the nearness of associations among nodes in broad scale casual groups, for example, informal organizations, which are exhibited by Markov Logic Networks (MLNs) and Bayesian Networks. This show gives a successful inference model which can deal with complex conditions and somewhat partially correct rules. The proposed system predicts the accuracy and efficiency of link prediction utilizing MAP Markov Logic induction technique and MPE Bayesian derivation strategy.

1. Introduction

Social network analysis is a mainstream approach to display the collaboration among the general population in a gathering or group. It can be envisioned as a diagram, where a vertex compares to a man in that gathering and an edge speaks to some type of relationship between the relating people. The affiliations are generally determined by shared interests that are normal in that gathering. Be that as it may, informal communities are extremely powerful protests, since new edges and vertices are added to the chart over the time. Understanding the progression that drives the advancement of interpersonal organization is a mind boggling issue because of countless parameters. In any case, a similarly less demanding issue is to comprehend the relationship between two particular nodes. This paper talk about the elements that drive the affiliations and to make the relationship between two hubs influenced by different nodes. The particular issue case that address in this exploration is to foresee the probability of a future relationship between two nodes, realizing that there is no relationship between the nodes in the present condition of the graph[1]. This issue is normally known as the Link Prediction issue.



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Smart Car Parking With Reservation System Using QR Generator

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Abstract

Nowadays parking has become an expensive resource in the almost any major city's in the world, and its limited availability is the concurrent cause of urban traffic congestion and air pollution. The common method of finding a parking space is manual where the driver usually finds a space on the street through luck and experience. This process takes time and effort and may lead to the worst case of failing to find any parking space if the driver is driving in a city with high vehicle density. In this paper, an attempt has been done to automate the car as well as the car parking system with a Smart Parking System (SPS) which is based on the integration of an Android app and QR Code reader. The introduction of a novel algorithm that increases the efficiency of the current smart-parking system and develops an android app to collect information about the occupancy state of parking spaces, and to inform the drivers to the nearest vacant parking spot. The entering into or leaving the parking slot is controlled by an Android-based application. The algorithm helps improve the probability of successful parking and minimizes the user waiting time.

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Energy-efficient sleeping technique in cellular network

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ABSTRACT

Presently days the greater part of the people groups are utilized portable phones, therefore the number of base stations and base station utilization's are additionally increased. The expanding interest of high limit in cell systems requires enormous vitality consumption. Thus, energy proficiency is turned out to be real objective in cell networks. In a phone network, the base stations are utilized more measure of energy. So, energy effectiveness component is connected to the base stations. In this case, we have used a mechanism to on/off base stations according to the users. If a base station does not contain any client then it goes into the sleeping mode, otherwise, it proceeds to its dynamic mode. In this case, a user-centric clustering mechanism is considered. In this technique another system is likewise used, this case the base stations check their closest neighbor base stations. Then tally the quantity of active base stations and sleeping base stations. If any client needs to interface another client to another base station and the majority of the base stations are sleeping. At, this case the resting base stations are naturally going into the wake-up state. And help to associate the clients.

Keywords: Base station, Cellular networks, Base station sleeping, Base station clustering

1. INTRODUCTION

These days the expanding number of smart-phones, tablets, laptops and so forth are remotely associated with the web has caused an extensive measure of activity increment in the cellular network[2]. In a request to give sufficient limit a lot of base stations have been deployed[3] which prompts substantial energy utilization. Studies [4],[5] shows that base stations are already used in 60-80% of total energy consumption in cellular networks. Therefore energy efficiency of base stations are the main goals in a cellular network.

In order to reduce energy consumption in base stations, there are many techniques can be used. e.g, transmit power control in single-antenna system [6],[7] and multi-antenna system[8], processing and speed scaling control[9], Base station sleeping[10]-[20], smart base station deployment [21],[22] etc. Base station sleeping technique is the main technique, in this case, underutilized base stations are going to the sleep.

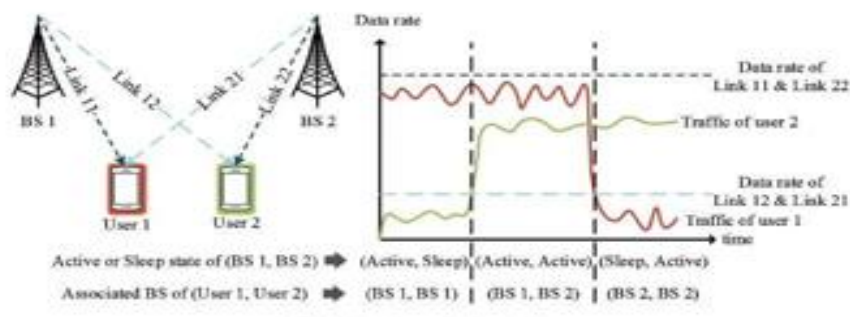


Fig. 1. Traffic adaptation in ideal case

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Deep Learning Models for Speech Emotion Recognition

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Abstract

Emotions play a vital role in the efficient and natural human computer interaction. Recognizing human emotions from their speech is truly a challenging task when accuracy, robustness and latency are considered. With the recent advancements in deep learning now it is possible to get better accuracy, robustness and low latency for solving complex functions. In our experiment we have developed two deep learning models for emotion recognition from speech. We compare the performance of a feed forward Deep Neural Network (DNN) with the recently developed Recurrent Neural Network (RNN) which is known as Gated Recurrent Unit (GRU) for speech emotion recognition. GRUs are currently not explored for classifying emotions from speech. The DNN model gives an accuracy of 89.96% and the GRU model gives an accuracy of 95.82%. Our experiments show that GRU model performs very well on emotion classification compared to the DNN model.

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Novel Web Service Based Fingerprint Identification Using Steganography and Xml Mining

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Abstract. Fingerprint recognition has been considered as the most popular and reliable system for web based person authentication. Fingerprints have unique patterns that can be used to distinguish one fingerprint from another. The fingerprint pattern can be used to enhance the security of existing authentication system by adding a layer of biometric security. In this paper we propose a novel algorithm that is able to distinguish the pattern of one fingerprint from the pattern of another fingerprint using XML mining. But the valuable fingerprint data of a user is at risk as it can be hacked during web based authentication and the data can be easily compromised. Therefore we further enhance the security by extracting the fingerprint features into an xml file and embed the same into an image file using steganography. The encoded file can be used for safe transmission of fingerprints across the web for bio metric authentication. Our proposed system uses a novel method in which xml mining is applied at the server side to make the fingerprint identification faster.

1. Introduction

Automatic personal identification is very important as our day to day life is getting digitized. Two categories of traditional personal identification are there: they are token based and knowledge based [1]. In the token based approach a person is identified based on what he/she has (physical key, ID card, passport, Badges, etc.) and in knowledge based approach a person is identified based on what he/she knows (ID number, password, PINs, etc.). However both these approaches have certain limitations. In the token based approach, the token can be easily stolen, lost, shared or can be duplicated. In knowledge based approach, the knowledge can be guessed, shared or forgotten. Biometric authentication/identification systems overcome the above mentioned limitations and are widely accepted. Biometric based approaches are considered as the most promising option for identifying individuals. Among the various approaches fingerprint recognition is one of the oldest and most popular technique for recognizing people [2].

Fingerprint recognition is used in many areas like access control [3], law enforcement, forensic science to aid criminal investigation [4], biometric smart cards etc. The popularity is mainly because of the uniqueness of fingerprint images, the availability of inexpensive fingerprint readers and the fact that criminals often leave their fingerprints at crime scenes. A fingerprint is a unique pattern of ridges and valleys on a finger. There are different stages in a fingerprint recognition system as shown in figure 1. They are mainly fingerprint acquisition, feature extraction, and matching. The traditional method for



Authenticating Communication of Autonomous Vehicles With Artificial Intelligence

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Abstract. Autonomous vehicles in Vehicular Ad-hoc Networks(VANET)-the spontaneous creation of a wireless network for data exchange to the domain of vehicles may pave the way for future systems where computers take over the art of driving. It aids in transferring secure messages for proper communication between the vehicles. Unauthorized access like injecting spoofed messages to VANET can arise as an extreme threat. So remedies should be taken at early degree of architectonic process. Denial-of Service(DoS) attack takes place while validating each message in VANET ,so an equity between message authentication and DoS prevention should be maintained. This paper discusses on diverse security demanding situations and distinct techniques to secure message transfer between the vehicles that are connected wirelessly.

Keywords-Artificial Intelligence, Vehicular Ad-hoc Network(VANET), wireless communication, message authentication, security issues

1. Introduction

The Internet of Things (IOT)[1][2], is one of the most flourishing technology which makes vehicles connected each other. It connects devices, machines and tools to the internet by means of wireless technologies. VANET[3][4] is a type of network in which the interaction of vehicles occur by exchanging messages between them. The safe exchange of messages can lead to collision avoidance, traffic congestion control, thus ensuring the driver a smooth driving experience. But there can be also many attacks faced by VANET[5] like monitoring attacks, social attacks, timing attacks, application attacks, and network attacks. So the connected vehicles should be secured properly. There are several existing methods for securing them.

Regarding the colossal gains expected from vehicular communications and massive vehicles(hundreds of millions worldwide), it is understood that the intra-communication of vehicles can turn into the greatest admissible recognition of mobile ad hoc networks. GPS acceptors in addition to communication capabilities, which are the most suitable assimilation of on-board computers and spotting devices, open immense trading chances, hence boosts astounding research challenges. One of the major issues is security; very little attention has been dedicated until now to the safety of vehicles in the network. Probably, the size of the network, the speed of the vehicles, the relevance of their geographic location, the very



An Approach of RDD Optimization in Big Data Analytics

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Abstract. We live in the information age and new information is produced in each and every second. The information can be world's data which is responsible for major technological changes that can bring new ways in decision making. Keeping this data for further analysis and computation is a difficult task. Several studies are done in this arena, making it effective for future figuring. Processing or analysing such huge amount of data is a challenging task. All the existing technologies contain certain bottlenecks and performance overheads, diverse challenges like scalability. Spark is the commonly used data analysis framework. Map Reduce is a computing paradigm and a popular model for distributed data analysis. This paper gives a survey about some enormous information technologies, how it will deal with huge data, and the difficulties in existing advances, and has additionally learned about a portion of the execution bottlenecks and preventive techniques, and the concentration at that point moves to the Resilient Distributed Dataset (RDD), and how it is optimized.

1. Introduction

The new media age has witnessed the growing of today's enterprises in an exponential rate day by day, along with the explosion of data and the databases, this has caused a big data problem faced by the industries due to its inability to manage or process this data within the time limit. Data is generated through several social networking sites, as a result of several transactions. The amount of data generated can be structured as well as unstructured [1]. Processing or analysing such huge amount of data is a challenging task. The blowing up of data has created a major challenge in the field of science and engineering. Data sets are fast growing and the conventional methods lack solutions to manage easily. Existing solutions use files or some based on storing in databases still fails in handling and analysing data properly and to make it use in future. As data sets exceed the capacity of the system, its analysis gets difficult and performance also gets limited. Data analysis is done by evaluating certain attributes and necessary data is extracted and transformed, types of data varying from simple to complex ones are extracted and perform multiple complex joins to these datasets. Explosion of data size makes it inefficient to store and





Your Signature is Assured: Post-Quantum Cryptography

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Abstract — Cryptographic techniques are crucial for the secure communicate in cutting-edge society. As increasingly more commercial enterprise processes are performed through the internet and the necessity for efficient cryptographic answers will grow in near future. Nearly all cryptographic schemes practically used are based on difficulty of solving two problems: factoring of large complex integers and tackling the discrete logarithms. However, schemes based on these problems became unreliable when large quantum computer systems are built. In quantum computers numeric and theoretic problems which includes factorization of integers and discrete logarithms were tackled down in polynomial time. The principle reason behind is the Shor's algorithm. Therefore requires immediate alternative options for those classical public key schemes. Besides the lattice, code and hash based cryptosystems, multivariate cryptography is considered to be a most promising candidate. Besides the resistance against quantum computer attacks, the multivariate schemes are fast and needs only modest computational requirements, which makes them more appealing for the use on low-cost devices like RFID (Radio Frequency identification) chips and smart cards. The paper presents a comprehensive review on diverse signature schemes used in Multivariate Post-Quantum Cryptography literature. Moreover highlights the problems in multivariate signature scheme.

Keywords: Cryptography, Quantum Computers, Post-Quantum Cryptography, Multivariate Public Key Signature Schemes, Low-cost devices.

I. INTRODUCTION

In the business world, the communicate among trading partners needs to be remain confidential. Even private user deals with cryptography every day. Common examples are online shopping and downloading of a software application. When logging in to an electronic mail account or moving over the website of a bank, cryptographic techniques are used too. As increasingly business processes are accomplished via the internet (e.g. via cloud computing) and due to new application like e-voting and digital payment, the need for efficient cryptographic solutions will show nonetheless growth in near future.

The most often used cryptographic primitives are encryption and digital signature schemes. Encryption schemes guarantee the confidentiality of information so an attacker cannot get any records approximately the content of the encrypted message. Besides that signature schemes make sure that the message genuinely comes from the sender (authentication) and that it was not changed after the signing process (data integrity). For contracts it is also vital that none of the signers forget the validity of the settlement (non-repudiation), which can also be guaranteed with the aid of a digital signature scheme.

Today, nearly all the cryptographic signature schemes practically used are primarily based on mathematical problems, specifically the factorization of large complex integers and the solving of discrete logarithms. Diverse internet and industry standards use asymmetric cryptography based fully on RSA or the Elliptic Curve Cryptography (ECC), to protect their data communication between smart cards, smart phones, computer systems, servers, or industrial control systems.

Taking an instance, with the RSA algorithm a Public-Key Encryption (PKE) scheme can be realized that permits it to send an encrypted email (e.g., with PGP/ GPG or S/MIME) to a recipient. There states no requirement that first to exchange a symmetric key though a securedchannel, the public key of the recipient is enough to achieve confidentiality. Other applications of asymmetric cryptography are digital signatures, which are based upon RSA or ECC. They are used to sign and verify information. The public key is involved to check the validity of a signature. If anyone tries to modify a digitally signed agreement or long term archives after signing, even with the aid of a single bit, the digital signature test fails. Both PKE and digital signatures are critical in Transport Layer security (TLS) protocol [1] which is the spine of secured communication within the inter-

An Analysis on Hadoop MapReduce Performance: a Survey

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Abstract--- Nowadays, network-based applications are growing rapidly such as cloud computing services, image processing, Internet of Things sensors, network traffic analysis mobility and video streaming services etc. It requires a massively distributed computation which leads to a quick and big increase in the usage of the network as well as it challenges the existing network management. Hadoop MapReduce is a framework that allows a committed and a scalable number of servers for analytics process. We can scale disk I/O requirements with the number of servers during computing and such type of scaling provides high network traffic in the underlying network of the Hadoop MapReduce. This comparative study reveals that network traffic engineering is an important research area in the MapReduce. The survey underlines the cutting edge in improving the performance of MapReduce using recent techniques and its usefulness for processing large-scale data-set. Based on this study the conclusion is that it is very difficult to change the existing network topology or network configurations frequently; therefore an Application-Aware Networks in Software-Defined Networking (AAN-SDN) is the best approach for network traffic management as well as for improving Hadoop MapReduce performance efficiency.

Keywords--- Hadoop, MapReduce, Network Traffic, HDFS, AAN-SDN.

I. Introduction

In this data age, a large volume of data is coming from various sources in a wide variety of forms. Many applications like mining of data, image processing on large image sets, data analytics etc., use a huge amount of data for processing in parallel. For example, terabytes of data are generated by New York stock exchange per day [1] and petabytes of data can be handled every day by the Facebook [2]. An average of hundreds of thousands of MapReduce jobs are executed every day on Google's clusters, that is it processes more than twenty petabytes of data on each day [3]. The most dominant approach for processing such type of volumetric traffic is Hadoop MapReduce. It is because a typical distributed system does not work properly with a huge amount of data due to its network dependency and high bandwidth utilization. With Hadoop, we can run many exploratory data analysis tasks on full data-sets, without sampling or it can be used for extracting information from larger datasets or for data pre-processing [16]. Many such applications can be executed in parallel on a number of machines that runs MapReduce and HDFS.

MapReduce is a type of programming model for computing data in a distributed fashion. MapReduce applications need processing of the enormous amount of data in parallel on multiple clusters. The partitioning of data, distribution of data to various machines, its synchronization and fault tolerance are managed automatically by the MapReduce framework. To schedule a job, the resource manager needs to be attentive about the network condition; but it does not, is the major problem of default Hadoop resource manager. A large amount of shuffle phase traffic causes more traffic in the Reducer phase, results in a sharp increase in computation time and this will also increase the cost. The recent studies show that the shuffle operation takes more time for execution, a third of the job completion time [4] If data is processed very close to the storage then amount of data and its transmission rate can be reduced because it takes advantage of locality of data.

Hadoop Distributed File System (HDFS) is easily portable master-slave architecture, ensures data safety when hardware failures occur and are useful for applications with large datasets. HDFS is responsible for storing data on the slave nodes. It consists of storage, which is attached to the live nodes of the cluster called Datanode and it stores data in the form of files. Internally, a file is partitioned into blocks; the number of blocks is based on its data size. Such blocks are stored in the DataNodes. Different racks of DataNodes are present in HDFS architecture and are not only for storing data but also for storing replicated data blocks (a block is replicated three times). These blocks are replicated in order to ensure data safety and are written into different DataNodes, resided in different racks to support data safety. The master server executes file system namespace operations. All the operations such as opening and closing of files or directories and their renaming etc. are managed by the map and reduce phases of Hadoop.

A Method for the Investigation of Bearing Vibration Based on Spectrogram Image Comparison

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Abstract. The possibility of analyzing the condition of bearing systems from the vibrations generated during their operation, by means of signal processing methods, has been of extensive research, over last few years. As, vibration signal is highly non-stationary, time as well as frequency domain features cannot designate its behavior well. Though, Spectrogram is a time-frequency domain feature extraction method, its analysis is tedious and maybe, subjective. In the proposed method, the spectrogram images of the normal vibration data is compared with that of the contextual vibration, using Peak Signal-To-Noise Ratio (PSNR). It has postulated that, the pattern similarity between the contextual spectrogram and baseline is little when the bearing is faulty. The PSNR between the spectrogram image of normal bearing vibration data and the baseline is different from those between the baseline and vibration data corresponding to Inner Race Failure (IRF), Roller Element Defect (RED) and Outer Race Failure (ORF). The PSNR analogous to the vibrations picked up from normal and faulty bearings vary with a P value of 4.58445×10^{-20} . The method can discriminate faulty bearings with, 96.77% sensitivity and 100% specificity.

1. Introduction

Bearings are the prominent components in most of the machines. They set up free rotational or linear movement, by lessening friction. Bearing may turn broken because of substantial stacking, lacking grease and inadequate fixing. A few investigations have expressed that the significant reason for failure of machines is because of bearing problem [1-2]. Sudden failure of the bearing may crush up different parts of the machines additionally and may raise downtime costs. Regular strategies for observing bearing wellbeing incorporate motor current analysis, wear debris analysis, noise monitoring, temperature monitoring, vibration monitoring, chemical analysis, Laser displacement measurement etc [3-4].

The misalignment of the bearing produces vibration and noise. Signal processing techniques are the most vital part of the systems intended for the automated analysis and interpretation of bearing vibration. Feature extraction techniques used in these automated systems generally belong to time domain, spectral domain [5-6] or Time-Frequency (TF) domain. Peak/peak to peak and Root Mean Square (RMS) amplitude of vibration, skewness, kurtosis, crest factor, measures of Central Tendency (CT), impulse factor, shape factor and clearance factor [7] are few of such time domain features usually employed.

K. Czarnecki [8] suggested that energy density estimated via ordinary spectrogram or Instantaneous Frequency Rate Spectrogram (IFRS) is a reliable feature as far as mechanical vibrations are concerned. R. Klein [9] demonstrated that faults in turbofan engine can be detected from the spectrogram of its vibrations, computed via Wigner-Ville, wavelets or Short Time Fourier transform (STFT). A. Belsak and J. Prezelj [10] used spectrogram of the vibrations produced in gear units for monitoring their condition. S. K. Yadav and P. K. Kalra [11], demonstrated that the spectrogram of vibration has the potential to detect faults in single cylinder four stroke IC engine. Griffaton et.al [12] suggested that damaged bearings in highly sophisticated systems like aircraft engines can be identified



Multirate and Filterbank Approaches in Digital Hearing Aid Design: A Review

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Abstract. Hearing is considered as the most important senses of humans because it connects us to the world always. And the communication between humans are mostly by speaking and listening. So hearing loss can have a significant affect on our life, from our work to our connections and enthusiastic prosperity. A hearing aid is an electro-acoustic gadget, which is intended to increase sound, with the point of making speech more comprehensible. The fundamental task of the hearing aid is to selectively amplify sound signals to such an extent that the handled sound matches ones audiogram. The emerging demand for personalized hearing assistants requires the filter bank to be capable of decomposing the sound waves in accordance with the characteristic of the patients hearing loss. In this review paper, the application of multirate frameworks and filter banks for different procedures in personalized hearing assistants are investigated.

1. Introduction

Hearing aids are gadgets that mostly defeat sound-related shortfalls and are regularly utilized to make up for hearing-loss in hearing-impered individuals. The fundamental target of a hearing aid is to fit the dynamic range of speech and regular sounds into the limited dynamic range of the hindered ear. With a specific end goal to accomplish a superior comprehension of this gadget and its capacity, we have to clarify how the sound is perceived by the human auditory framework and what are the issues experienced by hearing-disabled individuals [1].

The most well-known sort of hearing loss is sensorineural hearing loss (SNHL) in which the underlying cause lies in the vestibulocochlear nerve, the inner ear and the sound handling centers of the brain. Generally an issue with the cochlea, in the internal ear, in which the cilia don't distinguish clues of specific frequencies as they should. Most hearing impedances fall into this class, so this is the issue that most hearing aids try to address. Sensorineural disability reduces the capacity of a man to recognize and detect one frequency within the presence different frequencies. Thus, a man with hearing misfortune has diminished capacity to hear a sound that quickly takes after, or is quickly trailed by an alternate sound. This diminished frequency makes it more probable for a hearing-impered individual that noise will mask speech [2].



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Articles

Detection and Characterization of Bearing Faults from the Frequency Domain Features of Vibration

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ABSTRACT

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Help

The characteristics of vibrations is one which is widely used for the non-intrusive inspection and health monitoring of bearings. However, automated methods, intended for predicting the health status of bearings greatly depend on the features extracted from the vibration signal. In this paper, the ability of frequency domain features such as spectral role-off (SR), median frequency (MF), spectral centroid (SC), dominant frequency (DF), and spectral flux (SF) of the bearing vibration data corresponding to healthy, inner race failure (IRF), roller element defect (RED), and outer race failure (ORF) to identify the state of the bearing is analyzed. The SF, DF, and SC are identified

Compressive Sensing Recovery Algorithms and Applications- A Survey

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Abstract. Compressive sensing is an efficient method of acquiring signals or images with minimum number of samples, assuming that the signal is sparse in a certain transform domain. Conventional technique for signal acquisition follows the Shannon's sampling theorem, which requires signals to be sampled at a rate atleast twice the maximum frequency (i.e $f_s \geq 2f_m$). As compared with this traditional acquisition technique, compressive sensing technique captures wide range of signals at a rate significantly lower than Nyquist rate without losing the imperative information, so this technique can be widely used in MRI. Suitable reconstruction algorithms are needed for recovering the original signals from compressed sampled signal. This paper introduces a survey of the various reconstruction algorithms which might enable the use of this technology for wide spread hardware combatiabile implementation in the near future.

1. Introduction

The basic concept behind compressive sensing (CS) is to directly collect the signal in compressed form Figure 1. According to the Shannon/Nyquist sampling theorem, analogue signal can be recovered perfectly, if it can be sampled at a rate at least twice the maximum frequency component present in the signal (Nyquist 1928; Shannon 1949). CS builds on the work of Candes, Romberg, and Tao [1] and Donoho [2], were possibly the first set of researchers who had mathematically shown that a sparse signal can be recovered from a few set of measurements. Since there were only a few set of measurements, these researchers termed it as compressive sensing. It offers the possibility to capture less data then is commonly done, but still to be able to reconstruct the entire information. This can also appear as a consequence of omitting samples that are exposed to different kinds of noise or losing some parts of the signal during the transmission. These omitting samples recovered by using suitable CS reconstruction algorithms.



Design and Simulation of an Automated Road Safety Enhancement System by Testing the Physical Fitness of Driver

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Abstract. Most of the road mishaps occurred due to the mistakes of driver. The lack of physical fitness is one of the reasons for these kinds of accidents. Alcohol consumption and sleeping during driving also leads to accidents. The biological signals such as ECG, EEG and Heart Rate are considered to be good indicators to check physical fitness. To avoid the road mishaps, a micro-controller based system to sense the above mentioned parameters and to make a decision based on the sensed data is proposed in this paper. It consist of various sensors to detect biological signals, sleeping attitude and presence of alcohol in the blood of the driver. The micro-controller is programmed to make decision based on the sensed data. If the physical fitness of the driver is tested and verified successfully, can drive the vehicle. If not, the system automatically locks the engine and a message will be delivered to the control centre via wireless technology. The design and real time simulation of the proposed system is carried out in Proteus[®] and the micro controller programming is done in mikroC[®].

1. Introduction

The mistake by driver is one of the reasons for major road accidents. The performance of the driver depends upon his current physical condition. This may be because of the driver fatigue and distraction [1]. Alcohol consumption and sleeping during driving also leads to accidents. The biological signals such as ECG, EEG and Heart Rate are considered to be good indicators to check current physical level of the driver [2]. To avoid this mishaps, a micro-controller based system to monitor physical states of driver is proposed in this paper. The proposed system will detect various biological parameters and check whether the physical fitness of driver is good or not. The proposed system will be very useful for elderly car driver or driver with chronic diseases. It ensures safety driving and reduces the chance of road mishaps.

In past decades, many researches have performed to detect the fatigue and drowsiness of driver. Many of them are based on EEG signal bands (α , β and γ bands) [3]. These bands are occurred by the brain activity and it varies with respect to drowsiness or fatigue. For EEG based assessment, an algorithm is developed to assess driver fatigue based on the changes in EEG bands. Then estimated the drowsiness level by independent component analysis (ICA) of EEG and found the optimal locations to place EEG electrodes. Compared four algorithms





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Research Article

Non-intrusive detection and characterisation of bearing faults from the temporal features of vibration

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ABSTRACT

The behaviour of vibrations is widely used for non-intrusive inspection and health monitoring of bearings. However, automated methods, intended for predicting the bearing status, greatly depend on the features extracted from the vibration. Generally, time domain features are computationally simpler than frequency and time–frequency domain features. In this paper, the ability of time domain features to characterise the type of bearing fault is analysed. Types of bearing faults considered are healthy, inner race failure (IRF), roller element defect (RED) and outer race failure (ORF). The features being analysed are standard error (SE), absolute deviation of SE from the reciprocal of

Comparative Analysis of Full Adder Circuits

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Abstract. In this paper, comparison of various full adder circuits is analysed. Full Adder circuits are extensively used in digital design. Here different types of full adder such as Conventional CMOS, based on Ex-OR/Ex-NOR, Pass Transistor Logic(PTL) and Gate Diffusion Input(GDI)technique are done. From this, GDI technique takes less number of transistors and therefore consumes less power. In GDI- 14T, 12T which is based on MUX and a proposed 10T is implemented. The power consumption is less for 12T whereas better output is obtained for 10T. Simulation results are obtained in 180nm technology using Mentor Graphics Tool.

1. Introduction

Now a day, a tremendous increase in electronic industry is seen. The use of portable devices are also increasing. The evolution of nanotechnology has become a boon to the electronic manufacturing. As the channel length reduces, maximum number of transistors that can be embedded into a single chip increases. This gives rise to improved functionality. The current demands are high speed, low power, high throughput. So in VLSI, the circuits need good output with less power.


Full Adders are widely used in different combinational circuits, Application Specific Integrated Circuits(ASICs). It is an essential component for the design and development of all type of processors like Digital Signal Processors(DSPs), Microprocessors etc. It is the fundamental gate in many arithmetic circuits, such as adders and multipliers. Thus, upgrading the performance of the full adder block leads to enhancement of overall system performance. In order to attain low power for large circuits, the basic component itself needs to be minimized in terms of power. Different low power techniques are available. The most widely used methods include PTL, which requires less number of transistors as compared with conventional CMOS circuits. The problem with this is improper output voltage swings due to difficulty of PMOS to turnoff. This even increases static power dissipation[5]. Other existing low power technique includes Hitachi CPL[4] and DPL[6]. Older low power technique includes Dynamic logic, Domino logic, NORA logic, Differential Cascode Voltage Switch(DCVS), MOS Current Mode Logic(MCML) and Clocked CMOS(C2CMOS[8][9]). The latest low power circuits include GDI technique which





A Fuzzy Sharpness Metric for Magnetic Resonance Images

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Highlights

- A fuzzy-based metric meant for the objective measurement of sharpness of MR images.
- High correlation with subjective evaluation and fast computation.
- A bounded statistics with finite range between zero and one.
- No reference image is required for computation.
- Formulation does not include any manually selected parameters.

Abstract

A fuzzy-based sharpness metric for the objective measurement of sharpness of Magnetic Resonance (MR) images is proposed in this paper. In the proposed metric, Quadratic Index of fuzziness (QIF) is used to quantitatively express image sharpness. The proposed metric is found to be superior to Maximum Local Variation (MLV) metric, Perceptual Sharpness Index (PSI), Second order Derivative based Measure of Enhancement (SDME), Blanchet's Sharpness Index (BSI) and Roffet's Blur Metric (RBM) in terms of correlation with subjective quality ratings and computational time.

 Previous

Next 

Keywords

Edge enhancement; Fuzziness; Image sharpness; Magnetic Resonance Image

1. Introduction

In computerized analysis of Magnetic Resonance (MR) images, automated localization of structures is possible only if they have well-defined and sharp boundaries [[1], [2], [3]]. State of art techniques for image sharpening includes Unsharp Masking (UM) [4], shock filters [5] etc. Development of customized sharpening techniques suitable for MR images [[6], [7], [8]] is one of the hot areas of research in medical image computing. Need for objective quality metrics for the performance evaluation and comparison of state of art sharpening techniques is the major motivation of this paper. Another concern is that, majority of the sharpness metrics are developed for panoramic images, rather than medical images like MRI. Sharpness metrics with good correlation with subjective fidelity ratings, which are computationally feasible too, are

AN ETHICAL LEADERSHIP MODEL FOR ENHANCING MORAL EDUCATION IN THE DIOCESAN COLLEGES OF PALAI, KERALA, INDIA

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Abstract: The aim of this research was to develop an ethical leadership model for enhancing moral education in the diocesan colleges of Palai, Kerala, India. The researcher identified four specific objectives for this research. For accomplishing the first research objective, the researcher did the content analysis of 16 books and 114 articles directly related to the subject. These results were validated by twenty experts and from these results the instruments for the data collection for acquiring the second objective were developed. The data for second objective were collected by conducting in depth interviews with the administrators of the colleges and by using survey questionnaires for collecting data from the lecturers and the students. The results revealed the areas that needed improvements. The researcher, by making use of the ethical leadership theories and combining the results of the first and second research objectives, developed a new model for enhancing the moral education. The preliminary model was sent to 20 experts for their review. After having collected their suggestions, the researcher modified the model accordingly and thus the final model emerged. For accomplishing the fourth objective, a new curriculum was developed and the researcher implemented the new model for a period of three months in one of the colleges of the diocese of Palai. Pre-test and post-test were conducted. The results of the analysis of the data confirm that the new ethical leadership model for moral education is effective in terms of values, instructional strategies and moral assessment.

Keywords: Ethical Leadership, Moral Education, Higher Education.

Introduction

Whatever profession people are involved in; the society expects and demands high ethical standards of behavior from them. Being morally sound and honest is the most important characteristic of a good professional. People highly value morally sound behavior and pay respect to such people. In the present world, it is seen that the professionals are willing to do anything for the sake of money, power and other personal gains. They forget the importance of codes of conduct that they have to follow in their profession. It indicates the need for an evaluation of how we train the

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Gender Mainstreaming and Impact of Self-Help Groups: A Study on Social Entrepreneurship through Fish Aggregating Devices in Mannancheri of Alappuzha, Kerala

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ABSTRACT

A research study for assessing the impact of fisher folk Self Help Groups in gender mainstreaming was undertaken on social entrepreneurship venture on fish aggregating devices at Mannancheri gramapanchayath, located at Alappuzha district of Kerala. The analysis included specific aspects such as performance assessment of the SHGs, gender analysis and empowerment analysis which were carried out based on socio-economic surveys and personal interviews using pre-tested and structured data gathering protocols with standardized scales and indices involving the members of the SHGs. The male and female counterparts of the families were separately interviewed to assess the gender mainstreaming aspects in terms of equity and equality to access to resources, participation profile, decision making aspects, gender need analysis etc. Though majority of activities are male dominated, the female counterparts of the households also have definite role in decision making, purchase of accessories etc. A success case study was elucidated and documented as a documentary which can be used as a case model for promoting group action for mobilizing SHGs on a sustainable basis.

Key words: Self Help Group, Empowerment Index, Gender mainstreaming, Performance Level.

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The Impact of Visual Merchandising, on Impulse Buying Behavior of Retail Customers

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Abstract: Visual merchandising has been over the years thought to be marketing tool in retail industries. The researchers embarked upon a study to find the impact of visual merchandising with reference to the retail sector. For this they have taken the reliance trends as a case and has done an in depth study using its sample customers to find the impact of their buying behavior. The research was of a descriptive in nature and helped to develop the concept to clearly establish priorities, to divulge adequate information which the researchers feel will help in decision making for the company. A structured questionnaire was used to obtain information and to assess the impact of visual merchandising, on impulse buying behavior of customers. A random sampling technique was used in the study and care was taken that the respondents were as diversified as possible. A sample size of 100 respondents was taken from Cochin and Kottayam. To draw conclusions easily, the data was converted into XY (Scatter) diagrams. Research findings suggest that impulse buying accounts for substantial sales across a broad range of product categories in the stores. Since impulse buying is a pervasive aspect of consumers' behaviors and a focal point for strategic marketing plans, it is worthwhile for retailers to understand factors within the retail setting that trigger consumers' impulsive reactions. Retailers can help customers to find the right products through focused merchandising, intelligent store design and layout, and other visual merchandising practices, such as product displays, packaging, and signage. It is has also been found that all the four visual merchandizing factors affect the impulse buying behavior, but the effect of Promotional offerings at the entrance is comparatively very high. A greater importance should be given for visual merchandizing factors by retailers for differentiating itself from the competitors.

Keywords: Visual merchandising, impulse buying, consumer behavior, retail

I. INTRODUCTION

Marketing occupies an important position in the organization of a business unit. An effective system of marketing leads to the organization. All activities which are involved in the process of transferring goods from the place of its manufacture to the ultimate consumer come under the purview of marketing. Marketing is not a novel concept of the 20th century but is as old as human history. In the initial stages, trade was simply a barter system. During this period local markets developed. Goods were brought to this market from nearby places for sales. The difficulties experienced under the barter system induced the people to think about a common medium of exchange for this. They introduced various kinds of metals: The appearance of money quickened the phase of trade which is the heart of marketing. After the industrial revolution the marketing system became increasingly complex. With the advent of industrial revolution, the marketing system became revolutionary changes in the techniques, methods and volume of production. Large scale production led to large scale consumption, which consequently led to newer method of marketing. Marketing is one which facilitates any organization to much its own capabilities to the wants of its customers. The modern marketing starts with the identification of customer needs.

II. PURPOSE OF THE STUDY

The purpose of this research is to examine the relationship between customers' impulse buying behaviors and common external factors that trigger impulse buying. External factors that the research will examine are attributes likely to be encountered in many retailing contexts, such as visual merchandising. The research, therefore, will focus on effects of four types of visual merchandising on impulse buying behavior. The types of visual merchandising used as predictors in this study are window display, in-store form/mannequin display, floor merchandising and promotional signage.

III. OBJECTIVE OF THE STUDY

A. To examine the relationship between consumer's impulse buying behavior and common external factors that trigger impulse buying.

Improvement of Surface Finish and Reduction of Tool Wear during Hard Turning of AISI D3 using Magnetorheological Damper

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Smart materials are the materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli such as stress, temperature, moisture, pH, electric or magnetic fields. Magneto-rheological fluids are smart fluids, which can change their viscosity when a magnetic field is applied. That is, the liquid material will change to a semi-solid under the influence of the magnetic field. Hard turning has gained popularity in machining industries as an alternative to conventional cycle of turning, heat treatment and then finishing for assembly of high wear resistant parts. Vibration developed during the hard turning is the major reason for poor surface finish of the parts produced by this process. The present investigation aims at developing the magneto rheological damper for suppressing the tool vibration and promoting better surface finish. Experiments were conducted on AISI D3 steel of HRC 60 turned with multicoated hard metal inserts with sculptured rake face geometry. This study also presents multivariate loss function for multi criteria optimization of surface finish and tool wear. Experimental results revealed that use of MR damper reduced the surface roughness by three times when compared with that of not using MR damper. Results also revealed that the optimum parameters to improve the surface finish and reduce the tool wear simultaneously are cutting speed 120 m/min and feed rate 0.08 mm/rev.

Keywords: AISI D3 Steel, Hard Turning, Magneto Rheological Damper, Surface Finish, Multivariate Loss Function

Introduction

Hard turning defined as the turning of a part or bar stock that is harder than 45HRC on a lathe or turning center. Hard turning can be either turning with cutting fluid or pure dry turning. Dry turning technology needs a rigid machine tool with minimum or zero vibrations during machining as vibrations during the machining greatly influence the quality of surface finish and tool wear. Completely arresting the vibrations of machine tool is not possible. The solution for this problem can be use of Magneto rheological (MR) dampers using Magneto rheological fluids (MRF).¹ Magnetorheological devices used for several applications, including magnetorheological shock absorbers, control valves, drug delivery cancer treatment and bio-medical application as adaptive prosthetic foot. Various studies of Vardarajan and his colleagues²⁻³ present the effect of magnetic field and on damping ability and tool wear in hard turning of AISI 4340 steel, dry and with minimum fluid applications. Recent studies of Aouci *et al*⁴ on machinability investigation in hard turning of AISI D3 cold work of HRC 60 with ceramic

tool revealed that, at optimum cutting conditions a surface finish of 0.2834 μ m achieved. The present study aims to develop a MR damper to enhance the surface finish and reduce the tool wear in hard turning of AISI D3 steel with hardness of 60 HRC by dry machining.

Selection of work material

AISI D3 Steel, which is a high carbon-high chromium steel developed for applications requiring high resistance to wear or to abrasion and for resistance to heavy pressure rather than to sudden shock is used as the work material. The chemical compositions of this material in per cent by weight is C- 2.1, Si-0.3, Cr-11.5, Mn-0.4, Ni-0.31. Its usual application is as tool material in conventional machining.

Selection of tool material

Multicoated hard metal inserts with sculptured rake face geometry and the specification SNMG 120408 MT TT5100 from 'Taegu Tec' coated with TiC and TiCN are used as cutting tools in this study. The tool holder used has the specification PSBNR 2525 M12. The basic dimension of tool holder is 25 \times 25 \times 145 mm³.

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Welding processes for Inconel 718- A brief review

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Abstract. Inconel 718 is being extensively used for high-temperature applications, rocket engines, gas turbines, etc. due to its ability to maintain high strength at temperatures range 450-700°C complimented by excellent oxidation and corrosion resistance and its outstanding weldability in either the age hardened or annealed condition. Though alloy 718 is reputed to possess good weldability in the context of their resistance to post weld heat treatment cracking, heat affected zone (HAZ) and weld metal cracking problems persist. This paper presents a brief review on welding processes for Inconel 718 and the weld defects, such as strain cracking during post weld heat treatment, solidification cracking, and liquation cracking. The effect of alloy chemistry, primary and secondary processing on the HAZ cracking susceptibility, influence of post/pre weld heat treatments on precipitation, segregation reactions, and effect of grain size etc. discussed and concluded with future scope for research.

1. Introduction

Inconel 718 is a super alloy with higher amount of nickel initially developed by Elsestein of International Nickel Company for use in wrought condition. Now this alloy has been extensively using in investment cast form in the manufacturing of hot-section components of aero engines, gas turbines, and other high-temperature applications mostly involving high temperature environment such as chemical and process industries, and nuclear reactors. This is due of its oxidation and corrosion resistance and relatively good strength at elevated temperatures [1-4]. Investment cast structures welded during their fabrication stage or for some weld repairs. Table.1 shows a typical chemical composition of this alloy. Inconel 718 alloy has outstanding weldability in both age hardened or annealed condition. However, this alloy has high resistant to strain-age cracking yet this alloy has still weldability problems such as microfissuring and solidification cracking. Formation of Nb rich Laves phase which is a brittle intermetallic phase of Ni, Cr, Fe₂, or Nb, Mo, Ti, in the inter dendritic region at the time of solidification is another main problem. As Laves phases diminish the matrix of vital alloying elements and aid for favourable sites for crack initiation and its growth [5]. Detailed discussion on the weldability of this alloy was presented by Muralidharan et al. [6]. The main aim of this review is to present various welding process used by researchers for welding of Inconel 718 alloy and issues related to weldability of Inconel 718 strain age cracking, solidification cracking and the importance of post-weld treatments and alloying elements in fusion zone and HAZ intergranular cracking. Remaining part of this paper divided into a brief review on welding defects, processes used for welding of Inconel 718, finally conclusions and scope for future research in this area.

Table.1. Composition (Wt-%) of Inconel 718 [5]

Ni	Cr	Nb + Ta	Mo	Ti	Al	Si	C	Mn	S	P	Fe	B	Cu	Co
53	18.2	5.19	3.15	1.02	0.48	0.07	0.027	0.07	0.006	0.005	Bal	0.005	0.02	0.02



Optimization and selection of forming depth and pressure for box shaped Superplastic forming using grey based fuzzy logic

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Abstract: Superplastic forming (SPF) is the first choice of designers for manufacturing parts with complexity as used in aircraft and automobile industries, where the strength to weight ratio is the main criterion. Superplastic forming of a sheet metal has been extensively used to produce the parts with greater complexities that are much stronger at the same time lighter than with other methods. Superplastic forming of sheets invariably results in thickness variation. Minimum thickness results at the portion where sheet comes in to contact with the die last. Pressure, forming depth and complexity of the part affect this thinning. The present investigation aims for simultaneous optimisation of forming depth and pressure of box shaped Superplastic forming using grey based fuzzy logic. In the present study Sn-Pb chosen; which is a model material for SPF to carryout experiments, the same results could be applicable for any other Superplastic material. Results revealed that depth at level1 (D1) and pressure at level 3 (P3) parameter settings minimize the time of forming, and maximize the thinning ratio, simultaneously.

1. Introduction

Ductility is the ability to undergo shape change without failing under the action of external mechanical stresses. Elongations in excess of 200% indicate the superplastic behaviour in the materials. Superplastic forming is the forming process uses this high extensibility of these materials. Because of this property SPF is widely used in the manufacturing of parts with greater complexity at lower costs compared to conventional machining [1]. Certain conditions are necessary for materials to exhibit this phenomenon of super plasticity [2]. The Pb – 61.9% and Sn – 38.1% alloy is a model material to conduct experiments on superplastic forming. Most researchers used both symmetrical [3-7] and asymmetrical [7] rolling for the grain refinement and could achieve grain sizes below 10 microns. Superplastic forming of sheet invariably results in thickness variation. To meet the tight tolerance limits of the parts, it is very important to control this thickness variation. Processing of the material to obtain a high ‘m’ value, part/die design changes to minimize local stress concentrations, forming profiled sheet of varying thickness, and pressure application in a profiled and controlled manner to control the strain rate are some of the methods developed by researches to control this thickness variation. Most of the researchers focus on thinning during superplastic forming of hemi-spherical and conical shaped products [3-6].

Kalaichelvan, et.al [3] conducted experiments on Pb–Sn sheet and concluded that combination of variable pressure and preforming gives better results compared to applying only variable strain rate method. Babu and colleagues [4-6] presented thinning in hemi-spherical and conical shaped products. Their results showed that variation in pressure during forming reduced the thinning. This review concludes that very few researchers focused on thickness variation in particularly in the case of box shaped components [7, 8]. Hence, the present investigation focused to study the effect of pressure and depth on thickness variation and forming time of a box shaped component.



Development & characterization of alumina coating by atmospheric plasma spraying

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Abstract. Ceramic coatings are applied on metals to prevent them from oxidation and corrosion at room as well as elevated temperatures. The service environment, mechanisms of protection, chemical and mechanical compatibility, application method, control of coating quality and ability of the coating to be repaired are the factors that need to be considered while selecting the required coating. The coatings based on oxide materials provides high degree of thermal insulation and protection against oxidation at high temperatures for the underlying substrate materials. These coatings are usually applied by the flame or plasma spraying methods. The surface cleanliness needs to be ensured before spraying. Abrasive blasting can be used to provide the required surface roughness for good adhesion between the substrate and the coating. A pre bond coat like Nickel Chromium can be applied on to the substrate material before spraying the oxide coating to avoid chances of poor adhesion between the oxide coating and the metallic substrate. Plasma spraying produces oxide coatings of greater density, higher hardness, and smooth surface finish than that of the flame spraying process Inert gas is often used for generation of plasma gas so as to avoid the oxidation of the substrate material. The work focuses to develop, characterize and optimize the parameters used in Al₂O₃ coating on transition stainless steel substrate material for minimizing the wear rate and maximizing the leak tightness using plasma spray process. The experiment is designed using Taguchi's L9 orthogonal array. The parameters that are to be optimized are plasma voltage, spraying distance and the cooling jet pressure. The characterization techniques includes micro-hardness and porosity tests followed by Grey relational analysis of the results.

1. Introduction

Ceramic coatings are applied on metals to prevent those materials from oxidation and corrosion at room as well as elevated temperatures. These coatings are high temperature coatings based on oxides, silicates, nitrides, carbides, cermet and super porcelains and other inorganic materials. There are a wide range of ceramic coatings that can be applied to metal components in order to enhance their functional properties. The advantages of ceramic coating on materials are high chemical resistance, excellent wear resistance, good reflectivity, fine electrical resistance and prevention of hydrogen diffusion. Ceramic coatings have got a wide variety of applications like Furnace fixtures, Textile, thread and fiber parts, Mechanical seal areas (sleeves, journals, etc.), Impellers, Molds, Pistons, Valves, Wear rings etc.

2. Literature Review

Ceramic coatings on metal surfaces can improve the performance of the metallic substrates [1,2].The special properties of Alumina, a ceramic coating includes high hardness, chemical inertness, wear resistance and a high melting point. These excellent properties enabled alumina ceramics to be widely used in many applications subjected to extreme pressure, force and temperature conditions. [3-6]. The force of adhesion between the ceramic sprayed coating and the substrate metal is usually not very



Thermal performance of multilayer insulation: A review

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Abstract: A multilayer insulation (MLI) is a passive thermal protection system used in cryogenics and space exploration programs as a thermal insulator. It is very thin and light weight. Due to less weight and higher thermal performance of MLI, it found application in space programs to store cryogenic liquid propellant. The effective thermal conductivity of MLI is in the order of 10^{-5} W/mK. The prediction of heat transfer in MLI is very complex due to the anisotropic conductivity and combination of radiation, gas conduction and solid conduction modes of heat transfer. This work is an attempt to gather some significant research outcome in MLI performance prediction and the factors to be considered while modeling the MLI.

Key words: multilayer insulation, thermal protection system, thermal control

1. Introduction

MLI was introduced in 1950's. It consist of multiple foils made of Kapton or Mylar coated with a highly reflective metal placed parallel to each other and low thermal conductive spacers are arranged in between the foils to avoid direct contact with the foils[1]. Radiation, solid conduction and gas conduction are the significant modes of heat transfer in MLI. Multilayer insulations are capable of maintaining hundreds of temperature gradient across a thin insulation. The effective thickness of a typical MLI is within few millimeters. MLI found application in storage of cryogenic fluids storage used for space missions as propellant. It is also used in MRI scanning systems to produce high intensity magnetic fields with the help of superconductivity. It also known as a passive thermal control system used in satellites to maintain the temperature of electronic equipment within the working temperature limit.

The radiation heat from the outer space strikes on the first reflective layer where a part is reflected back to the environment, and the remaining radiation energy heats up the first layer of spacer. As the temperature of the layer increases, solid conduction, gas conduction and radiation takes place through the spacer material to the next foil. Thus the second foil temperature will increase. The second foil reflects some radiation back to the first foil and the remaining energy transfers to the third foil. This process continues up to the bottom layer.

