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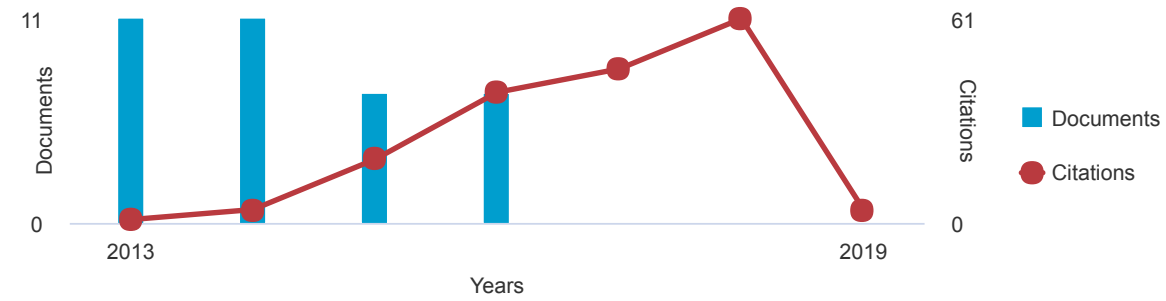

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A dual polarized UWB slot antenna with kite shaped slot for high isolation	Kumar, R., Krishna, R.V.S.R.	2016	2015 International Conference on Microwave, Optical and Communication Engineering, ICMOCE 2015	0
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Design of a compact MIMO/diversity antenna for UWB applications with modified TH-like structure View abstract Related documents	Kumar, R., Ram Krishna, R.V.S., Kushwaha, N.	2016	Microwave and Optical Technology Letters	5
A slotted UWB monopole antenna with single port and double ports for dual polarization Open Access View abstract Related documents	Krishna, R.V.S.R., Kumar, R.	2016	Engineering Science and Technology, an International Journal	7
An UWB dual polarized microstrip fed L-shape slot antenna View abstract Related documents	Krishna, R.V.R., Kumar, R., Kushwaha, N.	2016	International Journal of Microwave and Wireless Technologies	3
A Dual-Polarized Square-Ring Slot Antenna for UWB, Imaging, and Radar Applications View abstract Related documents	Krishna, R.V.S.R., Kumar, R.	2016	IEEE Antennas and Wireless Propagation Letters	19
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Design of a square ring shape slot antenna for UWB polarization-diversity applications View abstract Related documents	Ram Krishna, R.V.S., Kumar, R.	2015	AEU - International Journal of Electronics and Communications	3
A Dual Polarized Ultra-Wideband Slot Antenna Using Stepped Microstrip Feed Structure View abstract Related documents	Ram Krishna, R.V.S., Kumar, R.	2015	Frequenz	0
Slotted ground microstrip antenna with fss reflector for high-gain horizontal polarization View abstract Related documents	Ram Krishna, R.V.S., Kumar, R.	2015	Electronics Letters	15
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Design and analysis of new compact UWB frequency selective surface and its equivalent circuit Open Access View abstract Related documents	Kushwaha, N., Kumar, R., Ram Krishna, R.V.S., Oli, T.	2014	Progress In Electromagnetics Research C	8
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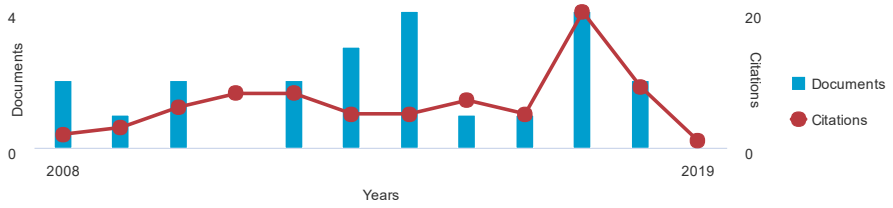

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Simulation of structural, thermal and electrical load for high voltage ceramic cap and pin disc insulator assembly View abstract ⌄ Related documents	Palhade, R.D., Tungikar, V.B., Dhole, G.M., Kherde, S.M.	2013	International Journal of Manufacturing, Materials, and Mechanical Engineering	0

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Application of Different Environments in Grinding of Titanium Alloys (Ti-6Al-4V): Investigations on Precision Brazed Type Monolayered Cubic Boron Nitride (CBN) Grinding Wheel	Palhade, R.D., Tungikar, V.B., Dhole, G.M.	2009	Journal of the Institution of Engineers (India), Part PR: Production Engineering Division	1
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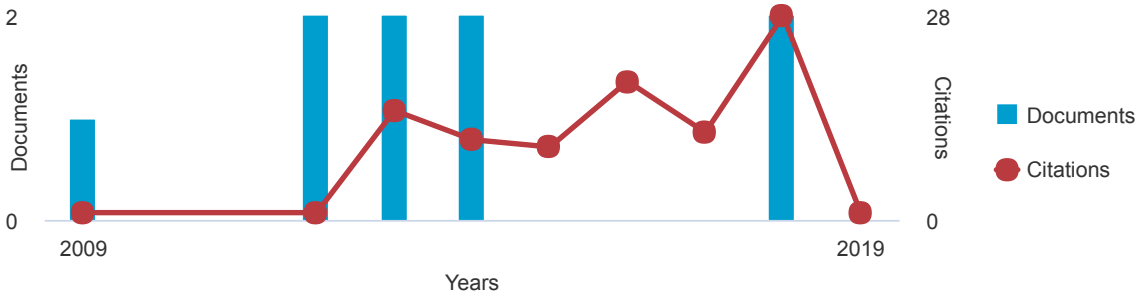

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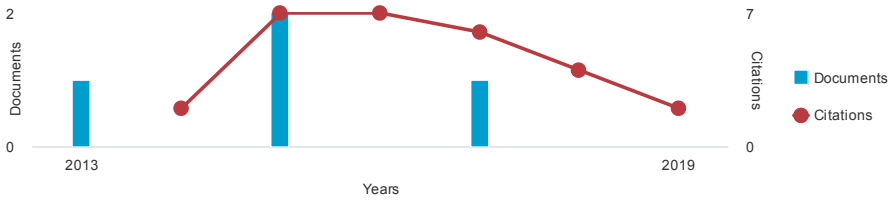

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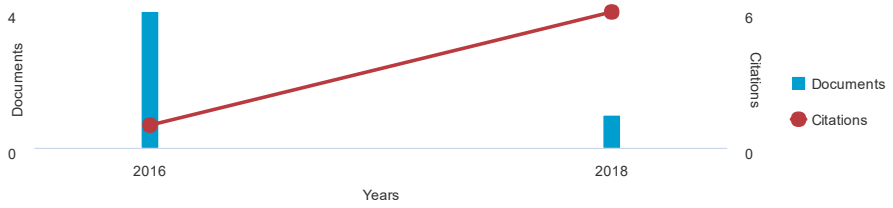

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Study of BGP convergence time Open Access	Devikar, R.N., Patil, D.V., Chandraprakash, V.	2016	International Journal of Electrical and Computer Engineering	1
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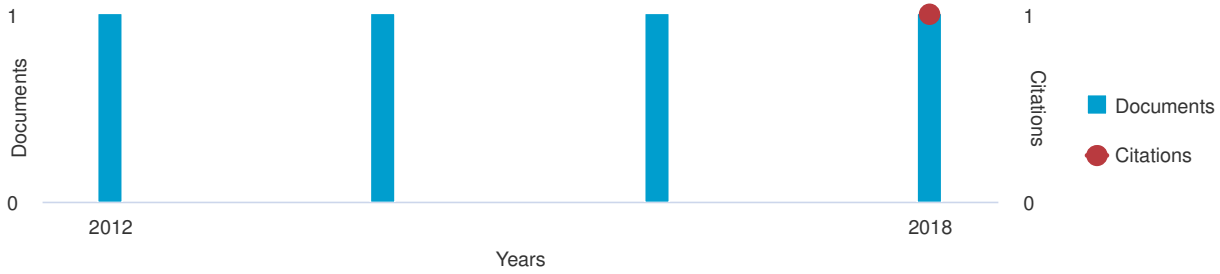

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Soil Temperature Influencing Evaporation Estimation Using Data-Driven Tools View abstract ⌄ Related documents	Chaudhari, N.D., Chaudhari, N.N., Pendhari, A.R., Thombre, M.M.	2018	Advances in Intelligent Systems and Computing	0
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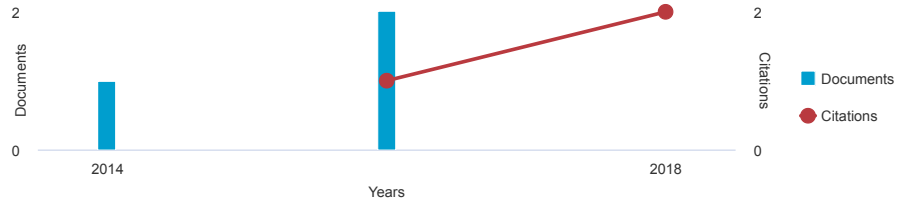

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Detection and discrimination of simultaneous stator inter-turn and broken rotor bar faults in induction motor View abstract Related documents	Sonje, D.M., Kundu, P., Chowdhury, A.	2016	2015 International Conference on Condition Assessment Techniques in Electrical Systems, CATCON 2015 - Proceedings	1
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PARTIAL REPLACEMENT OF SAND BY WASTE FOUNDRY SAND

Pendhari Ankush R.[1], Demse Dhananjay G.[2], Nikam Madhuri E.[3], Karpe Balraj E.[4], Khairnar Pramod R.[5], Suryawanshi Priyanka R.[6]

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Abstract - *The paper represents the current utilization of fine sand in the construction industry. The amount of waste foundry sand generated also encrypted in this paper. The paper also gives the remark on the utilization of waste foundry sand in the construction industry. The paper mostly focuses on the amount of foundry sand can be used as a cementitious material. The percentage of foundry sand which gives the maximum strength according to our conclusion has been also recorded here. The paper gives the noticeable and remarkable conclusion on utilization of foundry sand as a cementitious material. Paper gives the remarkable results about the properties according to compressive strength and flexural strength.*

This paper also gives the potential of this area by providing the careful study of some number of research papers of this topic. The review integrates all the important results. The review paper summarizes the conclusion on the basis of teste conducted for various properties of concrete like strength , durability etc. the paper review shows the positive as well as negative changes in the properties of concrete on the partial replacement of fine sand by waste foundry sand. from the past researches and the conclusion made by us shows the positive change in the utilization of waste foundry sand in construction field. As this results gives the great potential towards the development on environment friendly and strengthen cementitious concrete.

Key Words: Waste foundry sand, Slump cone test, Compressive strength, flextural strength, Concrete mix.

1. INTRODUCTION

Concrete is the main part of any construction work which is composed of gravels or crushed stones, sand and hydrated cement etc. it has been used over a century in all construction work. As the result owing to concrete is best, concrete is the main invention in our construction industry. Concrete mainly consist of cement, fine aggregate, coarse aggregate, water and now a days admixtures are used. One of this main constituents fine aggregate is the component which has been used in large quantity all over the world. The worldwide consumption of fine sand is around the world is very high and also this demand is increasing day by day. To overcome this demand is the main question arises in front of our construction industry.

While on the other side the industries has developed on large quantity. Metal industry is one of them. Metal industry has many waste product, and at a certain period this wastes are not used further. This waste generated is the main environmental problem. One of the waste generated from metal industries which can be helpful to overcome the demand fine sand is 'foundry sand'.

Foundry sand is uniformed sized, high quality silica sand is bound to form a mould for casting of ferrous and nonferrous metal. This sand is finer than fine sand. Burnt foundry sand is used many times in metal casting process, when it is no longer used it is removed from foundry as waste foundry sand. This waste foundry sand is useful to overcome the demand problem of fine sand. The replacement of fine sand in construction industry will lead it to economical, environmental friendly, light weight and high strength concrete.

Concrete is a composed material. All of its constituents contributes to its properties like fresh and harden properties. As the foundry sand is more finer than fine sand it is partially or up to certain limit replaceable. By finding the optimum percentage of foundry sand in concrete we can achieve the strength, economy, low cost concrete, environment friendly.

1.1 OBJECTIVES

1. To check the strength and properties of concrete.
2. To overcome the disposal problem of industrial waste.
3. Reduce the construction cost.
4. To analyze the different areas of civil engineering in which foundry sand can be efficiently used.

2. LITERATURE REVIEW

Several authors have reported the use of waste foundry sand in various civil engineering applications.

Equivalent static analysis of box culvert for fire tender loading

Prasad R. Vaidya

Dynamic moving live load can be considered as an equivalent static wheel load for the particular vehicle class and its wheel configuration. This paper elaborates loading considerations, modeling and analysis of double cell box culvert for fire tender loading. The critical loading conditions for cover slab, base slab and walls are discussed. The culvert is modeled by using finite element software. The interpretations of analysis results for different elements are presented. The present study aims to establish a procedure for computer aided analysis of box culvert especially used under pavement for cross drainage work.

1. INTRODUCTION

Box culvert is a closed RC structure generally used for water flow across the river while simultaneously allowing traffic over it. The structural elements consist of cover slab, base slab and walls build monolithically. Live load due to moving traffic is considered as a significant load which mainly governs the design. Dynamic analysis for moving load is a difficult and tedious procedure for small and moderate construction. The box culverts are used frequently in modern constructions as a cross drainage work. The airside drainage works in airports are usually with single cell or double cell box culvert with intermediate RC chambers. The culverts which are under runways subjected to aircraft loading are structurally important since they are subjected to heavy loads with impact. The culverts which are used as a cross drainage work under the road are often proved to be more economical than a bridge with abutment and deck slab. The culvert can be a single cell, double cell or multiple cells based on the requirements. The culvert is considered as a rigid frame with cover slab, base slab and vertical walls. The box may be provided with or without cushion depending on road level requirement. In the culvert with considerable cushion, the live loads on cover slab get dispersed due to cushion depth. However the dead load due self weight of cushion is the predominant load and will govern the design of cover slab. Designs of vertical walls depend upon the lateral thrust exerted by the wheel load in addition to active earth pressure. Earthquake forces are not considered in design of box culvert as per IS 1893:2002 [1].

Haunch is provided at the junction of vertical wall and cover slab for the smooth flow of forces. Base slab is provided with some projection to satisfy bearing requirements of the soil underneath. The thickness of cover slab and the wall is generally kept same to avoid variation in stiffness. The lateral pressure on side walls due to submerged soil can be effectively reduced by providing perforations for vertical walls with pipe sleeves. As the span of culvert increases flexural demand for cover slab will also increase, which is controlled by introducing vertical wall in between and thus making the culvert as multicell.

2. LOAD CASES AND SUPPORT CONDITIONS

Loading consideration plays a very crucial role in the analysis of the box culvert. Live load due to wheels of the fire tender vehicle will exert lateral pressure on side walls along with active earth pressure. The reasonable estimate is required to predict the behavior of the walls under the action of these forces. There is a monolithic connection of tank wall and slab. Hence it can be treated as a fixed one. Base slab is supported on soil with full bearing so that the horizontal thrust is resisted by the frictional force developed between concrete and soil. Once the sliding check is satisfied, there is no translation at bottom. At the top the only resistance is passive earth pressure, which is not sufficient for large horizontal trust and hence there will be a translation at the

A Novel Approach for Multi Class Fault Diagnosis in Induction Machine Based on Statistical Time Features and Random Forest Classifier

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Abstract: Fault diagnosis and detection is the important area in health monitoring of electrical machines. This paper proposes the recently developed machine learning classifier for multi class fault diagnosis in induction machine. The classification is based on random forest (RF) algorithm. Initially, stator currents are acquired from the induction machine under various conditions. After preprocessing the currents, fourteen statistical time features are estimated for each phase of the current. These parameters are considered as inputs to the classifier. The main scope of the paper is to evaluate effectiveness of RF classifier for individual and mixed fault diagnosis in induction machine. The stator, rotor and mixed faults (stator and rotor faults) are classified using the proposed classifier. The obtained performance measures are compared with the multilayer perceptron neural network (MLPNN) classifier. The results show the much better performance measures and more accurate than MLPNN classifier. For demonstration of planned fault diagnosis algorithm, experimentally obtained results are considered to build the classifier more practical.

Keywords: Fault Detection, Multilayer Perceptron Neural Network (MLPNN), Random Forest Classifier (RF), Statistical Time Features.

1. INTRODUCTION

Induction machines are playing most important part of the process by providing the uninterrupted continuation and production in many industries. They are mainly subjected to mechanical, electrical, and thermal stresses during running condition. If any of these stresses become severe enough then various faults may initiate in the induction machine. The faults in the machine can be segregated into mainly stator, rotor, bearing and eccentricity related faults. If the faults are not sensed at an initial stage, results in premature damage of the machine and costly downtime of the plant. Numerous methods and scheme are designed for fault identification.

Many existing methods are applicable for bigger size induction machines, and very few are applicable in small size machines due to restrictions related to sensor size and cost of data

Volume 5 Issue VI, June 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

Circular Microstrip Patch Antenna for RFID Application

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Abstract: ***In this paper, circular microstrip patch antenna (CMPA), with coaxial probe feeding, have been proposed. The proposed antenna operates in the frequency range of (2.4-2.48) GHz RFID band. The antenna is fabricated on FR4 substrate with size of 50mm × 50mm × 1.6mm. The antenna is simulated using the method of moment's CAD FEKO antenna simulator. The measured and simulated results are found to be in good agreement.***
Keywords— microstrip, circular, RFID, polarization, frequency

I. INTRODUCTION

Radio frequency identification (RFID) systems in UHF band have attracted many researcher's attention for their popular applications in manufacturing companies and service industries. Radio frequency identification (RFID) technology allow users to uniquely identify tagged people or objects [13]. RFID employs electromagnetic (EM) waves to exchange information between readers and tags for the purpose of identification and tracking [11]. Microstrip antennas are used in many application because of its low profile, ease of fabrication and low cost. Circular patch or disk is the one of the popular configuration to design a Microstrip patch antenna [12].

S.J. Pawar *et.al*. proposed coaxial feed dual band circular microstrip patch antenna (CMPA) for ISM (2.4-2.5GHz) and WLAN (5.150-5.350GHz) application. Dual frequency bands has been achieved by inserting a circular slot in the circular radiator as well as bandwidth enhancement is achieved by modifying the ground plane[1]. D.D. Ahire *et.al*. proposed dual band rectangular microstrip patch antenna using T-slot and capacitive loading. The 'T' shaped slot is used on radiator and ground plane to enhance the bandwidth [2]. Xiong Ying Liu *et.al.* proposed a broadband circularly polarized stacked coin-shaped patch antenna for a universal UHF-RFID reader. For achieving circular polarization, the main patch is fed by four probes, connected to the feeding strip with an interval of a quarter-wavelength at 900 MHz [3]. Yu-Shao *et.al.*proposed a printed slot antenna that utilizes a ring slot and a cross slot. Ring slot and cross slot controls the lower band and upper band respectively [4]. Lee Chang *et.al*, proposed a single-feed active RFID tag antenna that operates in the microwave frequency. The reported antenna functions as a dipole when used in free space and it functions as a patch when applied on a metallic surface. The antenna structure contains no ground plane [5].

In this paper, circular microstrip patch antenna with coaxial feeding technique is presented for RFID application. This paper has been organized as in four main sections. Section I includes introduction, Section II depicts design of antenna for RFID application. Section III and IV shows analysis and results respectively.

II. ANTNNA DESIGN

The antenna geometry consists of circular patch with square cut inside the patch area to achieve circular polarization. The coaxial probe feed is applied having location x = 4 and y = - 4 to the circular patch radiator. The circular patch radius (α) and ground plane area of the antenna are 14.5 mm and 50mm × 50mm, respectively. The proposed antenna is designed on a FR4 substrate with thickness, h = 1.6mm, dielectric constant, ε_r = 4.4. The diagonal corner of circular patch has been cut with dimensions of 6 mm × 8mm. The antenna resonates at 2.46 GHz for RFID (2.4-2.48) GHz band.

The geometry of circular microstrip patch antenna is depicted in fig.1.

The circular patch radius (α) is given in the following equation,

$$\alpha = \frac{F}{1+\frac{2h}{\pi\varepsilon_r F\left[\ln\left(\frac{\pi F}{2h}\right)\right]^{1/2}}} \quad (1)$$

Where,

$$F = \frac{8.791 \times 10^9}{f_r\sqrt{\varepsilon_r}} \quad (2)$$

7th International Conference on Recent Trends in Engineering, Science & Management
Genba Sopanrao Moze College of Engineering, Balewadi-Baner, Pune (ICRTESM-17)
01st-2nd April 2017, www.conferenceworld.in ISBN: 978-93-86171-12-2

ENHANCEMENT OF LOW RESOLUTION IRIS IMAGES USING WAVELET TRANSFORM

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ABSTRACT

The aim of image resolution enhancement is to process a given input low resolution image to make the result more desirable than the original image for a given specific application. There are various image processing application which requires high resolution images for processing and analysis. One of the commonly used techniques for image resolution enhancement is Interpolation. Interpolation technique has been widely used in many image processing applications such as facial reconstruction, in medical field, multiple descriptions coding, and super resolution. Discrete wavelet transform is used to decompose low resolution image and stationary wavelet transform is used to preserve edges. Iris recognition is widely used in safety certification. In large scenes or long distance conditions, the iris images may has low resolution. Lack of information in these iris images or videos affects the performance of the iris recognition greatly. In this paper, scheme of super resolution is used to reconstruct high resolution images from low resolution iris image sequences.

Keywords- Image resolution enhancement, Interpolation, Discrete wavelet transform, stationary wavelet transform, Iris recognition.

I. INTRODUCTION

Digital imaging systems have a variety of applications for commercial, medical and recreational purposes. In these applications, a high quality image is required to allow human interpretation or machine perception. However, sometimes the spatial resolution of image is limited by technical considerations of the imaging system in which the image is captured. Therefore signal processing techniques are used to create a higher resolution image that will allow for better identification and interpretation of details. The aim of single image super resolution is to create a high resolution image from a single instance of a low resolution image of the original scene.

A REVIEW OF COSMETIC CONTACT LENS DETECTION IN IRIS IMAGES

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ABSTRACT

For authentication and security applications the use of iris as a biometric has been common nowadays. Acquisition of iris images is prime requirement of such large-scale applications to develop database so that identity of the people can be established. Eye specialists suggest the contact lens for correcting the eyesight. It can be used instead of the spectacles or glasses. They are however, increasingly being used for cosmetic reasons also where texture and color of iris region is superimposed with a thin textured lens. The use of a colored lens changes the appearance and texture of an eye in both the visible and the near- infrared spectrums. Detection of the presence of a contact lens is the primary step in improving the reliability of iris recognition techniques for contact lens wearers. Some soft lenses have designer patterns on them, which may be completely different from their original image. The main contribution of this paper is comparative study of different techniques used for detection of cosmetic contact lens in the Iris images.

Keywords: *Cosmetic contact lens; Lens detection; Colored lens; Image processing*

1. INTRODUCTION

Biometrics is the metric related to human characteristics. Some features of the human body like face, hand print, foot prints, finger prints, vascular data as well as vocals can be used to measure, identify and verify the person's identity. Iris is one of the most important biometrics which is unique to every person. Iris pattern is different for all human beings. This uniqueness, stability and non-intrusiveness make it most accurate biometric. The iris is well protected from the environment and stable over time as it is an internal organ of the eye[1]. According to recent research, iris features can be affected by several covariates like pupil dilation [3] and sensor interoperability [4-7]. Iris recognition system can be forged and it can also be used for illegal means [8]. The iris recognition system can be spoofed through the use of artifacts like paper printed iris pattern, cosmetic contact lens, redisplayed videos, fake glass/plastic eye, printed contact lens, etc [2]. Among all these techniques, printed contact lens is more prominent [9-11]. When the person enrolls into an iris image capturing system, without taking off the contact lens, any other person wearing the similar contact lens can be recognized as authorized user which is the false recognition. Several researchers reported [12-13] that, "it is actually possible to spoof some iris recognition systems with well-made contact lens" [9]. Hence for proper authentication, it is important to detect the contact lens present in iris image before recognition. With advances in technology and reduction in cost, the number of users of contact lens is becoming large. The worldwide contact lens market in 2011 was about 6.8 billion [14]. Technavio's market research analysts predict the global soft contact lens market to grow steadily at a CAGR of around 8% by 2021. One of the primary issues for this market is the rapidly rising number of eye disorders**.** The majority of the eye disorders are refractive error**,** cataract, and glaucoma which lead to visual impairment or blindness. This rate of eye disorders is exponentially increasing among the population. It will facilitate the growth of global soft contact lens market [15].Generally, a prescribed contact lens should not interfere with the accuracy of the iris recognition, but colored contact lens used for cosmetic purposes certainly changes the natural iris pattern. All prescribed as well as cosmetic contact lenses degrade the iris biometric performance. Gas-permeable contact lenses degrade performance by 20-50 folds. The degradation in performance for different categories of contact lenses is consistent across multiple iris-

QUALITY ASSESSMENT OF IMAGES AFTER RAIN REMOVAL

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ABSTRACT

Rain removal from images is an essential task and has been recently examined. Rain represents sharp power variations in images, which corrupt the quality as well as execution of outdoor vision systems. Hence firstly rain streak removal from images and then quality assessment of images after removing rain from it is very important. Quality assessment measures the perceived image degradation compared to an ideal or perfect image. In this paper the fundamental objective is to use a single-image-based rain removal framework via properly formulating rain removal as an image decomposition problem based on morphological component analysis (MCA) and then Quality assessment of rain removed image is done. After removing rain from images it is necessary to correlate with the perceived quality of an image. Hence quality assessment of rain removed images is performed by using various parameters.

Keyword: - *Rain Component, Rain detection and Rain removal, Bilateral Filter, Morphological Component Analysis (MCA), Quality assessment*

1. INTRODUCTION

Climate conditions i.e. rain, snow, mist, fog and haze decrease the quality as well as execution of outside vision framework. Rain is one of the kinds of climate condition and additionally rain is the real part for the dynamic bad climate[1]. Rain presents sharp intensity variations in pictures, which corrupt the quality or execution of outside vision frameworks. Rain removal has numerous applications in the field of security observation, vision based navigation, video or movie editing and video indexing or retrieval. In this way, it is vital to expel rain streaks from the pictures. The discovery and expulsion of rain streaks in a picture is performed by different techniques. After Removal of rain streaks and quality measurement, it is possible to effectively remove the rain components in the picture.

Now days, image de-noising is an important process in image processing. The proposed method focuses on rain streak removal frame work based upon morphological component analysis[2]. Bilateral filter is used in the de-noising stage. Then the filtered image is partitioned into low frequency and high frequency component. The high frequency component had undergone various processes such as patch extraction, dictionary learning and dictionary partitioning and sparse coding. The output of dictionary partitioning approach undergone morphological component analysis as an image decomposition process. As a result, the quality of rain removed image is checked via parameters such as MSE (Mean square error), PSNR (Peak signal to noise ratio) and SSIM (Structural similarity

2018 International Conference On Advances in Communication and Computing Technology (ICACCT)
Amrutvahini College of Engineering, Sangamner, Ahmednagar, India. Feb 8-9, 2018

U-slot Loaded Rectangular Microstrip Patch Antenna for Wideband Applications

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***Abstract*— In this work, a probe fed rectangular microstrip patch antenna (RMPA) in S band have been proposed. Bandwidth enhancement is obtained by cutting a U- and two parallel rectangular slots. FR-4 substrate having dielectric constant of 4.4 and thickness of 1.6mm is used to design RMPA with an overall size of 38 × 48 mm^2. The designed antenna is simulated using CAD FEKO antenna simulation software. The proposed antenna has VSWR bandwidth of 177 MHz (2.53 GHz to 2.71 GHz) with gain of 1.14 dBi. The proposed microstrip patch antenna is fabricated and tested. The measured bandwidth is 145 MHz, which shows good agreements between simulated and measured results.**

Keywords—U-slot, S band

I. INTRODUCTION

The wideband systems design and their applications to wireless communication, have gained a lot of interest. Antenna, the crucial part of a wireless system, is considered as one of the important component of integrated wireless systems. In modern handheld wireless communication systems, the antenna should be compact, broadband with stable radiation characteristics. The microstrip patch antenna provides a good solution in terms light weight, low cost, small volume, low-profile, planar configuration, and compactness [15]. However, it suffers from low gain, narrow bandwidth and poor radiation efficiency. Varieties of patch structures are reported in literature such as rectangular, square, circular etc. for broadband performance. In literature, it has been studied that U-shaped slot is used to enhance the bandwidth of microstrip patch antennas. However, it has been applicable to the thicker substrates [1-8].

Amit Deshmukh *et.al* proposed a compact variation of a U-slot loaded RMPA and a half U-slot loaded RMPA with substrate thickness of 2.62cm [1]. R. P. Labade *et.al* proposed a broadband MPA by increasing the substrate height and inserting the slots at different angles [2]. Ahmed Khidre *et.al* described one of the methods of widening the bandwidth is to cut a U-shaped slot inside the patch however, the author used the substrate thickness of 3.175mm [3]. J. A. Ansari *et.al* described that substrate thickness and slots length have significant effect on frequency ratio [4].

U. Chakraborty *et.al* proposed a dual band microstrip patch antenna using two rectangular slots with slotted ground plane. Each open-ended slot is responsible to generate a wide impedance band that is shifted to lower frequencies by the effect of the ground slot [5]. From literature, U-slot has been incorporated in suspended structure antenna or in substrate with higher thickness to achieve higher bandwidth. In this work, an attempt is made to use the U-shaped slot for the thinner substrate having thickness of 1.6 mm. The paper is organized in following sections. Section I depicts introduction, Section II explains the wideband antenna design, Section III presents experimental results and Conclusion is presented in Section IV.

II. ANTENNA DESIGN

Wideband RMPA is designed by using 1.6mm thick FR-4 substrate with substrate dimension of L_{sub}=38mm and W_{sub}=48mm having relative permittivity of 4.4. Coaxial probe feed is used at x = -12.5 mm. Dimensions of patch are calculated using given transmission line equations [13].

Width of the patch has been calculated using:

$$W = \frac{c}{2 \times f_r \times \sqrt{\frac{\epsilon_r + 1}{2}}} \quad \text{---- (1)}$$

Where c is the free-space velocity of light i.e. 3×10^8 m/s
ε_r is the dielectric constant of FR-4.
fr is the resonating frequency.

The value of the effective dielectric constant is given by

$$\epsilon_{reff} = \frac{\epsilon_r + 1}{2} + \frac{\epsilon_r - 1}{2}\left[1 + \frac{12h}{W}\right]^{-1/2} \quad \text{----(2)}$$

Where, h and W are thickness of substrate and width of patch antenna respectively.

Length of the patch can be calculated as:

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Design of Wideband Monopole Square microstrip patch antenna

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***Abstract*—A microstrip fed square patch antenna for wideband application is presented in this paper. The proposed antenna is designed to operate at 3GHz. Overall dimensions of antenna are 45×30 mm^2. FR4 substrate having dielectric constant 4.4 is used. Bandwidth enhancement is achieved by introducing defected ground structure(DGS),offset feed and modified patch technique. CAD FEKO simulation software is used for simulation. Fractional bandwidth of 229% with gain of 2.36 dBi is achieved.**

Keywords—monopole, wideband, defected ground structure

I. INTRODUCTION

Printed microstrip patch antennas have attracted much attention due to is low profile, lightweight and ease of fabrication. However, its narrow bandwidth is a limitation for high data rate communication applications. Printed monopole antennas are good candidates for use in wideband wireless technology because of their wide impedance bandwidth and nearly omni-directional radiation pattern. These antennas can be easily integrated with other components on the PCB. Printed monopole antennas are truly planar and have radiation patterns similar to that of a dipole antenna [1-6].

K. P. Ray *et.al* presented investigations on broadband printed rectangular monopole antenna. Systematic study has been carried out to demonstrate the effect of patch width and feeding techniques on the impedance bandwidth of the printed rectangular monopole antenna [1]. Amit Deshmukh *et.al* proposed ultra-wideband planar microstrip antenna obtained by combining rectangular and circular shaped planar monopole patches [2]. M. J. Ammann presented parametric analysis of planar square monopole antenna in terms of feed gap [3]. R .P. Labade *et.al* proposed and investigated the design and optimization of low cost, wideband, compact printed rectangular ultra wide band (UWB) antenna at lower edge. Antenna is having a rectangular patch and modified ground structure. Bandwidth enhancement is obtained by modifying the destructive ground plane structure (DGS) [4]. K. P. Ray *et.al* described that for antennas with wide bandwidth, the lower band edge frequency (F_L) is the main design parameter rather than the central resonance frequency [5]. K. P. Ray *et.al* proposed offset feeding as bandwidth enhancement technique. Bandwidth is also improved by using square monopole antenna with semicircular base [6]. R. R. Patil *et.al* proposed the antenna which incorporates a symmetrical bevelling technique of radiator element which leads to enhance the impedance bandwidth [10]. J. S. Row presented the design of a wideband patch antenna with monopole-like conical radiation patterns. The antenna has a square patch that is shorted to the ground plane through two shorting walls and is excited by a top-loaded coaxial feed centered below the square patch. Several prototypes with various antenna heights are implemented and measured [12].

In this paper, square microstrip patch antenna for wideband application using microstrip feed is presented. Bandwidth is improved by using offset feed, modified patch and defected ground structure. This paper is organized in following sections. Section I depicts introduction, Section II explains the antenna design, Section III presents results and discussion. Conclusion is presented in Section IV.

II. ANTENNA DESIGN

The proposed design is simulated and fabricated by using FR4 substrate having thickness 1.6mm and dielectric constant 4.4. Substrate dimensions are 45×30 *mm*^{2}. Length and width of patch are equals to the quarter wavelength of resonating frequency. Length of patch is taken as L = 15 *mm*. The feed gap is adjusted to 2 *mm* between patch and ground. Length and width of ground plane is taken as 21*mm* and 30 *mm* respectively. Width of feed line(W_f) is calculated as 3 *mm* [16]. Based on the above dimensions the antenna is simulated, fabricated and tested. Fig.1 shows the geometry of the proposed antenna and fig.2 shows the photograph of the fabricated antenna.

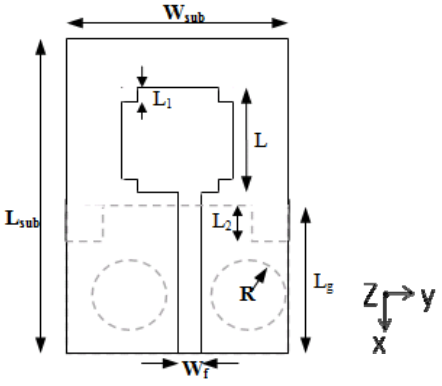

Fig.1: Geometry of antenna

978-1-5386-2051-9/18/$31.00 ©2018 IEEE

Design of Wideband Printed Rectangular Monopole Patch Antenna With Band Notch

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***Abstract*—In this paper, a microstrip-line fed printed monopole rectangular microstrip patch antenna with wide bandwidth having frequency band-notch function for wireless communication have been proposed. Bandwidth enhancement is obtained by rounding the corners of rectangular patch and modifying the ground plane. By cutting rectangular slot on the radiating element, the frequency band-notch characteristic is obtained. FR-4 substrate having dielectric constant of 4.4 and thickness of 1.6 mm is used to simulate printed rectangular monopole antenna (PRMA) having an overall size of substrate 55 × 45 mm^2. The designed antenna is simulated using CAD FEKO simulation software. The proposed antenna has impedance bandwidth of 6.61 GHz (2.11 GHz to 8.72 GHz) with a rejection band from 3.03 GHz to 3.48 GHz. The observed gain of proposed antenna is 2.42 dBi. The proposed microstrip patch antenna is fabricated, tested and measured result is presented in this paper.**

***Keywords*—Microstrip-line fed, wideband, frequency band-notch.**

I. INTRODUCTION

The wideband systems design and their applications to wireless communication, have gained a lot of interest. Antenna, the vital part of a wireless system, is considered as one of the largest components of integrated wireless system. The microstrip patch antenna provides a good solution in terms light weight, low cost, small volume, low-profile and planar configuration [15]. However, it suffers from narrow bandwidth and poor radiation efficiency. Today's communication system demands wide bandwidth for higher data rate transmissions. Varieties of patch structures are available but rectangular, square and circular shapes are most frequently used [5-12].

Amit Deshmukh *et.al* proposed ultra-wideband planar microstrip antenna obtained by combining rectangular and circular shaped planar monopole patches [1]. K. P. Ray described that planar monopole antennas are designed using resonance frequency equation for MSA or by equation for quarter wavelength of monopole antenna. The printed monopole antennas give very large impedance bandwidth with reasonably good radiation pattern [2]. Z. N. Chen *et.*al proposed the antenna in which a strip is asymmetrically attached to the radiator patch to enhance the bandwidth [3]. K. P. Ray *et.al* described that for antennas with wide bandwidth, the lower band edge frequency (f_l) is the main design parameter rather than the central resonance frequency [4].

In proposed work, rectangular microstrip patch antenna fed by microstrip-line is presented. The paper is organized in following sections. Section I depicts introduction, Section II explains the wideband antenna design, Section III presents parametric study, Section IV presents experimental and simulated results of the proposed antenna. Conclusion is presented in Section V.

II. ANTENNA DESIGN

Wide band PRMA is simulated by using 1.6mm thick FR-4 substrate with dimensions of L_{sub}=55mm and W_{sub}=45mm having relative permittivity of 4.4. The length of microstrip-line fed wideband PRMA (L=21mm, W=15mm) is equal to quarter wavelength at resonating frequency. The width of microstrip-line feed W_f is calculated as 3 mm to achieve 50-Ω characteristic impedance [17]. The geometry of the proposed printed rectangular monopole patch antenna is illustrated in Fig. 1.

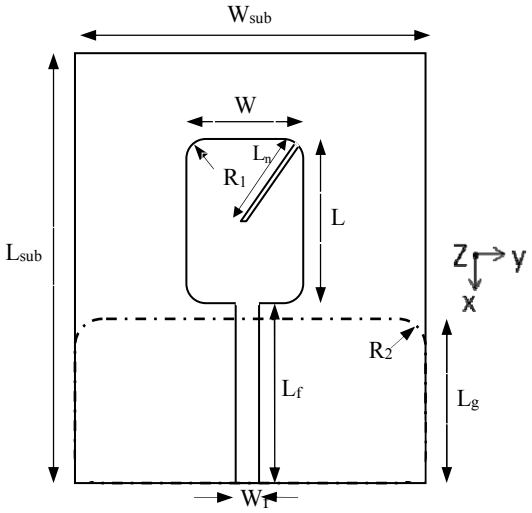

Fig. 1 Geometry of the Proposed PRMA

978-1-5386-2051-9/18/$31.00 ©2018 IEEE

2018 International Conference On Advances in Communication and Computing Technology (ICACCT)
Amrutvahini College of Engineering, Sangamner, Ahmednagar, India. Feb 8-9, 2018

Bandwidth Enhancement of Square Microstrip Patch Antenna Using Defected Ground Structure

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***Abstract*— This work presents a probe fed square microstrip patch antenna with broad bandwidth. By cutting the slots in radiating elements and in ground plane broadband performance can be obtained. The proposed antenna is designed and fabricated using economical FR-4 substrate with size of 50×50 mm^2. The simulated and measured bandwidth is 138 MHz and 100 MHz respectively. The average gain of the antenna is observed to be less than unity.**

Keywords*— DGS, bandwidth enhancement,microstrip,wireless communication

I. INTRODUCTION

Microstrip patch antennas are good candidate for wireless communication due to is low profile, lightweight and ease of fabrication. Continuous research and development has been carried out in past few years and microstrip patch antennas (MPA) have been applied in many different and successful applications. Applications of MPA in various fields of high-tech technology include satellite communication, mobile communication, biomedical radiator, radar system, etc. [14]. Amit Deshmukh *et.al* proposed various U and V-slot loaded rectangular antenna. By using this configuration, larger bandwidth is achieved without increasing the size of antenna [1]. Parametric analysis of suspended broadband microstrip patch antenna using V-shaped slot has been proposed by G. Kumar *et.al* [2]. R. P. Labade *et.al* proposed compact microstrip patch antenna which is suitable candidate for radio navigation and for radar applications such as detecting positions of living and non-living objects. Substrate height is increased and slots are inserted at different angles so as to improve bandwidth [3]. M. P. Joshi *et.al* proposed dual band circular antenna which is used for ISM and WLAN applications. To get the dual band, circular slot is inserted in radiating patch. Comparative results and analysis is presented in [4]. J.A. Ansari *et.al* described that substrate thickness and slots length have significant effect on frequency ratio [5]. R .P. Labade *et.al* projected printed rectangular wide band antenna at lower edge frequency. Antenna with rectangular patch and modified ground structure is proposed. Destructive Ground structure is used to obtain bandwidth enhancement [6].

In the proposed work, square microstrip patch antenna for wireless communication is presented. Antenna with defected ground structure is simulated using CAD FEKO simulation software. Rectangular and square slots are cut inside patch and on ground plane respectively to achieve broadband response. This paper is organized in following sections. Section I depicts introduction, Section II explains the antenna design, Section III presents simulation and experimental results. Conclusion is presented in Section IV.

II. ANTENNA DESIGN

The projected design is simulated and fabricated by using FR4 substrate having thickness 1.6 *mm* and dielectric constant 4.4. Substrate dimensions are considered as 50×50 *mm*^{2}. Length is calculated using transmission line equations [15]. Patch shape is modified by cutting all corners and rectangular slots with defected ground structure (DGS) in ground plane to improve bandwidth.

Length of patch is calculated using [15]:

$$L = \frac{C}{2 \times f_r \times \sqrt{\epsilon_{reff}}} - 2\Delta L \qquad \text{..... (1)}$$

Where *c* is the free-space velocity of light i.e. 3 ×10^8 *m/s*

Effective dielectric constant [15]:

$$\epsilon_{reff} = \frac{\epsilon_r + 1}{2} + \frac{\epsilon_r - 1}{2}\left[1 + \frac{12h}{W}\right]^{-1/2} \qquad \text{..... (2)}$$

Where ε_r is the dielectric constant of FR4,
fr is the resonating frequency,
h is thickness of substrate,
W is width of patch.

Length extension due to fringing field (ΔL) [15]:

$$\Delta L = 0.412h\frac{(\epsilon_{reff} + 0.3)}{(\epsilon_{reff} - 0.258)}\frac{\left(\frac{W}{h} + 0.264\right)}{\left(\frac{W}{h} + 0.8\right)} \qquad \text{..... (3)}$$

Length of the square patch is calculated as 40 *mm*. The antenna is excited using coaxial probe feed at *x*=10 *mm* location on radiating patch. The design parameters for the proposed antenna are as shown in table 1. Design evolution

978-1-5386-0926-2/18/$31.00 ©2018 IEEE

A Novel Approach for Multi Class Fault Diagnosis in Induction Machine Based on Statistical Time Features and Random Forest Classifier

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Abstract: Fault diagnosis and detection is the important area in health monitoring of electrical machines. This paper proposes the recently developed machine learning classifier for multi class fault diagnosis in induction machine. The classification is based on random forest (RF) algorithm. Initially, stator currents are acquired from the induction machine under various conditions. After preprocessing the currents, fourteen statistical time features are estimated for each phase of the current. These parameters are considered as inputs to the classifier. The main scope of the paper is to evaluate effectiveness of RF classifier for individual and mixed fault diagnosis in induction machine. The stator, rotor and mixed faults (stator and rotor faults) are classified using the proposed classifier. The obtained performance measures are compared with the multilayer perceptron neural network (MLPNN) classifier. The results show the much better performance measures and more accurate than MLPNN classifier. For demonstration of planned fault diagnosis algorithm, experimentally obtained results are considered to build the classifier more practical.

Keywords: Fault Detection, Multilayer Perceptron Neural Network (MLPNN), Random Forest Classifier (RF), Statistical Time Features.

1. INTRODUCTION

Induction machines are playing most important part of the process by providing the uninterrupted continuation and production in many industries. They are mainly subjected to mechanical, electrical, and thermal stresses during running condition. If any of these stresses become severe enough then various faults may initiate in the induction machine. The faults in the machine can be segregated into mainly stator, rotor, bearing and eccentricity related faults. If the faults are not sensed at an initial stage, results in premature damage of the machine and costly downtime of the plant. Numerous methods and scheme are designed for fault identification.

Many existing methods are applicable for bigger size induction machines, and very few are applicable in small size machines due to restrictions related to sensor size and cost of data

Application of Waste Foundry Sand in Concrete

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Abstract— Foundry waste is a standout amongst the most dynamic examination ranges that envelop various orders including structural building and development materials. They can stand near the idea of green Concrete which is in perfect with the earth. Foundry sand from throwing commercial ventures is a waste material which is dumped widely and in this study an endeavor has been made to assess the use of this waste material in cement. The steady exhaustion of sand beds at all significant wellsprings of accessibility is a noteworthy concern and in this manner endeavors are taken keeping in mind the end goal to supplant sand in development exercises. In this study, impact of foundry sand as fine total substitution on the compressive strength of concrete with a M20 mix extent explored at various restricted curing periods (3 days, 7 day sand 28 days). The rate of foundry sand utilized for substitution were 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% and 100% by weight of fine total. Test indicated great results, demonstrating ability of foundry sand for being a segment in cement for granting strength. Making concrete from reused materials spares vitality and preserves assets which lead to a safe maintainable environment.

Key words: Casting industry, Concrete, Foundry waste, Foundry sand, Landfill, Sustainable environment

I. INTRODUCTION

The waste created from the commercial ventures cause ecological issues. Subsequently the reuse of this waste material can be accentuated. Foundry sand is top notch silica sand that is a repercussion from the generation of both ferrous and nonferrous metal throwing Commercial enterprises. From hundreds of years foundry sand has been utilized as a trim throwing material since its high warm conductivity. The physical and compound attributes of foundry sand will depend in extraordinary part on the sort of throwing procedure and the business area from which it starts. In the throwing procedure, shaping sands are reused and reused numerous times. In the end, notwithstanding, the reused sand corrupts to the point that it can never again be reused in the throwing procedure. By then, the old sand is dislodged from the cycle as side effect, new sand is presented, and the cycle starts once more. Two general sorts of cover frameworks are utilized as a part of metal providing reason to feel ambiguous about depending which the foundry sands are delegated: mud reinforced frameworks (Green sand) and synthetically fortified frameworks. Both sorts of sands are reasonable for helpful utilize however they have distinctive physical and ecological qualities. Throughout the most recent decades, much research has been led on the mechanical, concoction and strength parts of foundry sand.

II. OBJECTIVE

The principle goal of this paper is to think about the conduct of cement in which fine total in typical cement is supplanted with foundry sand at room temperature. The primary parameters examined are compressive strength of concrete.

III. METHODOLOGY

Strength is one among the most critical properties of cement, following the primary thought in basic outline is that the basic individuals must be equipped for conveying the forced burdens. The blend of cement utilized as a part of this study is M20. Concrete blend with 0% waste material is the control blend and water bond proportion received is 0.6 as per the Indian Standard particular IS 10262 - 2009. A design mix proportions of 1:2.64:3.81:0.6 was investigated for the research. The percentages of replacements are 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% and 100% by weight of fine aggregate. Tests were performed for compressive strength of concrete for all replacement levels of fine aggregate at different curing period (3 days, 7 days and 28 days). Also, the physical and chemical properties of the foundry sand are also studied.

IV. EXPERIMENTAL MATERIALS

A. Cement (OPC):

The Ordinary Portland Cement of 53 grades conforming to IS: 8112 is used. The cement used is fresh and without any lumps. Physical property of cement is as per table I.

Characteristic	Value
Specific Gravity	3.12
Consistency	32%
Initial Setting Time	30 min
Final Setting Time	600

Table 1: Physical Properties of Cement

B. Aggregate:

Aggregate give body to the concrete, reduce shrinkage and effect economy. One of the most important factors for producing workable concrete is a good gradation of aggregates. Minimum paste means less quantity of cement and less water, which are further mean increased economy, higher strength, lower shrinkage and greater durability.

1) Coarse Aggregate:

The fractions from 20 mm to 4.75 mm are used as coarse aggregate. The Coarse Aggregates from crushed Basalt rock, conforming to IS: 383 is being use. The Flakiness and Elongation Index were maintained well below 15%.

Characteristic	Value
Specific Gravity	2..76
Total Water Absorption	0.38
Fineness Modulus	6

Table 2: Physical Properties of Course Aggregate

2) Fine Aggregate:

Those fractions from 4.75 mm to 150 microns are termed as fine aggregate. The river sand is used in combination as fine aggregate conforming to the requirements of IS: 383.

Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 5 Issue 06, June-2016

Application of Zeolite for Post Combustion Carbon Capture

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***Abstract*— Stabilization of anthropogenic Carbon dioxide on massive scale calls for development and deployment of cleanup mechanisms as Carbon Capture and Storage. Adsorption by physical regenerable sorbents is a promising method of separation of flue gases. This paper focuses on evaluation of carbon capture potential of Zeolite 4A. Removal efficiency, adsorption capacity of selected adsorbent is analyzed volumetrically. Six Adsorption cycles are carried out in a fixed bed adsorption column using Pressure Swing Adsorption. The adsorption capacity ranges from 0.17- 2.5 mol/kg and removal efficiencies vary between 6.7 – 33.3 %. Temperature increase limits the adsorption potential of the sorbent.**

Keywords—Carbon capture; adsorption, regenerable sorbents, zeolte.

I. INTRODUCTION

Despite of number of mitigation policies global green house emissions have reached 49 Gt CO_2-eq in 2014 [1]. It is estimated that the CO_2 emissions will increase by 3,210 mt by 2030. Coal driven thermal power plants contribute 37% of total CO_2 emissions [2]. India has submitted the emission inventory in the Second national Communication (NATCOM) in 2012. In 2000 the total GHG emissions were reported to be 1523 Mt-CO_2-eq. in which energy sector contributed 92.7% [3]. Being party to UNFCCC, India is abided to stabilize anthropogenic CO2 emissions by 33-35% of the base year 2005 by 2030. However, in the present situation we are far behind than that of the emission reduction targets. Massive reduction in CO_2 with continued use of fossil fuels calls for deployment of Carbon Capture and Storage (CCS) technologies.

A. Approaches and mechanisms of carbon capture

CCS is an "end-of-pipe" treatment which refers to separation of CO2 from the flue gases emitted from a point source and its subsequent long term storage in biological or geological sinks. Three basic approaches are implemented for carbon capture (Fig.1) namely pre-combustion capture, post combustion capture and oxy-fuel combustion capture [4]. Pre-combustion processes include gasification of fuel to form mixture of CO_2 and H_2. Hydrogen is used for energy generation and CO_2 is captured. In oxy-fuel combustion oxygen is used instead of air for fuel combustion. This results in reduced volume and concentrated stream of flue gases containing oxides of sulfur (SO_2), carbon dioxide and water

Post combustion process employs physical and chemical means to separate CO_2 from flue gases. The CO concentration in flue gas varies from 5-15 % by volume. Post combustion capture involves CO2 removal at higher temperature and lower concentration. More over higher volumetric loads need to be handled [5]. Despite of these limitations post combustion processes have highest near term potential of development and commercialization.

Absorption, adsorption, membrane separation and cryogenics are four mechanisms for CO_2 capture. Adsorption, absorption and membrane processes are suitable for post combustion capture whereas cryogenics is appropriate for oxy-fuel and pre combustion carbon capture [5, 6].

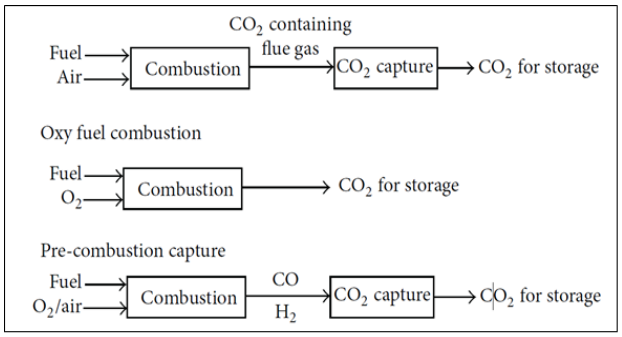

Fig.1 Carbon capture approaches

Present study focuses on removal of CO2 by adsorption using solid regenerable sorbents. Brunetteital have critically compared this mechanism in view of energy requirement, operational parameters, recovery, stages of development and future commercial utilization opportunities [7]. According to International Energy Agency (IEA) CCS technologies will contribute 19-20% curtailment in CO2 emissions by 2050 [8].

B. Carbon Capture by adsorption

Carbon capture by adsorption is gaining growing concern over the most established wet scrubbing process. It is one of the most studied mechanisms having near term application potential as emission cleanup technology [9]. This process employs solid sorbents to remove CO2 from the flue gases by physical or chemical adsorption. A pure stream of CO2 is obtained during desorption cycle and the adsorbent can be regenerated [10].

Correlating Failure Mode Effective Analysis (FMEA) & Overall Equipment Effectiveness (OEE)

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Abstract : To compete in global market, no organization will tolerate losses. Overall Equipment Effectiveness (OEE) is such a performance measure metric which will indicate performance rate with very simple calculations. It considers all important measures of productivity. Implicitly it indicates amount of losses each parameter contributes to reduce productivity. By applying quality improvement tool such as failure Mode and Effect Analysis (FMEA) root cause of any OEE measure can be found out. It will help to improve OEE and correspondingly productivity. In this paper an attempt has been made to establish a relationship between OEE and FMEA. All the parameters of OEE (i.e. Availability, Performance Rate and Quality Rate) are evaluated with respective to FMEA (i.e. severity, occurrence and Detection). Total 32 hypothesis are considered to establish relation between OEE and FMEA. A case study conducted in one of reputed process industry gives very significant insight for OEE improvement. Power of Excel tool is explored in this paper.

Keywords- OEE, RPN, FMEA, Hypothesis

I. INTRODUCTION

In the face of current global competition and increasing demand , there is basic business demand to improve manufacturing performance.OEE is a "best practices" way to monitor and improve the effectiveness of manufacturing processes (i.e machines, manufacturing cells, assembly lines).OEE is simple and practical, it takes the most common and important sources of manufacturing productivity loss and places them into three primary categories and distills them into metrics that provide an excellent gauge for measuring where you are and how you can improve.[1]

A Failure Mode and Effect Analysis (FMEA) is an engineering technique used to define, identify and eliminate known or potential failures, problems, errors from the system, design, process and or service before they reach the customer. It is a systematic approach and a mental discipline that an engineer normally goes through in any manufacturing process. It is also problem prevention tool and a living document of engineers' thoughts based on experience, past concerns and quality performance indicators. FMEA is an established reliability engineering activity that also supports fault tolerant design, testability, safety, logistic support, and related functions. FMEA is "a systematic, analytical approach to properly plan for defect prevention and

It is a technique for identifying and focusing on those areas in the design and manufacturing process for the prevention, reduction, and elimination of non-conformances in the product or production". The Failure Modes and Effects Analysis (FMEA) is a document to identify the associated with something potentially going wrong such as creating a defect or out of specification in the production of the product. The FMEA identifies what controls are placed in the production process to catch any defects at various stages on the processing. [2]

According to Nakajima (1989) definition, OEE is measured in terms of the six big losses, which are essentially a function of the availability, performance and quality rates of the machine, production line, or factory, whichever is the focus of OEE application.

OEE (%) = Availability (%) x Performance rate (%) x Quality rate (%)

Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 5 Issue 06, June-2016

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Post combustion process employs physical and chemical means to separate CO_2 from flue gases. The CO concentration in flue gas varies from 5-15 % by volume. Post combustion capture involves CO2 removal at higher temperature and lower concentration. More over higher volumetric loads need to be handled [5]. Despite of these limitations post combustion processes have highest near term potential of development and commercialization.

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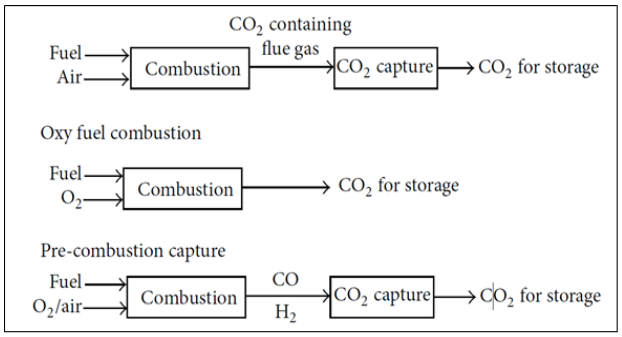

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Scientific Journal Impact Factor (SJIF) : 3.518
International Journal of Modern Trends in Engineering and Research
ISSN (ONLINE) : 2349 - 9745 ISSN (PRINT) : 2393 - 8161

Stabilization of Black cotton soil by using Fly ash and Lime

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Abstract— Stabilization of soil is important to enhance the engineering properties of expansive soil like strength, volume stability and durability. The Black cotton soils are very hard when dry, but lose its strength completely when in wet condition Expansive soils (black cotton soil) are a worldwide problem that poses several challenges for civil Engineers. In this work an attempt has been made to stabilize the soil using Fly ash and Lime. Experimental work has been carried out with 5%, 10%, and 15% of Fly ash as well 4 %, 8 % and 12% of lime content. The experimental work is based on different percentages of Fly ash and lime content in soil on tests for soil Liquid limit, Plastic limit, C.B.R. test, Unconfined Compression Test and Standard Proctor Test. The aim is to improve the engineering properties of the black cotton soil.

Keywords— Stabilization, Black cotton soil, Fly ash, Lime, Unconfined Compressive Strength, Liquid limit, Plastic limit, OMC, MDD, CBR.

I. INTRODUCTION

Expansive soil (Black cotton soil) is mostly found in the arid and semi-arid regions and it cover very large area of the world. It covers nearly 30% of the land in India and includes approximately the entire Deccan Plateau. Andhra Pradesh, Karnataka, Maharashtra, Parts of Gujarat and Western Madhya Pradesh. The name "Black Cotton" as an agricultural origin. Most of these soils are black in color and are good for growing Cotton. These soils can be used as a construction material when it possesses engineering properties such as high strength, low settlement and high durability. Difficulty is often experienced while working with such soils particularly in its field compaction. Black cotton soil experiences volumetric changes due to changes in water content and suction.

Black cotton soil is a type of expansive soil with high plasticity and can maintain water throughout the summer season. However swelling occurs during rainy seasons and shrinkage occurs on evaporation of water during summer seasons. Due to its peculiar characteristic of high plasticity, excessive swelling, shrinkage and low strength when wet, the soil is regarded unsuitable for construction material. Heavy financial investments are required to be made for construction of roads, canals and embankments due to non-availability of suitable soil.

However in developing country like India, due to industrial development there is increase in a demand for energy which has resulted in construction of considerable thermal power plants. At the moment there are total 87 working thermal power plants in India. This development has resulted in production of by-product like fly ash in large quantity. The disposal of fly ash requires large holding ponds, lagoons, landfills etc. Utilization of such hazardous by-product is very important to prevent the environment from its effect. Though fly ash has little cementatious value but in the presence of moisture it reacts chemically and forms cementatious compounds and attributes to the improvement to the strength and compressibility characteristics of soils.

It has a long history of use as an engineering material and has been successfully employed in geotechnical engineering. Studies have been conducted in the past by many investigators regarding the use of fly ash alone or in addition with lime for improving the properties of soils.

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 05 | May-2016 www.irjet.net p-ISSN: 2395-0072

STUDY OF HIGH STRENGTH TERTIARY BRAND CONCRETE WITH VARYING CONTENTS OF MICRO SILICA

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Abstract - *Concrete is the most important engineering material in construction industry because of its inherent strength properties. However, the addition of some other materials may change the properties of concrete. With increase in trend towards the wider use of concrete for pre-stressed concrete and high rise buildings there is a growing demand of concrete with higher compressive strength. Micro-silica, also called as silica fumes is produced in electric arc furnace as a by-product of the production of elemental silicon's or alloys containing silicon. The mineral admixtures with pozzolanic properties such as fly ash (FA), silica fume (SF), ground blast-furnace slag (GGBS) and metakaolin (MK) are commonly used as a partial substitution of Portland cement during construction. These admixtures are often added to modify the physical and chemical properties of cementitious mixes, performances and engineering properties of the concrete. In comparison to ordinary Portland cement, the collection of GGBS as a by-product requires less energy and it produces less greenhouse gases. Thus, GGBS blended concrete is a more environmentally friendly concrete compared to OPC concrete. This paper presents the study of variation of contents of micro silica in the mix consisting of cement, GGBFS (ground granulated blast furnace slag), and micro silica. Micro silica is used in three percentages 0%, 7%, and 10% and the compressive strength test of cubes is being conducted.*

Key Words: compressive strength, cementitious content, GGBFS, Micro silica, pozzolanic.

1. INTRODUCTION

Fly ash, ground granulated blast-furnace slag, silica fume, and natural pozzolans, such as calcined shale, calcined clay or metakaolin, are materials that when used in conjunction with Portland or blended cement, contribute to the properties of the hardened concrete through hydraulic or pozzolanic activity or both. Supplementary cementitious materials are added to concrete as part of the total cementitious system. They may be used in addition to or as a partial replacement of Portland cement or blended cement in concrete, depending on the properties of the materials and the desired effect on concrete. Traditionally, fly ash, slag, calcined clay, calcined shale, and silica fume were used in concrete individually. Today, due to improved access to these materials, concrete producers can combine two or more of these materials to optimize concrete properties. Mixtures using three cementitious materials, called ternary mixtures, are becoming more prominent.

2. MATERIAL

Ground granulated blast furnace slag (GGBS) is a by-product from the blast-furnaces used to make iron. These operate at a temperature of about 1,500 degrees centigrade and are fed with a carefully controlled mixture of iron-ore, coke and limestone. The iron ore is reduced to iron and the remaining materials form a slag that floats on top of the iron. This slag is periodically tapped off as a molten liquid and if it is to be used for the manufacture of GGBS it has to be rapidly quenched in large volumes of water. The quenching optimises the cementitious properties and produces granules similar to coarse sand. This 'granulated' slag is then dried and ground to a fine powder.

Silica fume, also known as microsilica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. Silica fume is an ultrafine material with spherical particles less than 1 μm in diameter, the average being about 0.15 μm.

Cement, type of cement is important mainly through its influence on the rate of development of compressive strength of concrete. The choice of the type of cement depends upon the requirements of performance at hand. The most commonly used cement is ordinary Portland cement. Variation in the cement quality will cause the compressive strength to vary more than any other single material.

2.1 Tests on material

The materials required and determining their various properties has been carried out in this phase. The Constituents of concrete viz. cement, fine aggregate, and

EFFECTS OF POND ASH AS SAND REPLACEMENT IN CONCRETE

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Abstract: *An increased demand for river sand as fine aggregate in the construction industry has resulted in the reduction of resources and an increase in cost. Under such circumstances, the pond ash which is a residue and by-product of thermal power plant can be used as an economic alternative to the natural sand. This paper deals with the strength and durability performance of concrete replaced with pond ash as fine aggregate and also the effect of integral type inhibitor namely triethanolamine is carried out. The percentage of pond ash added by weight of fine aggregate was 0,10, 20, 30, 40, 50 and that of triethanolamine was added at the percentages of 1%, 2%, 3%, 4%, 5% by weight of cement. The corrosion resistance was evaluated using different electrochemical techniques like Rapid Chloride Penetration Test, Impressed Voltage test and Gravimetric weight loss measurement and the optimum dosage of inhibitor was determined. To obtain the optimum percentage of pond ash which gives the maximum strength, mechanical properties like compressive strength, spilt tensile strength and flexural strength were also studied. Test results indicates that replacement of sand by pond ash increases the strength of the concrete, by the addition of integral inhibitor it provides lower permeability as well as greater density which offers a better resistance to corrosion and improves durability in adverse environment.*

Index Terms— *concrete, pond ash, corrosion inhibitor, triethanolamine, durability, corrosion resistance.*

I. Introduction

Continuous research efforts have proved concrete as a versatile material. Concrete needed for a wide range of construction activity can be made easily available since all the constituents of concrete are of geological origin. Since the available sand as a fine aggregate is not able to meet the demand of construction sector, pond ash, defined as a residue and by-product of thermal power plants can be an inexpensive alternative to the river sand. The un-utilised electro static precipitator ash and bottom ash are mixed in slurry form and taken to lagoons for deposition which are known as pond ash. The compressive strength of concrete with pond ash increases with increased curing period [Arumugam K 2011]. If proper replacement level and procedure is used then pond ash concrete may be used for highway embankments, mass concreting, Plain Cement Concreting (PCC), etc. [K.M. Bagwan 2014].

The capability of concrete to resist chemical attack, weathering action and abrasion while retaining its desired engineering properties is called the durability of concrete [M.S Shetty]. Corrosion of reinforcing steel is a major problem affecting the mechanical properties of concrete. Deterioration in concrete is mainly caused by the corrosion of reinforcing steel and other embedded metals in concrete. When steel corrodes, the rust formed occupies a larger volume than the steel. This expansion produce tensile stresses inside the concrete, which leads to cracking, delamination, and spalling. Corrosion can be prevented by chemical method using certain corrosion inhibiting chemical and coating to reinforcement [Michael C. Brown 2001]. Corrosion inhibitors function by reinforcing a passive layer or by forming oxide layer and prevent outside agents and reduce the corrosion current [LouL De. Schutter 2008]. This paper presents an experimental study on the durability performance of concrete replaced with pond ash as fine aggregate and also the effect of integral type inhibitor namely triethanolamine.

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International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 05 | May-2016 www.irjet.net p-ISSN: 2395-0072

STUDY OF HIGH STRENGTH TERTIARY BRAND CONCRETE WITH VARYING CONTENTS OF MICRO SILICA

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Abstract - *Concrete is the most important engineering material in construction industry because of its inherent strength properties. However, the addition of some other materials may change the properties of concrete. With increase in trend towards the wider use of concrete for pre-stressed concrete and high rise buildings there is a growing demand of concrete with higher compressive strength. Micro-silica, also called as silica fumes is produced in electric arc furnace as a by-product of the production of elemental silicon's or alloys containing silicon. The mineral admixtures with pozzolanic properties such as fly ash (FA), silica fume (SF), ground blast-furnace slag (GGBS) and metakaolin (MK) are commonly used as a partial substitution of Portland cement during construction. These admixtures are often added to modify the physical and chemical properties of cementitious mixes, performances and engineering properties of the concrete. In comparison to ordinary Portland cement, the collection of GGBS as a by-product requires less energy and it produces less greenhouse gases. Thus, GGBS blended concrete is a more environmentally friendly concrete compared to OPC concrete. This paper presents the study of variation of contents of micro silica in the mix consisting of cement, GGBFS (ground granulated blast furnace slag), and micro silica. Micro silica is used in three percentages 0%, 7%, and 10% and the compressive strength test of cubes is being conducted.*

Key Words: compressive strength, cementitious content, GGBFS, Micro silica, pozzolanic.

1. INTRODUCTION

Fly ash, ground granulated blast-furnace slag, silica fume, and natural pozzolans, such as calcined shale, calcined clay or metakaolin, are materials that when used in conjunction with Portland or blended cement, contribute to the properties of the hardened concrete through hydraulic or pozzolanic activity or both. Supplementary cementitious materials are added to concrete as part of the total cementitious system. They may be used in addition to or as a partial replacement of Portland cement or blended cement in concrete, depending on the properties of the materials and the desired effect on concrete. Traditionally, fly ash, slag, calcined clay, calcined shale, and silica fume were used in concrete individually. Today, due to improved access to these materials, concrete producers can combine two or more of these materials to optimize concrete properties. Mixtures using three cementitious materials, called ternary mixtures, are becoming more prominent.

2. MATERIAL

Ground granulated blast furnace slag (GGBS) is a by-product from the blast-furnaces used to make iron. These operate at a temperature of about 1,500 degrees centigrade and are fed with a carefully controlled mixture of iron-ore, coke and limestone. The iron ore is reduced to iron and the remaining materials form a slag that floats on top of the iron. This slag is periodically tapped off as a molten liquid and if it is to be used for the manufacture of GGBS it has to be rapidly quenched in large volumes of water. The quenching optimises the cementitious properties and produces granules similar to coarse sand. This 'granulated' slag is then dried and ground to a fine powder.

Silica fume, also known as microsilica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. Silica fume is an ultrafine material with spherical particles less than 1 μm in diameter, the average being about 0.15 μm.

Cement, type of cement is important mainly through its influence on the rate of development of compressive strength of concrete. The choice of the type of cement depends upon the requirements of performance at hand. The most commonly used cement is ordinary Portland cement. Variation in the cement quality will cause the compressive strength to vary more than any other single material.

2.1 Tests on material

The materials required and determining their various properties has been carried out in this phase. The Constituents of concrete viz. cement, fine aggregate, and

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New Frame Work for Translation of Sign Language Action into Text Description in Kannada

Ramesh M. Kagalkar, Dr. S.V Gumaste

Abstract

In later year's gesture based communication acknowledgment has turned in a standout amongst the most developing fields of examination and it is the most characteristic method of correspondence for the individuals with listening to issues. A hand signal acknowledgment framework can give a chance to hard of hearing persons speak with typical individuals without the need of a translator or middle. Proposed system is going to construct a framework and techniques for the programmed acknowledgment of the Kannada communication via gestures. Through that we are giving instructing classes to the reason for preparing the hard of hearing sign client in Kannada. The framework does oblige hand to be appropriately adjusted to the camera and does not require any wearable sensors. A substantial arrangement of tests has been utilized as a part of the proposed framework to perceive confined words from the standard Kannada communication through signing, which are taken before the camera with distinctive hard of hearing sign client. In proposed framework, we mean to perceive some extremely essential components of gesture based communication and to make an interpretation of them to content and the other way around. The proposed framework utilizing 36 Kannada letters in order for acknowledgment.

Keywords

Kannada Sign Language, Hand Gesture Recognition, Canny's Edge Detection, Processing, Feature Extraction, Pattern Recognition/Matching, Gray Scale Image, Database.

Full Text:

PDF

IJCSE International Journal of Computer Sciences and Engineering Open Access
Research Paper Volume-4, Issue-9 E-ISSN: 2347-2693

Gradient Based Key Frame Extraction for Continuous Indian Sign Language Gesture Recognition and Sentence Formation in Kannada Language: A Comparative Study of Classifiers

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Available online at: www.ijcseonline.org

Received: 22/Aug/2016 Revised: 02/Sept/2016 Accepted: 20/Sept/2016 Published: 30/Sep/2016

***Abstract*— Human hands are delicate instruments. Hand gestures and finger gestures are excellent ways of emphasizing what we say, but on the other hand they can also reveal our true intentions. In this paper introduced a continuous Indian sign language recognition system, wherever each the hands are used for playacting any gesture. Recognizing a sign language gestures from continuous gestures could be a terribly difficult analysis issue. This paper solve the problem using gradient based key frame extraction technique. These key frames are useful for splitting continuous language gestures into sequence of signs further as for removing uninformative frames. After splitting of gestures every sign has been treated as associate degree isolated gesture. Then features of pre-processed gestures are extracted using orientation histogram (OH) with principal component analysis (PCA) is applied for reducing dimension of features obtained after OH. Experiments are performed on our own continuous ISL dataset which is created using EOS camera in PG Research Laboratory (SPPU, Pune). Probes are tested exploitation varied forms of classifiers like, Manhattan distance, Correlation, Manhattan distance, City block distance, Euclidian distance etc. Comparative analysis of our projected theme is performed with varied forms of distance classifiers. From this analysis we tend to found that the results obtained from Correlation and Euclidian distance offers higher accuracy then alternative classifiers.**

Keywords- Gesture Recognition, Orientation histogram (OH); Correlation; Indian sign language (ISL); Principal component analysis (PCA);

I. INTRODUCTION

Humans know each other by conveying their ideas, thoughts, and experiences to the people around them. There are numerous ways to achieve this and the best one among the rest is the gift of Speech. Through speech everyone can very convincingly transfer their thoughts and understand each other. It will be injustice if we ignore those who are deprived of this invaluable gift. The only means of communication available to the vocally disabled is the use of sign language. Using sign language they are limited to their own world. This limitation prevents them from interacting with the outer world to share their feelings, creative ideas and potentials. Very few people who are not themselves deaf ever learn to sign language. These limitation increases the isolation of deaf and dumb people from the common society. Technology is one way to remove this hindrance and benefit these people. Several researchers have explored these possibilities and have successfully an achieved finger spelling recognition with high levels of accuracy. But progress in the recognition of sign language, as a whole has various limitations in today's applications.

The problem of automated sign language recognition can be put across as, given a video of a sign language sentence, can We identify the signs in the sentence and reconstruct the sentence? The solution to the problem of sign language recognition has many practical implications. Firstly, advances in automated sign language recognition are necessary to improve the quality of life of deaf persons by facilitating their interaction with hearing populace in public situations. For instance, the use of innovative computer technologies can provide a solution to the dilemma a security screener faces in attempting to communicate with deaf passengers during the course of daily business activities. Also, it can be helpful in other places like courtroom, conventions or even a grocery store. On the other note, human computer interaction (HCI) is gradually moving towards a modality where speech recognition will play a major role. While speech recognition has made rapid advances, gesture recognition is lagging behind. With this gradual shift to speech based Input output devices, there is a great danger that persons who rely solely on sign languages for communication will be deprived access to state-of-the-art technology unless there are significant advances in automated recognition of sign languages. Secondly, the problem of automated sign language recognition is also worthwhile from a scientific and technological point of interest, since advances in this problem would definitely impact the general problem of automated

ISSN (Online) : 2454-4159
International Journal of Advanced Research in Science Management and Technology
Volume 2, Issue 7, July 2016

Performance Evaluation of A Role Based Access Control Constraints in Role Mining Using Cardinality

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ABSTRACT- A Role Based Access Control (RBAC) is an extremely successful strategy for managing permissions assigned to a large number of users in an enterprise. This offers another approach to deal with RBAC, which is additionally called as visual role mining. Here the key thought or is to graphically represent the user permissions assignments for enabling fast analysis or examination and elicitation of meaningful roles with constraint. For implementing RBAC, within considered organization roles should be firstly identified. Normally the procedure of characterizing the roles is by a base up or bottom up methodology, a process which begins with the permission assignment to each user, is known as role mining. Here this system proposes a role mining problem definition under the cardinality constraints, which means restricting the most extreme number of authorizations or permissions that can be incorporated into the role. Constraints are critical part of RBAC and now and then contended to be the fundamental inspiration for RBAC. Permission usage cardinality constraint is also one of the cardinality constraint which restricts, greatest number of permissions that can be incorporated in a role. In this framework cardinality constraints on number of permissions incorporated into a role have been firstly considered in and Matrix Based Role Assignment (MBRA) algorithm and role miner algorithm has been proposed.

KEYWORDS - Role mining, Role based access control (RBAC), cardinality constraint.

I. INTRODUCTION

Role-based access control (RBAC) has long been recognized as a normative access control model. The essential notion of RBAC is to decouple users and permissions, and then associate both to roles respectively. This substantially simplifies the complexity of users and permissions management, widely perceived as onerous operations by system administrators. Employing RBAC is not only convenient but reduces the complication of access control since the number of roles in an organization is significantly smaller than that of users.

Moreover, the use of roles as authorization subjects, instead of users, avoids having to revoke and re-grant authorizations whenever users change their positions and/or duties within the organization. As a result, RBAC has been implemented successfully by numerous information systems. The trend is that RBAC will maintain its increasing prevalence since the growing demand for cost-effectiveness in management and security mechanism calls for it. Roles, users, permissions, objects and operations are constituents in RBAC where roles represent organizational agents that perform certain job functions within the organization, users are human beings and permissions are a set of many-to-many relations between objects and operations. According to the RBAC reference model , roles describe the relationship between users and permissions. Roles can be hierarchically structured, where senior roles generally inherit the permissions assigned to junior roles. Additionally, constraints such as separation of duties may be associated with the roles.

ISSN: 2278 – 1323
International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)
Volume 5, Issue 10, October 2016

Image Classification-Review

Komal V. Rayate, Shyamrao V. Gumaste

***Abstract*— Hyper-spectral images display strong dependencies across spatial and spectral neighbors', which have been proved to be very helpful for hyper-spectral image classification. High-resolution images have the type of plentiful geometric and detail information, which are useful to detailed classification. The predictable algorithm integrates spectral, spatial contextual and spatial location cues by modeling the probabilistic potentials. It is well implemented through split trainings of easy classifiers defined by equivalent potentials. Experiments Hyper-spectral images display strong dependencies across spatial and spectral neighbors, which have been proved to be very helpful for hyper-spectral image classification. High-resolution images have the type of plentiful geometric and detail information, which are useful to detailed classification [13].**

Experiments on real-world hyper-spectral data illustrate that algorithm is reasonable with the most current results in hyper-spectral image classification. The projected algorithm integrates spectral, spatial contextual, and spatial location cues within a CRF framework to give matching information from changing perspectives, so that it can deal with the common problem of spectral inconsistency in remote sensing images, which is directly reflected in the accuracy of each class and the average accuracy. The new results with three high-resolution images prove the validity of the algorithm, compared with the other state-of-the-art classification algorithms [6].

***Index Terms*— Conditional random fields, Markov random field, Support vector machines.**

I. INTRODUCTION

In field of remote sensing, main task is land-cover classification. Hyper-spectral image classification has being a exacting focus of land-cover classification investigate because hyper-spectral image contains very rich spectral attributes, which allows the categorization, identification and classification of the land-covers with better accuracy and robustness.

We are performing strong literature survey which helps in developing a new hyper-spectral image classification algorithm based on discriminative conditional random fields (CRFs) to at the same time deal with the problems mentioned previously.

- First, as a discriminative method, CRF directly models the posterior as Gibbs distribution, and then it avoids the problem of clear modeling of likelihood. Thus, CRF can be simply used to categorize various hyper-spectral images, no matter what distributions follow. The altered data of a variety of hyper-spectral images are captured by supervised learning and denoted in variety of different learned parameters of CRF model.
- Second, as well avoiding of clear modeling of likelihood, CRF has intrinsic skill to include the contextual information in both label and observed images in a righteous manner. The contextual information is captured through intrinsic CRF structure, not require of difficult modeling of the dependencies among interpretation of neighboring sites. After the modeling method, the problem remains is functioning of CRF training. Correct view is difficult in general because the partition function of Gibbs distribution depends not only upon model parameters but also on input data [13]. This means the limit estimation requires computing partition function for each training case and also in every iteration of a numerical optimization algorithm. Since CRFs for image investigation are large graphical models with loops, the computing can be costly. To deal with this problem, a variety of approximate methods have been used in parameter view. In hyper-spectral and spatial image classification, the most usual job is to choose some samples from a particular image for classifier training, and then the learned classifier is used to classify the remaining test samples in the similar given image. So limited training methods should be used equivalent to the task of hyper-spectral and spatial image classification [6].

CRF has the essential ability to integrate the contextual information in both the labels and observed data. Thus, for the first issue, we focal point on defining CRF graph construction to extend a new hyper-spectral and spatial image classification algorithm [8].

Many functioning imaging systems are now available providing a huge amount of images for various thematic applications.

- Ecological science: Hyper-spectral and spatial images are used to approximation biomass, biodiversity, or to study land cover changes.
- Geological science: It is probable to recover physiochemical mineral properties such as composition and abundance.
- Hydrological science: Hyper-spectral and spatial imagery is used to resolve changes in wetland characteristics. Water quality, estuarine environments, and coastal zones can be analyzed as well.

Manuscript received Oct, 2016.
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***Abstract*— Scenario in web is changing rapidly and volume of web resources is growing, efficiency has become a challenging issue for crawling such data. The deep web content is the data that cannot be indexed by search engines as they stay behind searchable web interfaces. The proposed system aims to develop a framework for focused crawler for efficient harvesting hidden web interfaces. Initially Crawler performs site-based searching for center pages with the assistance of web search tools to abstain from visiting more number of pages. To get more precise results for a focused crawler, proposed crawler ranks websites by giving high priority to more relevant ones for a given search. Crawler accomplishes quick in-site searching via looking for more relevant links with an adaptive link-ranking. Here we have incorporated Breath First Search (BFS) algorithm in incremental site prioritizing for broad coverage of deep web sites.**

Keywords—Focused Crawler, Deep Web, BFS, Feature Selection, Ranking.

I. INTRODUCTION

Web search tools attempt to fetch data as relevant as possible. One of the parts of web search tools is the Web Crawler. A web crawler is a program that goes across the web assemble and gather data in a database for further analysis. The procedure of web crawling includes collecting pages from the web and sorting them out in a manner that the search engine can redeem them efficiently. The intention is to do it fast and efficiently without much obstruction with the operation of the remote server. A web crawler initiates with a URL also called as seed. The crawler visits the links in the list and it also looks for hyperlinks to other web pages. It then adds them to the existing list of URLs in the list. This process of crawler

II. LITERATURE SURV

The hidden web content is the inform
indexed by search engines as they stay b
interfaces [2]. A Crawler encounters a
during a crawling process . For efficien
coverage, ranking and prioritizing links
necessary. In previous work two type
proposed, the crawlers are generic c
crawlers. Generic crawlers are mainly cr
deep web and construction of direc
resources.The search is not limited to a
strives to fetch all searchable forms
crawlers collects all searchable forms and
on a specific topic. Focused Crawler i
fetching web pages that are relevant to
interest [5]. It gathers the documents that
topic. It is called as a Topic Crawler as th
works. The focused crawler determines
document before crawling the page. It e
page is relevant to a particular topic and h
fundamental point of preference of this sc
requires less equipment assets.
Form-Focused Crawler (FFC) [6] and A
Hidden-web Entries (ACHE) [7] automa
databases for a specific topic. FFC inc
form classifiers for focused crawling of w
is an enhancement of FFC with compone
and adaptive link learner. The FFC and
crawlers intended for searching in
interfaces.FFC Crawler performs a broa

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Enhancing Crawler Performance for Deep Web Information Extraction

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***Abstract*—** Scenario in web is changing rapidly and volume of web resources is growing, efficiency has become a challenging issue for crawling such data. The deep web content is the data that cannot be indexed by search engines as they stay behind searchable web interfaces. The proposed system aims to develop a framework for focused crawler for efficient harvesting hidden web interfaces. Initially Crawler performs site-based searching for center pages with the assistance of web search tools to abstain from visiting more number of pages. To get more precise results for a focused crawler, proposed crawler ranks websites by giving high priority to more relevant ones for a given search. Crawler accomplishes quick in-site searching via looking for more relevant links with an adaptive link-ranking. Here we have incorporated Breath First Search (BFS) algorithm in incremental site prioritizing for broad coverage of deep web sites.

***Keywords*—Focused Crawler, Deep Web, BFS, Feature Selection, Ranking.**

I. INTRODUCTION

II. LITERATURE SURVEY

The hidden web content is the information that cannot be indexed by search engines as they stay behind searchable web interfaces [2]. A Crawler encounters a variety of web pages during a crawling process . For efficient crawling and wide coverage, ranking and prioritizing links of different sites is necessary. In previous work two types of crawlers were proposed, the crawlers are generic crawlers and focused crawlers. Generic crawlers are mainly created for representing deep web and construction of directory for deep web resources.The search is not limited to a particular topic, but strives to fetch all searchable forms [3,4]. Thus, generic crawlers collects all searchable forms and does not concentrate on a specific topic. Focused Crawler is a web crawler for fetching web pages that are relevant to a particular area of interest [5]. It gathers the documents that are related to a given topic. It is called as a Topic Crawler as the result of the way it works. The focused crawler determines the relevance of the

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 04 Issue: 07 | July -2017 www.irjet.net p-ISSN: 2395-0072

An Efficient and Scalable UP-Growth Algorithm with Optimized Threshold (min_util) for Mining High Utility Item sets from Transactional Database.

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Abstract - *High utility itemsets mining from a big transactional database is an emerging concept in data mining which refers to the discovery of knowledge like high utility itemsets (profits) with user-specified minimum utility threshold min_util. Since a number of relevant algorithms have been proposed in past years, they fall into the problem of producing a large number of candidate itemsets for high utility itemsets. Though, setting min_util properly is a difficult problem for users. Generally discourse, finding a suitable minimum utility threshold by trial and error is a tedious process for users. If min_util is set very small value, then very large set of High Utility Itemsets will be generated, which may cause the mining process to be very inefficient. On the further case, if min_util is set very large, it is expected that no High Utility Itemsets will be found. Such a huge number of candidate itemsets decrease the mining performance in terms of time and space complexity. In this paper, we discourse the above issues by proposing a new framework for high utility itemset mining, with desired number of HUIs to be mined. Here we have done a structural comparison of the two algorithms with discussions on their advantages and limitations. Experiential evaluations on both real and synthetic datasets show that the performance of the proposed algorithms is close to that of the optimal case of state-of-the-art utility mining algorithms. This template, modified in MS Word 2007 and saved as a "Word 97-2003 Document (Size 10 & Italic , cambria font)*

Key Words: Candidate pruning, frequent itemset, high utility itemset, utility mining, data mining.

1. INTRODUCTION

Frequent item set mining (FIM) is a fundamental research concept in data mining. The traditional FIM may yield a large numbers of frequent but low-value item sets and may lose the information on valuable item sets having low selling frequencies. Hence, it cannot satisfy the requirement of users who desire to discover item sets with high profits. Even, the association rule mining algorithm named apriori is used to find the candidate itemsets and then derive the frequent itemsets based on the minimum support value. The apriori used join and prune mechanism to find the itemsets. To address the issues of frequent mining, utility mining came into existence. In utility mining, each item is associated with a unit profit and the quantity of that item. An item set is called high utility item set (HUI) if its utility is no less than a user specified minimum utility threshold min_util. Efficient mining the high utility itemsets in databases is not an easy task because the downward closure property used in FIM does not hold for the utility of item sets. In other words, pruning search space for HUI mining is difficult because a superset of a low utility item set can be high utility. To tackle this problem, the concept of transaction weighted utilization (TWU) model was introduced. In this model, an item set is called high transaction-weighted utilization item set (HTWUI) if its TWU is no less than min_util, where the TWU of an item set represents an upper bound on its utility.

Depending on the threshold value, the search space can be very small or very large. Besides, the choice of the threshold greatly influences the performance of the algorithms. If the threshold is set too low, many high utility itemsets are generated and it is difficult for the users to comprehend the results. A huge search space makes mining algorithms incompetent or even run out of memory, because the more HUIs the algorithms generate, the more resources they consume. On the contrary, if the threshold is set too high, no HUI will be found. To find a proper value for the min_util threshold, users need to try different thresholds by estimating and re-executing the algorithms over and over until being satisfied. In this paper, we discourse all of the above challenges by proposing a novel framework for high utility item set mining, with the desired number of HUIs to be mined. This technique is proposed for mining the complete set of top HUIs in databases without the need to specify the min_util threshold. This strategy is concerned with any kind of one phase algorithm which have item set with their utility.

2. LITERATURE SURVEY

R. Agrawal et al in [2] has proposed Apriori algorithm, it is used to find frequent itemsets from the database. In miming the association rules we have the problem to generate all association rules that have support and confidence greater than the user specified minimum threshold respectively.

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Handling Various Issues In Text Classification : A Review

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***Abstract*—**Text classification is a process of document classification depending upon its content into predefined categories. This helps in providing conceptual views of collection of documents and has important real world applications. Text classification is the priliminary reqisite of text retrieval and understanding systems. The text retrieval system retrieves text in reply to a user defined query. While the text understanding system transforms text in such a way that it produces summaries, answer questions or data extract. This survey provides a brief review of generic text classification processes, phases of that process, the existing work done on the text classification and the various methods and algorithms for the effective text classification.

Keywords—Text Mining, Text Retrieval, Text Classification.

I. INTRODUCTION

The text mining researches has gained more importance now-a-days because large numbers of electronic documents are available from the various sources. Information content in the document can be either semi structured or unstructured. Text mining primarily focuses on enabling users to pull out information from textual resources and to deal with the operations like text retrieval, classification of supervised, unsupervised and semi supervised documents and summarization. Various techniques like Natural Language Processing, Data Mining, Machine Learning work in collaboration to classify and determine patterns from the various types of documents [1].

Text classification is a part of text mining. The forms of text classification are Single label text classification in which document belongs to a singe class and multi-label text classification in which document belongs to multiple classes. Text classification is a process of partitioning a set of input documents into muliple classes where each document belongs to one or more class. Tremendous growth of information flows and the unpredictable growth of Internet have promoted the evolution of automated text classification. Also the progress of computer hardware provides enough computing power too. Text categorization is frequently used to handle spam emails, classify large text collections into topical categories, to manage knowledge and to help Internet search engines. Text categorization is a process of classifying a document under predefined category. Like, if d_i *is* a document from the collection of documents *D* and {c1, c2 $_{...Cn}$} *is* a set of all categories. Then text classification process assigns one category c_j to a document *di*.

The process of text categorization in form of automated text categorization system is divided into two main phases:

1. Information retrieval phase that deals with web crawling, data parsing, indexing of document and retrieval of document.

2. Classification phase in which the algorithm processes the data to make a decision on what category should the text belong to.

The additional phases can be added to the classification process so that it will reduce the computational amount and train the algorithms with training data before the classification.

Text classification contains topic based text categorization and genre based classification. Topic based text categorization classifies documents in reference to their topics [2]. Texts can be written in many forms like scientific articles, movie reviews, news reports and advertisements.

Some of the important approaches of text mining are introduced in this paper as follows: Section II gives the general strategy for text classification. Section III introduces the Various Text Classification techniques. Section IV gives the application areas of text classification. Section V includes various Survey's on text classification and section VI has the information of various datasets that can be used for text classification and finally in Section VII conclusion were made.

Journal of Intelligent & Fuzzy Systems 31 (2016) 1287–1297
DOI:10.3233/IFS-162195
IOS Press

Optimal tuning of PID controller with time delay system using CS and SRMR technique

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Abstract. This paper proposed a cuckoo search (CS) algorithm and self reunion multiple regression (SRMR) method based optimal tuning of proportional integral derivative (PID) controller with high order time delay system. The main part of this projected technique is in hybridizing SRMR with CS algorithm and so enhanced searching ability, random reduction and mitigated difficulty can be achieved. The main goal of this paper is to acquire the optimal control parameter of the PID controller depend on the outcome deviation of the higher order time delay system. In this projected technique is used to derive the SRMR function from the higher order system output parameters. Here, the CS algorithm depends on the least square error (LSE) minimization function is used to optimize the SRMR coefficients. The projected technique is helps to achieve the best fit parameter of the higher order system and improving the consistency of the system. The projected technique is applied in the MATLAB/Simulink platform and examined under various types of higher order time delay systems. The efficiency of the projected technique is proved by the comparative analysis with the existing techniques. The differentiation results consistently prove the efficiency of the projected technique and verified its potential to resolve the related problems.

Keywords: SRMR, CS, LSE, PID controller, higher order time delay system

1. Introduction

Time-Delay Systems (TDS) stumble upon with engineering, biology, and economics [2, 13] in different regions. A time delay is a basis of unsteadiness and variations in a system [1]. There are two types of time delay systems: retarded and neutral [16]. In TDS, where time-delays offer between the functions of input to the system and their resulting effect, can be pointed out by delay differential equations (DDEs) [3]. Systems with delays specify a class in unlimited size frequently used for the modeling and the revise of transport and propagation phenomena [7]. Time-delays in control loops generally embarrass system presentation and puzzle the study and plan of feedback controllers [14].

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Due to a number of functions of communication networks in biology and population dynamics [19] the stability of time-delay systems is a hold back of recurrent interest. Generally, stability study of time-delay systems can be classified into two kinds. One is the delay-dependent stability study which includes the data on the size of the delay, and another is the delay-independent stability study [15, 21]. The delay independent stabilization presents a controller which can alleviate the system irrespective of the size of the delay [18]. Alternatively, the delay dependent stabilizing controller is bothered with the size of the delay and frequently offers the upper bound of the delay [20].

One of the manipulated the presentation and steadiness of time-delay systems [8] is Dead time. Time delay incessantly exists in the measurement loop or control loop, therefore it is more rigid to control this kind of process [5, 16]. Some new control technologies, like predictive control, the neural type of an artificial neutral delay in a control loop [42–47] in

ISSN: 2277-9655
Impact Factor: 4.116
CODEN: IJESS7

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

IRIS RECOGNITION USING GRAY LEVEL RUN LENGTH MATRIX AND KNN CLASSIFIER

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DOI: 10.5281/zenodo.203815

ABSTRACT

Biometric devices are great tools for the security. Iris is a very unique identifying characteristic amongst all human biometric traits. In the proposed system, the biometric authentication system using iris recognition is presented. In this iris image is preprocessed then image localized with the Hough transform, normalized using Daugman's rubbersheet model finally image sharpening is used with the morphological toggle filter. Feature extraction is done using Gray Level Run Length Matrix (GLRLM) technique with 0 directions and classification is done using multiclass KNN. This system is evaluated on CASIA database and it gives 92.66% accuracy.

KEYWORDS: Iris recognition, Feature extraction, GLRLM (gray level run length matrix), KNN (K-nearest neighbor)

INTRODUCTION

In the last decade, the field of information and technology grows exponentially. It is good for society, but there is an increase in the frauds with greater proportion. Therefore, there is a need of robust, effective security system which is not susceptible to the hackers.

Numbers of authentication systems are proposed by different researchers which are based on card, password. PIN. These traditional authentication systems are not that safe because card or pin can be stolen by anyone or these can be used by unauthenticated person too. The biometric systems overcome the disadvantage of the traditional system. Biometric authentication system is the only robust, accurate solution for person identification system.

Biometric systems are divided into physiological and behavioral characteristic for person identification. The biometric systems consist of various traits like Face, fingerprint, palm print, vein pattern, retina, iris, Gait, Voice etc. Among all biometric systems, Iris based biometric system is the most secure system because the iris pattern of each person are unique, even though the iris pattern of the twins doesn't match.

In this system, Iris based person identification system is proposed. The system comprises of image acquisition, preprocessing, binarization, morphological filter operations, feature extraction and classification.

The paper is organized as, in the second section the previous techniques to recognize the iris has been present. The proposed methodology to detect the iris by machine learning algorithm has been present in the third section. Results in quantitative and qualitative ways are presented in Fourth section. In the last section, the proposed system is concluded.

LITERATURE REVIEW

Biometric system is growing research topic from the last decade, so there is a number of papers were presented by different researchers. Some of them are reviewed in this section.

The first successful method for iris segmentation iris proposed by the Daugman's and named as Daugman's Algorithm in 1993. [1]

2016 IEEE International Conference on Advances in Electronics, Communication and Computer Technology (ICAECCT)
Rajarshi Shahu College of Engineering, Pune India. Dec 2-3, 2016

Iris detection for Person Identification using Multiclass SVM

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***Abstract*— There are critical applications which need high confidentiality and high security. For this, biometric devices are great tools. In the proposed system, the biometric authentication system using iris detection is presented. In this iris image is preprocessed then Hough transform is applied and finally, the image is normalized using Daugman's rubbersheet model. Feature extraction is done using Gray Level Co-occurrence (GLCM) technique and classification is done using multiclass SVM. This system is evaluated on UPOL database and it gives 94.23% accuracy.**

***Keywords*— GLCM, Hough circular transform, Iris, Machine learning, Person identification, SVM**

I. INTRODUCTION

Today, the security of the system is a growing field. Authentications play a major role for security against the intruders. There are three types of security systems viz. Password based, card based and biometrics. In the password based system, the authentication is taken from keyboard keys and matched with the password stored in memory. A password based system is weak because of human tendency for writing it down somewhere and which is easily accessible, hence it provides a poor security level. In addition to the password, card can be additionally secured. In a card based system, magnetic tape is stuck on the card for user identification and external user have to provide the security PIN. The most popular example of the card system is ATM cards. The card based system may fail due to increase in the illegal manufacture of the copies of magnetic strips. To get more secure system, biometric authentication systems are introduced. Biometric recognition is a reliable and most widely used for personal identification. There are some common type of biometric system based on Fingerprint, facial feature, iris, vein structures, hand silhouette, etc. Like physiological characteristic are more stable, unchangeable and unalterable without significant force. Whereas behavioral characteristic like signature, speech pattern, or how one type at a keyboard are more often depend upon an individual's psychological makeup. Intra personal characteristics much differ than the behavioral characteristics of the person. Behavioral characteristics are often influential e.g. Controllable actions and less psychological factors affect a signature and emotional state influences speech pattern, whereas fingerprint template is independent. Beside these reliable authentication systems are based on iris recognition are reputed among all biometric methods: as a consideration, we get almost zero probability of matching two people with similar iris pattern. Only biometric systems provide better security and authentication because of its uniqueness among different people. As compared to the biometric systems, the iris based authentication systems are more secure because the cornea and eyelid of the eyes are protect it from external environment. The iris feature not varies with aging. It remains stable and fixed. This technology is easy, accurate, difficult to break and non intrusive. This is the reason to use iris as a biometric.

The following paper is further divided into five parts. The Section I introduce the current technology trends in iris detection in personal authentication. The Section II presents the state of the art in the domain of iris recognition. We take J. Daugman's [1] iris recognition system as a reference for comparison. The Section III presents in details our approach, and discuss the different issues that we chose. The Section IV presents GLCM feature extraction technique, Section V explains the multiclass SVM, qualitative and quantitative analysis is explained in section VI. In the end Section VII concludes the project with the next considerations for the improvement of the proposed solution.

II. LITERATURE SURVEY

A First person identification system based on iris is proposed by French ophthalmologist Alphonse Bertillon in 1993. This system was based on the iris color pattern. John Daugman's proposed a system based on High confidence, personal identification by video analysis of the iris texture [1].

In 2011, Kien Nguyen et al., Proposed a technique for iris identification for low resolution iris images. Low resolution images may degrade the performance of the system. The system performance increased by implementing image processing algorithm. This approach is the first approach to transferring super resolution images from intensity to features [2].

A dynamic matching algorithm for iris detection is proposed by the P. Thumwarin, N. Chitanont et al. In 2012. In this approach the each feature of the iris image was extracted by using Fourier series. This unique feature from the iris is used to recognize the iris. The distance between test image and reference image was calculated by using dynamic radius matching technique. The experimental results show that recognition accuracy of this system without dynamic radius matching and dynamic radius matching is 90.52% and 94.89% respectively. The experimentation was performed on CASIA

978-1-5090-3662-2/16/$31.00 ©2016 IEEE

2016 International Conference on Automatic Control and Dynamic Optimization Techniques (ICACDOT)
International Institute of Information Technology (I²IT), Pune

Design Of Dual Band Circular Microstrip Patch Antenna for ISM and WLAN

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***Abstract*—In this paper, Coaxial feed dual band circularMicrostrip patch antenna (CMPA) for ISM (2.4-2.5GHz) and WLAN (5.150-5.350GHz) application is proposed. Dual frequency bandsare obtained by inserting a circular slot in the circular radiator as well as bandwidth enhancement is obtained by modifying the ground plane.FR-4 substrate having dielectric constant of 4.4 and thickness of 1.6 mm is used to simulate CMPA and an overall size of CMPA is 40 × 40 × 1.6mm^3. The designed antenna simulated using CAD FEKO simulation software.The proposed antenna achieves S_{11}< -10dB. Maximum bandwidth observed is about 78MHz for ISM band and 190MHz for WLAN band.**

Keywords—dual band; microstrip; circular;DGS

I. INTRODUCTION

Recently, demands of microwave and wireless communication system in various application is increasing. Therefore, selection of microstrip patch antenna is suitable to apply because of its advantages such as ease of compatibility with microwave circuits, fabrication, low profile and less cost [17]. However, despite of these advantages microstrip antennas suffers from limitations such as narrow bandwidth and low gain. Today's communication system demands more gain, wide bandwidth and compactness in size. To avoid use of two separate antennas for two frequency bands and to fulfil the demand of leading market there is a need to develop the dual band antennas. Varieties of patch structures are available but rectangular, square and circular shape is most frequently used [5-16]. Many designs are reported in literature, for different communication bands, which uses different techniques such as slotting, defected ground structure, metamaterial loading etc. to enhance the performance of Microstrip patch antennas.

Garima *et.al* proposed that by increasing the size of diamond shaped slot effective radius of circle get decreases and patch current increases. So that, impedance bandwidth and gain of antenna get increases. Improved bandwidth is of 13.58% for C-band application [11]. M.Haroon Taria *et.al* proposed that the requirement of high speed wireless local area networks (IEEE 802.11a standard) and other communication systems. Proposed antenna operates in5.15-5.825GHz.Bandwidth increases due to larger width of microstrip antenna. Slot is inserted in the area of patch where current concentrated region could be joined to merge the gain distributed [7].In past few years, investigators have been studied different methods to enhance the bandwidth. It is observed that efficiency of antenna get increases by increasing bandwidth and gain decreases accordingly.J.A. Ansari *et.al* described that substrate thickness and slots length have significant effect on frequency ratio [12].Rajat Srivastava*et.al* described that by loading a circular and rectangular slot dual band with enhanced bandwidth is obtained for WLAN/GPS/WiMAX applications [3]. S. Imran Hussain Shah*et.al*proposed a multiband microstrip patch antenna in which H-shaped slot is inserted on the patch and U, L-shaped DGS loaded on the ground plane which resonates antenna at 1.87GHz and 2.25GHz with bandwidth of 140MHz and 105MHz respectively [4].

In this paper, circular microstrip patch antenna for dual band operation is designed using coaxial feeding technique is presented. Dual band CMPA without DGS (Defected Ground Structure) and with DGS designedand simulated using CAD FEKO simulator. Circular slot is inserted on circular radiating patch for dual band operation and DGS is designed to improve the bandwidth of the proposed antenna. At the last simulated results of antenna without DGS and with circular DGS is compared. The paper is organized in following sections. Section I depicts introduction, Section II explains the dual band antenna designs, Section III and IV presents antenna analysis and experimental results respectively. Conclusion is presented in Section V.

II. ANTENNA DESIGN

Dual band CMPA is simulated by using 1.6mm thick FR-4 dielectric substrate whichhas permittivity and loss tangent of 4.4 and 0.02 respectively with 40 × 40 mm^2 ground area. Coaxial feeding is used for proposed dual band circular microstrip patch antenna at x=4mm and y=4mm with radius of circular patch, α is 15. 6mm.Circular slot with radius, r is 4.5mmis used. The antenna resonates at 2.48GHz and 5.32GHz for ISM and WLAN band respectively. Bandwidth enhancement of designed dual band CMPA get enhanced using circular shaped Defected Ground Structure(DGS).

978-1-5090-2080-5/16/$31.00 ©2016 IEEE

© 2016 IJSRSET | Volume 2 | Issue 4 | Print ISSN : 2395-1990 | Online ISSN : 2394-4099
Themed Section: Engineering and Technology

AVR based Robotic Arm for Speech Impaired People

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ABSTRACT

Communication is the most important part of human life. Deaf and dump people face many problems while communicating with the normal people. They interact with help of sign language, but this sign language is not understood by the common people. Speech impaired people experiences many challenges while communicating. Solution to this problem is provided in this paper. we proposed a system which uses flex sensor and accelerometer to sense the hand gesture. Indian sign language is used for recognizing the words. The sensors are placed on the data gloves. The signals are processed using AVR controller, which are play backed in form of voice using play back voice module. Additionally a feature of wireless robotic ARM is also provided.

Keywords: Flex Sensor, Speech Impaired People, Robotic Arm, Indian Sign Language.

I. INTRODUCTION

Communication is most important part of human life. Communication language vary from place to place and country to country. Hand is one of the richest source for communication, as we talk normally our hand automatically moves in accordance with the speech. Deaf and dump people make use of sign languages to communication with each other. Loss of hearing and speech makes the impaired people lonely and isolated. Sign language is only the means of communication for them to communicate with people. Science and technology has been advanced with various technologies to overcome the problem of speech impaired people. sign language uses hand movement and manual communication to convey the message instead of voice or sound patterns. Sign language of speech impaired people vary from place to place and from country to country. Many challenges are faced by the speech impaired people while communicating with the normal people.

Some of the main challenges experienced by speech impaired people while communicating with normal people are social interaction, communication disparity, education, behavioral problems, mental health, and safety concerns. As a result of these obstacles, deaf and dumb people are discouraged to speak out about themselves or their situations in a public place or emergency cases or in a private conversation.

In this paper an embedded system is proposed which will translate Indian sign language and at the output we are having playback voice module, such that we can get output in form of sound. Flex sensors and accelerometer are used to sense the hand gesture. Additionally the feature of wireless robotic ARM is added. This provides virtual robotic ARM to move exactly same as that of the real hand. The device designed is portable and user friendly. It will be flexible to any common person.

The paper is arranged in the following manner section 2 contains of the methodology detailed working and implantation of the proposed system is discussed. In Section 3 design consideration and design equation are discussed, section 4 consist of experiments and results. Section 5 concludes the paper.

Previously hand gesture hand gesture system was developed by various ways, Watcharin Tangsuksant *et.al* in[6] they translated ASL from static postures. In this

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 07 | July-2016 www.irjet.net p-ISSN: 2395-0072

Rectangular DGS Loaded Circular Microstrip Patch Antenna for Wireless Applications

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Abstract - *A compact dual-band Coaxial feed circular Microstrip patch antenna (CMPA) is presented and discussed for ISM(2.4-2.5GHz) and WLAN(5.150-5.350GHz) band applications. The proposed antenna is designed on a FR4 substrate with dielectric constant of 4.4 and an overall size of 40 × 40 × 1.6mm^3. Dual frequency bands are obtained by inserting a circular slot in the circular radiator as well as bandwidth enhancement is obtained by loading a rectangular shaped defected ground structure. The proposed antenna achieves S_{11} < -10dB. Maximum bandwidth observed is about 68MHz for ISM band and 174MHz for WLAN band. The antenna simulated using CAD FEKO simulation software.*

Key Words: dual band; microstrip; circular; rectangular; DGS

1.INTRODUCTION

The rapid advancement in microwave and wireless communication has attracted the interests in microstrip antennas. With the wide spread proliferation of wireless communication technology in recent years, the demand for compact, low profile, ease of compatibility with microwave circuits and less cost has increased significantly [17].

However, in spite of these advantages microstrip antennas suffers from limitations such as narrow bandwidth and low gain. To avoid use of two separate antennas for two frequency bands and to fulfil the demand of leading market there is a need to develop the dual band antennas. Many designs are reported in literature, for different communication bands, which uses different techniques such as slotting, defected ground structure etc. to enhance the performance of Microstrip patch antennas also varieties of patch structures are designed. Now a days defected ground structure (DGS) microstrip patch antennas have been rapidly developed for multi-band and broad band in wideband communication systems. M.Haroon Taria *et.al* proposed that the requirement of high speed wireless local area networks (IEEE 802.11a standard) and other communication systems.Bandwidth increases due to larger width of microstrip antenna.[7]. In past few years, investigators have been studied different methods to enhance the bandwidth. It is observed that efficiency of antenna get increases by increasing bandwidth and gain decreases accordingly. J.A. Ansari *et.al* described that substrate thickness and slots length have significant effect on frequency ratio [11]. Garima *et.al* proposed that by increasing the size of diamond shaped slot effective radius of circle get decreases and patch current increases. So that, impedance bandwidth and gain of antenna get increases. Improved bandwidth is of 13.58% for C-band application [12]. C. J. Wang *et.al* presented that a Z-like slot get loaded on a patch which increases resonant frequency as number of slots increases without increasing occupied slot area [14]. Srijita Chakraborty *et.al* observed that by modifying zigzag shaped DGS, antenna resonate at Bluetooth, WiMAX and IMT bands respectively [17]. A.K.Arya *et.al* proposed different defected ground structures in detail. It has been observed that from single Skew-F shaped defect in ground plane,the frequency ratio is decreases by increasing the length of middle arm of F. It has been observed that good impedance matching is achieved by increasing the number of slots [18]. U. Chakraborty *et.al* described that a dual band microstrip patch antenna for WLAN application is responsible to shift down the resonant frequency to lower values. Slot impedance is directly proportional to length of the slot is gradually increased [19].

In this paper, Dual band CMPA without DGS (Defected Ground Structure) and with DGS designed and simulated using CAD FEKO simulation software. Coaxial feeding technique is used to design circular microstrip patch antenna for dual band operation. Circular slot is inserted on circular radiating patch for dual band operation and DGS is designed to improve the bandwidth of the proposed antenna. At the last simulated results of antenna without DGS and with rectangular DGS is compared. The paper is organized in following sections. Introduction is depicted in Section I, Section II explains the dual band antenna designs, Section III and IV presents antenna analysis and experimental results respectively. Conclusion is presented in Section V.

Volume 5 Issue VI, June 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

Circular Microstrip Patch Antenna for RFID Application

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Abstract: ***In this paper, circular microstrip patch antenna (CMPA), with coaxial probe feeding, have been proposed. The proposed antenna operates in the frequency range of (2.4-2.48) GHz RFID band. The antenna is fabricated on FR4 substrate with size of 50mm × 50mm × 1.6mm. The antenna is simulated using the method of moment's CAD FEKO antenna simulator. The measured and simulated results are found to be in good agreement.***
Keywords— microstrip, circular, RFID, polarization, frequency

I. INTRODUCTION

Radio frequency identification (RFID) systems in UHF band have attracted many researcher's attention for their popular applications in manufacturing companies and service industries. Radio frequency identification (RFID) technology allow users to uniquely identify tagged people or objects [13]. RFID employs electromagnetic (EM) waves to exchange information between readers and tags for the purpose of identification and tracking [11]. Microstrip antennas are used in many application because of its low profile, ease of fabrication and low cost. Circular patch or disk is the one of the popular configuration to design a Microstrip patch antenna [12].

S.J. Pawar *et.al*. proposed coaxial feed dual band circular microstrip patch antenna (CMPA) for ISM (2.4-2.5GHz) and WLAN (5.150-5.350GHz) application. Dual frequency bands has been achieved by inserting a circular slot in the circular radiator as well as bandwidth enhancement is achieved by modifying the ground plane[1]. D.D. Ahire *et.al*. proposed dual band rectangular microstrip patch antenna using T-slot and capacitive loading. The 'T' shaped slot is used on radiator and ground plane to enhance the bandwidth [2]. Xiong Ying Liu *et.al.* proposed a broadband circularly polarized stacked coin-shaped patch antenna for a universal UHF-RFID reader. For achieving circular polarization, the main patch is fed by four probes, connected to the feeding strip with an interval of a quarter-wavelength at 900 MHz [3]. Yu-Shao *et.al.*proposed a printed slot antenna that utilizes a ring slot and a cross slot. Ring slot and cross slot controls the lower band and upper band respectively [4]. Lee Chang *et.al*, proposed a single-feed active RFID tag antenna that operates in the microwave frequency. The reported antenna functions as a dipole when used in free space and it functions as a patch when applied on a metallic surface. The antenna structure contains no ground plane [5].

In this paper, circular microstrip patch antenna with coaxial feeding technique is presented for RFID application. This paper has been organized as in four main sections. Section I includes introduction, Section II depicts design of antenna for RFID application. Section III and IV shows analysis and results respectively.

II. ANTNNA DESIGN

The antenna geometry consists of circular patch with square cut inside the patch area to achieve circular polarization. The coaxial probe feed is applied having location x = 4 and y = - 4 to the circular patch radiator. The circular patch radius (α) and ground plane area of the antenna are 14.5 mm and 50mm × 50mm, respectively. The proposed antenna is designed on a FR4 substrate with thickness, h = 1.6mm, dielectric constant, ε_r = 4.4. The diagonal corner of circular patch has been cut with dimensions of 6 mm × 8mm. The antenna resonates at 2.46 GHz for RFID (2.4-2.48) GHz band.

The geometry of circular microstrip patch antenna is depicted in fig.1.

The circular patch radius (α) is given in the following equation,

$$\alpha = \frac{F}{1+\frac{2h}{\pi\varepsilon_r F\left[\ln\left(\frac{\pi F}{2h}\right)\right]^{1/2}}} \quad (1)$$

Where,

$$F = \frac{8.791 \times 10^9}{f_r\sqrt{\varepsilon_r}} \quad (2)$$

International Journal of Emerging Technology and Advanced Engineering
Website: www.ijetae.com (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 6, Issue 7, July 2016)

Design of Dual Band Circular Microstrip Patch Antenna with Defected Ground Structure for ISM and WLAN Band Applications

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***Abstract*— Dual band circular Microstrip patch antenna (CMPA) is designed and discussed for ISM(2.4-2.5GHz) and WLAN(5.150-5.350GHz) band applications using Coaxial feeding technique. The proposed antenna is designed on a FR4 substrate with dielectric constant of 4.4 and tangent loss is 0.02. An overall size of CMPA is 40 × 40 × 1.6mm^3. Dual frequency bands are obtained by inserting a circular slot in the circular radiator as well as bandwidth enhancement is obtained by loading an elliptical shaped defected ground structure. The proposed antenna achieves S_{11} < -10dB. Maximum bandwidth observed is about 65MHz for ISM band and 164MHz for WLAN band. The antenna simulated using CAD FEKO simulation software.**

***Keywords*— dual band; microstrip; circular; rectangular; DGS**

I. INTRODUCTION

The rapid development in microwave and wireless communication has increased the interests in microstrip antennas. The demand for low profile, compact, less cost and ease of compatibility with microwave circuits has increased significantly which is get fulfil by using microstrip patch antennas [3].

To avoid use of two separate antennas for two frequency bands and to achieve demand of communication market there is a need to develop the dual band antennas. Many design structures and techniques such as slotting, defected ground structure etc. are reported in literature, for different communication bands. Now a days defected ground structure (DGS) microstrip patch antennas have been rapidly developed for multi-band and broad band in wideband communication systems. It is observed that efficiency of antenna get increases by increasing bandwidth and gain decreases accordingly. C. J. Wang *et.al* presented that a Z-like slot get loaded on a patch which increases resonant frequency as number of slots increases without increasing occupied slot area [3]. Microstrip patch antenna for GSM and Wi-Max application is proposed.

Which is showing promising characteristics for WLAN, Wi-Max, and Satellite application at resonant frequencies of 5.5 GHz for WiMax, 5.2 GHz and 5.8 GHz for WLAN and 6-7 GHz for satellite application respectively[8]. Garima *et.al* proposed that by increasing the size of diamond shaped slot effective radius of circle get decreases and patch current increases. So that, impedance bandwidth and gain of antenna get increases. Improved bandwidth is of 13.58% for C-band application [10]. A.K.Arya *et.al* proposed different defected ground structures in detail. It has been observed that from single Skew-F shaped defect in ground plane,the frequency ratio is decreases by increasing the length of middle arm of F. It has been observed that good impedance matching is achieved by increasing the number of slots [11]. The substrate material plays significant role determining the size and bandwidth of an antenna. By increasing the dielectric constant the size of antenna is decreases but lowers the bandwidth and efficiency of the antenna while decreasing the dielectric constant bandwidth increases but size of antenna is increase[12]. Compact antenna is designed for WLAN operating in band of 2.4 and 5GHz. Various results are obtained by varying different dimensions of patch of microstrip antenna. Antenna is feed using microstrip-feeding technique. Different defected ground structures (DGS) have been developed analysed [13].

In this paper, Dual band CMPA without DGS (Defected Ground Structure) and with elliptical DGS designed and simulated using CAD FEKO simulation software. Probe feeding technique is used to design circular microstrip patch antenna for ISM and WLAN band operation. Circular slot is inserted on circular radiating patch for dual band operation and DGS is designed to improve the bandwidth of the proposed antenna. At the last simulated results of antenna without DGS and with elliptical DGS is compared. The paper is organized in following sections. Introduction is depicted in Section I, Section II explains the dual band antenna designs, Section III and IV presents antenna analysis and experimental results respectively. Conclusion is presented in Section V.

Microstrip Patch Antennas for Wireless Communication: A Review

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***Abstract*—Nowadays RF and wireless communication systems are widely used in day-to-day activities of human being and industrial applications. WLAN, Wi-Fi, WiMAX, ISM are some applications in which antenna plays an important role. Microstrip patch antennas are widely used to cater the requirements of today's communication system. This paper aims to present a review on various configuration and techniques of microstrip patch antennas used in wireless communication systems.**

Keywords—microstrip patch; WLAN; WiMAX;Wi-Fi, ISM

I. INTRODUCTION

RF communication systems are playing potential role in day-to-day human activity. These systems are used to assist in distribution or collection of large data or to make home entertainment system more convenient. In past years, many wireless communication technologies are emerged such as Wireless Local Area Network (WLAN) (2.4-2.48 GHz, 5.15-5.35 GHz, 5.725-5.825 GHz), Wireless inter-operability for microwave access (Wi-Max) (3.4-3.69 GHz, 5.25-5.85 GHz), Wireless Broadband (2.3-3.39) etc. The RF communication system are becoming more and more compact; hence the antennas used in RF communication system need to be compact in size, easily integrated with RF circuitry and responsive to the desired polarization with large bandwidth and high gain. Also today's communication system requires multiple switching frequencies and to accomplish this need multiband antennas are required. The microstrip patch antenna is found to be suitable candidate to fulfill these requirements of RF communication systems. However, microstrip patch antenna suffers from low gain, distorted radiation pattern and narrow bandwidth. Several techniques have been reported in literature to improve these important performance parameters of the microstrip antenna [1-20]. Some of the commonly used techniques through which the performance of microstrip patch antenna can be enhanced are slotting, meandering, stacking, defected ground, shorting pins, metamaterial loading, etc. are the. This paper presents a review on recent trends and techniques used to design microstrip patch antenna for various wireless communication applications. In this paper detailed review is presented in section II and conclusion in section III.

II. REVIEW OF MICROSTRIP PATCH ANTENNA FOR WIRELESS COMMUNICATION

With the rapid development of wireless communication techniques, the demand for low profile, low weight and inexpensive antennas are increased. WLAN and Wi-MAX are the two important wireless technologies and may be used at the same time in single hand held RF communication system. To fulfill the need of dual or multiband resonance slotting technique has been found to be very useful. Yingsong Li and Wenhua Yu, has presented triple band monopole antenna for WLAN and Wi-MAX. The proposed antenna is the combination of tooth-brush shaped patch, a meander line and an inverted U-shaped patch. The proposed antenna resonates at 2.4/3.5/5.2/5.5/5.8 GHz bands. The simulated and measured result shows that the antenna possesses good impedance and radiation characteristics suitable for WLAN and Wi-MAX technology. The proposed antenna has been fed by microstrip line and fabricated on inexpensive FR4 substrate [1]. U. Chakraborty *et al.* proposed slotted compact dual band microstrip patch antenna for IEEE 802.11a WLAN application. A compact dual band antenna has been realized by etching the two slots on the patch and one in the ground plane. The antenna provides good impedance bandwidth from 5.125 to 5.395 GHz and from 5.725 to 5.985 GHz for WLAN application. The reported dimensions of the antenna are $12 \times 8 \times 1.58$ mm^3. The antenna prototype has been developed and measurement has been taken for return loss and radiation pattern. The results are convincible and show that the antenna can be suitable for dual band WLAN application [2]. In order to incorporate more than two communication bands, Jian Dong *et al.* presented quad band slot antenna for integrated mobile devices. The proposed design of antenna operates over 1.79-2.63GHz, 3.46-3.97 GHz, 4.92-5.85 GHz and 7.87-8.40 GHz. The proposed antenna covers multiband application such as Personal Communication Services (PCS), wideband code division multiple access (WCDMA), Bluetooth, WLAN, Wi-MAX and X-band SATcom. The antenna is fed by quarter wave microstrip line and different shapes of slot have been etched in side patch as well as ground area. The radiation pattern shows that the antenna exhibits monopole like radiation pattern in H-plane and dipole like radiation pattern in E-plane. The reported size of antenna is 20×30 mm^2 and the antenna has been fabricated on economical FR4 substrate. The

978-1-5090-4257-9/17/$31.00 ©2017 IEEE

International Journal of Electrical and Electronics Engineers
Vol. No. 8, Issue No. 02, July-December 2016
ISSN (O) 2321-2055
ISSN (P) 2321-2045

AN UTILIZATION OF IMAGE PROCESSING APPLICATION FOR FUNGAL DISEASE DETECTION

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ABSTRACT

The grape development is an imperative constitute of Indian agrarian economy. Relevent illness control measures must be embraced grape estate to minimize losses. Creative methods using machine vision and mechanized thinking are being investigated to achieve sharp developing including early acknowledgment of contaminations in backwoods, specific fungicide application, and so forth. This examination used a texture analysis method termed the color co-occurrence method (CCM) to evaluate if grouping algorithm could be used to recognize contaminated and commonplace grape petals. Typical and unhealthy grape leaf tests were gathered and tried utilizing suitable segmentation procedure. Embedded Processor named Raspberry Pi 2 is used for these Image Processing techniques. The classification technique utilized based on Kohonen neural system classifier. This instrument can be used to recognize diverse diseases in grapevine leaves and showed the result as a sickness present on leaf close by its name and will prescribe the cures as necessities be. The algorithm is prepared on OpenCV and java as the programming language.

Keywords: Color Co-Occurrence Method, Grape Leaf Disease, Java, Kohonen Neural Network, Raspberrypi

I. INTRODUCTION

Cultivation is the life & energy of our country nation economy. Grape is most vital constitute in farming industry. Grape is typically developed for agricultural industry. Grape are usually cultivated for export to different countries. India is one of the main grape exporters in the world. India secured a ninth position on the planet among top ten grape trader nations (APEDA-2014). The noticeable assorments of grapes developed in Republic India are Thompson seedless, sonaka,Anab-e-Shahi,Perlette,Bangalore blue,Pusa Seedless, Beuty Seedless etc.The nation has transported 1,07,257.85 MT of Grapes to the world for the estimation of Rs. 1,086.51 crores amid the time 2014-15. In the grape creation Maharashtra hold the topmost position with a generation of 2292.53MT that is 81 percent share in grape production in overall country. Most of farmers are utilized conventional methods to identify any illness on plants they develop. It takes great quantity of to distinguish any contamination in the expansive field.some time disease is excessively serious, making it impossible to control which harm entire yield. Grape trees can show a substantial gathering of signs reflecting distinctive disarranges that can unfavorably influence their prosperity, life, yield, and money related efficiency. The contaminations reported in this study are regularly controlled using fungicidal specialists gave a couple

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9th International Conference on Recent Trends in Engineering, Science and Management
(IETE)The Institution of Electronics and Telecommunication Engineers , Hyderabad, India
(ICRTESM-17)
18th June 2017, www.conferenceworld.in
ISBN: 978-93-86171-49-8

Speech Enhancement Using Deep Neural Network

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ABSTRACT

Speech is the main source of human interaction. In everyday life,Speech understanding in noisy environments is still one of the major challenges for users. The quality and intelligibility of speech signals are generally gets corrupted by the surrounding background noise during communication. So to improve the quality and intelligibility, Corrupted speech signals is to be enhanced. In the field of speech processing, different effort has been taken to develop speech enhancement techniques in order to enhance the speech signal by reducing the amount of noise. Speech enhancement deals with improving the quality and intelligibility of speech which gets degraded in the presence of surrounding background noise. In various everyday environments, the goal of speech enhancement methods is to improving the quality and intelligibility of speech especially at low Signal-to-Noise ratios (SNR). Regarding intelligibility, different machine learning methods that aim to estimate an ideal binary mask has given the promising results. This project covers the work of speech enhancement by use of the supervised method Deep Neural Network (DNN). In contrast to the different noise reduction techniques such as MMSE, the supervised method enhance the speech by finding a mapping function between the noisy and clean speech signals based on deep neural networks.

Keywords:Deep Neural Networks, Dropout, Global Variance equalization, Noise aware training, Speech enhancement.

I. INTRODUCTION

In today's technological era speech is the most important way of communication. Speech is a source through which human can talk. Speech is the main element of any communication between two persons. The speech waveform is a sound pressure wave originating from controlled movements of anatomical structures making up the human speech production system.

In recent years, many researches had being carried out in the field of Speech processing. The main problem with any Speech processing experiment is the background noise. Clean speech is corrupted with the background noisy environment. So the main goal of Speech Enhancement is to improve the quality of noise which gets corrupted by the noisy background environment so that the clean speech can be recognized. The main goal of Speech Enhancement is to improve the intelligibility and quality of the noisy speech signal which gets degraded in adverse conditions. Also, the performance of the Speech Enhancement in real acoustic environment is not always satisfactory. Speech Enhancement has wide number of applications such as mobile communication, hearing aid devices and Speech recognition system.

© 2016 IJSRSET | Volume 2 | Issue 4 | Print ISSN : 2395-1990 | Online ISSN : 2394-4099
Themed Section: Engineering and Technology

An Unique Technique for Grape Leaf Disease Detection

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ABSTRACT

In this paper the grape fungal diseases are detected and classified according to their features with the help of Digital Image Processing algorithms. An embedded system is used for implementing the image processing application. A plug & play Instrument Raspberry Pi 2 is utilized in multiple applications directly. India being an agro-based economy, farmers experience lots of problems in detecting and preventing diseases in fauna. Due to global warming there is change in environment which affects plants specially diseases which grow on plant. Image processing algorithms such as edge detection, RGB to grayscale conversion,Otsu's algorithm and watershed segmentation are implemented. This device will store input & output files on inbuilt memory cards hence external application can access it using memory address or simple file path. This tool can be used to detect various diseases in grapevine leafs & will show the result as a disease present on leaf along with its name and will suggest the related remedies.

Keywords: Embedded System,;Plug And Play; Raspberry Pi; RGB to Grayscale Conversion; Grape Leaf Disease

I. INTRODUCTION

Our economy depends on agribusiness; there are heaps of things to be taken look after great Agro generation. In India a large portion of the agriculturists are poor; they can't stand to spend on different elements like climate information, diseases acknowledgment and numerous more online applications. The stripped eye perception of specialists is the primary methodology utilized as a part of the strategy for finding and perceiving the plant infections. Be that as it may, this needs nonstop checking of specialists. At the point when there is a major ranch, this methodology may be profoundly costly and also tedious.

Further, in some creating nations, ranchers may need to go miles to contact the specialists, this makes counseling to the specialists is excessively costly and tedious and also agriculturists are unconscious of non-local infections. Plant leaf ailments broadly influence the generation of the nation here this overview contribute a brief clarification on various acknowledgment methods. Programmed discovery of plant ailments is an essential examination field as it might demonstrate resources in checking enormous field of yields, and along these lines consequently recognize infections from indication that create on plant clears out. Hence plant ailment naturally recognized with the assistance of picture preparing system which give more real and robot direction for overseeing malady. Nearly, visual distinguishing proof is less exact and tedious. Sickness ID is a repetitive assignment and generally infections are seen on the leaves or stems of the plant. There are different strategies of infection identification and demonstrate expensive. Our framework is helpful and gives minimal effort answer for the plant leaf infection discovery and characterization particularly for grape leaf diseases.

The primary goal is to build up an embedded system fit for pre-processing pictures, caught by the camera for recognition of grape leaf ailment continuously. The power of recognized ailment and its solution for beat that distinguished malady is said. . In this paper the test is performed on three sicknesses in particular Powdery mildew, Downy mildew and Black rot. Camargo and Smith (2009) proposed a method to identify regions of leaves containing lesions caused by diseases. The tests were performed using leaves from a variety of plants, like bananas, maize, alfalfa, cotton and soybean. Their algorithm is based on two main operations. First, a color

International Journal of Science Technology and Management
Vol. No.6, Issue No. 06, June 2017
www.ijstm.com
ISSN (O) 2394 - 1537
ISSN (P) 2394 - 1529

Speech Enhancement Using Deep Neural Network

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ABSTRACT

Speech is the main source of human interaction. In everyday life,Speech understanding in noisy environments is still one of the major challenges for users. The quality and intelligibility of speech signals are generally gets corrupted by the surrounding background noise during communication. So to improve the quality and intelligibility, Corrupted speech signals is to be enhanced. In the field of speech processing, different effort has been taken to develop speech enhancement techniques in order to enhance the speech signal by reducing the amount of noise. Speech enhancement deals with improving the quality and intelligibility of speech which gets degraded in the presence of surrounding background noise. In various everyday environments, the goal of speech enhancement methods is to improving the quality and intelligibility of speech especially at low Signal-to-Noise ratios (SNR). Regarding intelligibility, different machine learning methods that aim to estimate an ideal binary mask has given the promising results. This project covers the work of speech enhancement by use of the supervised method Deep Neural Network (DNN). In contrast to the different noise reduction techniques such as MMSE, the supervised method enhance the speech by finding a mapping function between the noisy and clean speech signals based on deep neural networks.

Keywords:Deep Neural Networks, Dropout, Global Variance equalization, Noise aware training, Speech enhancement.

I. INTRODUCTION

In today's technological era speech is the most important way of communication. Speech is a source through which human can talk. Speech is the main element of any communication between two persons. The speech waveform is a sound pressure wave originating from controlled movements of anatomical structures making up the human speech production system.

In recent years, many researches had being carried out in the field of Speech processing. The main problem with any Speech processing experiment is the background noise. Clean speech is corrupted with the background noisy environment. So the main goal of Speech Enhancement is to improve the quality of noise which gets corrupted by the noisy background environment so that the clean speech can be recognized. The main goal of Speech Enhancement is to improve the intelligibility and quality of the noisy speech signal which gets degraded in adverse conditions. Also, the performance of the Speech Enhancement in real acoustic environment is not always satisfactory. Speech Enhancement has wide number of applications such as mobile communication, hearing aid devices and Speech recognition system.

A Shearlet Transform based Illumination Invariant 2-D Face Recognition

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***Abstract*—Amongst various bio-metric traits, face has been widely accepted by researchers and commercial firms. The facecan be recognized by 2-D and 3-D face recognition techniques. Face recognition has various challenges such as, occlusion, pose variations, illumination variations, and expression variations in probe and gallery faces. In this paper challenges due to illumination variations are addressed using shearlet based face recognition method. Illumination invariant face recognition is achieved with the use of logarithmic transformation and is followed by forward shearlet transform. The 2-D discrete shearlet transform provides high performance and computational efficiency than the discrete wavelet transform (DWT), in multi-directional transform domain. In order to remove illumination variations, low frequency approximate component of shearlet coefficients have made null. Subsequently the inverse shearlet transform is computed which results in a spatial domain image. Principal Component Analysis (PCA) feature extraction technique has used to extract features. The proposed technique is experimented on the Extended Yale B face database.**

Keywords—Discrete Shearlet Transform; Illumination; PCA; Gallery faces; Logarithmic transformation

I. INTRODUCTION

Biometric attributes are distinctive, measurable aspects used to label and characterize individuals. Biometric traits are often classified as physiological versus behavioral attributes. Physiological attributes are such as fingerprint, face, DNA, palm print, hand geometry, iris, and retina [1]. Behavioral aspects are related to pattern or behavior of a person such as voice, hand writing etc. Face recognition is one of the most crucial biometric identification techniques. Among various bio-metric methods, face recognition has advantage over all other bio-metric traits, that it does not require any co-operation of the test subject or user which is also called as class, at the time of working of face recognition system [2], [3].

Perfectly implemented systems equipped at airports, multiplexes, security system, law enforcement, video surveillance, computer interaction and other public places can recognize individuals among the mass without passers-by even being informed about the system [2], [3]. Other biometric attribute cannot achieve this kind of mass identification or verification. The most challenging attribute of face recognition are changes in head pose, expression, illumination and occlusion. In comparison to pose and expression, illumination variations present a much greater obstacle for face recognition to extract features efficiently [3]. Face appearance can alter drastically due to illumination variations and the changes between the images of the same face due to illumination are almost larger than image changes due to variation in face identity [4]. When the image is formed, aspects like lighting (spectra, source distribution, and intensity) and camera aspects (sensor response, lenses) influence the appearance of the image of face [5], [8].

The 2-D facial appearance will undergo severe degradation when training or testing imagesare entirely exposed to severely changing illumination. The challenge of removing the impact of illumination variations is approximately categorized into three types such as,

1) Illumination model technique: Structures3-D face model for the changing circumstances of different poses and illumination in an image.

2) Illumination pretreatment technique: Try to normalize the illumination variation and form images under various light circumstances consistent.

3) Invariant feature extraction technique: This technique tries to extract facial invariant features of illumination.

Research shows that these approaches cannot absolutely figure out the obstacle of face image affected due to variations induced by illumination.

X. Cao et al. [4] have proposed a novel wavelet based method that deal with the correlation of neighboring wavelet coefficients to extract an illumination invariant features. This method has improved edge conserving capability in low frequency illumination areas and better useful information saving capability in high frequency domains based on wavelet Neigh-shrink denoise methods. H. D. Chande et al. [5] presented an efficient illumination invariant face recognition system using DCT (Discrete Cosine Transform) and PCA (Principal Component Analysis), where DCT is processed to remove illumination changes based on the logarithmic area while PCA is used for face recognition from face dataset. N. Gudur et al. [6] presented PCA technique based on Gabor wavelet with the extraction of localized features to improve the efficiency of face recognition caused by illumination

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

"A Fingerprint Spoofing Detection System Using LBP"

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***Abstract*—Among various biometric traits, like face, iris, voice, fingerprints, gait etc. fingerprints are considered to be well known due to its characteristics like, uniqueness, they do not change during time period, two fingerprints are never identical, it maintains its own individuality. But unfortunately the development of fake fingerprints is bringing up new challenges. Therefore fingerprint spoof detection system has become increasingly important. There are systems checks whether the input source is genuine finger image or spoofed finger image. This enhances the security of fingerprint recognition system. Use of fingerprint as biometric characteristics is extensively used and developed for fingerprint recognition in forensic, civilian and commercial applications. In this paper , a brief review about fingerprint spoofing and its detection technique is discussed with respect to the commonly used database LivDet. We have used Local Binary Pattern and Discrete Shearlet Transform as a feature extractor to evaluate the fingerprint image , whether real or spoofed.**

Keywords*—*Biometrics*, *Fingerpint Spoofing, Local Binary Pattern, Discrete Shearlet Transform, Databases.

I. INTRODUCTION

In the modernized social and business environment many demanding processes are required at greater levels of substantial and e-security, that cannot be provide by traditional identification methods such as, identification card, stamps, magnetic strips, password or radio frequency identification (Radio Frequency Identification).Biometric aspects are exclusive to an individual and it simplifies the authentication process by eliminating the need of password or PIN's. The basic aim of biometrics is to automatically segregate subjects in a decent and predictable manner for target applications based on one or more signals derived from physical or behavioral traits. Among various traits, "Fingerprints" are always considered as the sign of each human being. The improvement of fingerprint biometric system is most successful today due to their inherent properties. Security is always a focus in biometrics applications, so correct authentication of enlisted fingerprints becomes quite crucial for each system. "Verification" and "Identification" are two main and important procedures. An identified person can claim his/her existence and then this impression is compared with individual's biometric characteristics. The experiment is done on LivDet database of real and their corresponding fake fingerprints. We performed fingerprint identification and it's sustained checking in MATLAB software. Biometric systems also contain vulnerabilities and are susceptible to various kinds of attacks as depicted in Figure 1.

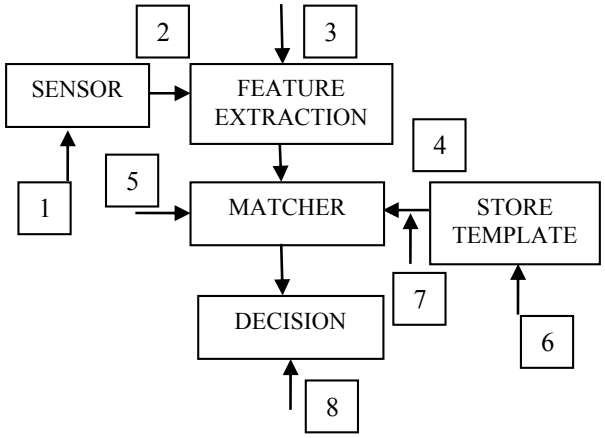

Fig.1. Spoofing attacks on fingerprint security systems [1]

Fingerprint Sensing [1]:

1. Optical Sensors: Finger is placed on transparent prism and image is obtained through camera.
2. Sensor is bypassed and biometric data previously stored is resubmitted.
3. Feature Extractor: Here the extractor is substituted with trojan horse where the features are preselected by the attacker.
4. The features are replaced with false set of features.
5. The matcher is corrupted and forced to output match scores preselected by attacker.
6. Templates are modified by the attacker.
7. Templates which are transmitted are interrupted and corrupted.
8. The final match result is overridden by attacker.

A. What is Spoofing?

Spoofing generally refers to a fake access by an illegal user into fingerprint biometric system by using a fake fingerprint reproducing that one of an unauthorized user. These artifacts are made from various materials like play-doh, clay, gelatin; silicon etc. [18].The whole process of creation of fake fingerprints can be done with or without co-operation and get easy access to highly authenticated society. We can countermeasure against such attacks using "liveness" check.

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

No-Reference Image Quality Assessment of JPEG Compressed Images using Mean Coefficient DWT Based Features

YOGITA V. HIRAY, HEMPRASAD Y. PATIL

Abstract—**It is need of the decade to develop systems that evaluate the quality of an image as it saves various subsequent unnecessary noise filtering applications in image processing. In this paper, we have presented a No Reference Image Quality Assessment (NRIQA) technique for prediction of image quality of JPEG compressed images. We are using computational training model which is trained with DWT based features. We have modified the frequency domain feature extraction scheme by using a novel mean coefficient DWT technique. We have tested the results on the LIVE database.**

Keywords—Image Quality assessment; NR-IQA; DWT; JPEG.

I. INTRODUCTION

Image performs vital role in multimedia network/digitalized world. Due to fast growth of technology, we can capture image and share it with all over the network and communicate with the world. Image gives more information than the theoretical data if and only if the image is clearly recognized by the naked human eye. Image gets distorted in various processing operations like acquisition, compression, transmission, storage, display etc. Therefore the image quality assessment is necessary in state of the art processing applications. Quality is proportional to an amount of distortion present in an image. Image quality assessment is mandatory because it saves unnecessary application of various noise filtering algorithms. Human Visual System (HVS)has some characteristics which are used to predict the quality of an image. It is a subjective quality assessment measure in which quality of an image experienced and reported by human. Another type of IQA is objective quality assessment in which quality of an image can be evaluated by means of machine.

There are three further classifications of the objective quality assessment, which are: (1) FR-IQA (Full Reference Image Quality Assessment) (2) RR-IQA (Reduced Reference Image Quality Assessment) (3) NR-IQA (No Reference Image Quality Assessment). Out of this three, NR-IQA works without a reference image [1]. There are different approaches in NR-IQA like distortion specific approach in which specific type distortion is focused.

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Liu H et al. [2] worked on perceived ringing artifacts. Jing Zangand T. M. Le[3] developed an NRIQA based algorithm for JP2k. Panetta k etal.[4] presents a model for color quality measure. Taegeun oh et al. [5] developed a distortion specific model for camera shaken image. They access sharpness of the image. Baharami k et al. [6] used MLV (Maximum Local Variation) for sharpness assessment. Leida li et al. [7] developed a reference-less model for addressing blocking artifacts.

General purpose NR-IQA based approaches use training and testing models which are enlisted as follows:

Morthy and Bovik developed a two-step BIQI (Blind Image Quality Indices) framework on natural scene statistic in which image categorized first and then specific quality evaluation has been done. They further developed the DIIVINE algorithm which is based on wavelet domain [8, 9]. Sad and Bovik proposed BLINDS and BLINDS-II algorithms based on DCT domain [10, 11]. Mittal et al. [12] presents a model based on natural scene statistic named as BRISQE. Lixiong Liu et al. [13] developed a NRIQA algorithm based on spatial and spectral entropy features.They have used block DCT coefficients. Researchers have used various transforms in preprocessing operations of image like curvelet, contourlet, DWT etc. [14, 15]. In this paper we have proposed a distortion specific approach in which we have developed a framework using mean DWT coefficient and achieved a very good predictive quality performance of JPEG compressed images. We have used JPEG compressed images of the LIVE database for training and testing purpose. Rest of paper organized as follows: In section II the overview of 2-D discrete wavelet transform and the LIVE database is described briefly. Various steps and algorithm of proposed method is explained in section III. Section IV is followed by results and discussion. Finally, sections V conclude this paper.

II. METHODS AND MATERIALS

A. 2-D Discrete Wavelet Transform

Wavelet transform is widely used for data compression. 2-D DWT is used to analyze the high frequency content in an image. It has key advantage over Fourier transform in terms of temporal resolution. The advantage of 2D-DWT is that, it captures both frequency and location information [16, 17]. In discrete wavelet transform wavelets are discretely sampled.2D-DWT gives four sub-bands LL, LH, HL, and HH respectively as shown in Fig 1. Out of them we are only

978-1-5090-0774-5/16/$31.00 © 2016 IEEE

A Novel Quantized Gradient Direction based Face Image Representation and Recognition Technique

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***Abstract*— This paper presents a novel quantized gradient based local feature descriptor, named Local Quantized Gradient Direction (LQGD) descriptor and the subsequent Partitioned Gradient Histogram, for facial image representation. The 8 bit LQGD descriptor accommodates eight levels quantized gradient magnitude and direction information from the horizontal and vertical gradients at local facial image pixels using 3x3 neighborhoods. The subsequent novel partitioned histogram based feature detection using the proposed descriptor offers separation in feature space resulting in recognition performance improvement. The technique is also robust to rotation, scale variations and noise due to typical preprocessing, background minimization and the descriptor itself. Spatial and transform domain feature level fusion is used for further performance improvement. The benchmarking of the proposed technique has been done using publicly available YEL and JAFFE databases with other contemporary techniques. The proposed technique outperforms the other published contemporary techniques.**

I. INTRODUCTION

Face recognition is widely used in biometric authentication and human-machine interactions. Although, it has a very wide range of applications demanding absolute perfection and reliability, the performance of the face recognition algorithms is severely affected by various factors including unconstrained environments. Among various factors, expression variation is the major factor which affect the system performance, since geometry of the face significantly changes as a result of facial expressions. Unconstrained conditions combined with expression variations further complicates the problem. Considerable research has already been dedicated to problems related to the expression invariant face recognition. However, the modern applications like national security and surveillence that demand absolute perfection and reliability still keep this research area open for further developments. It is very important to extract an accurate facial image from human facial images by neglecting unnecessary or discriminative feature-less regions for an accurate successful facial recognition. Since the classification performance is severely affected by the information contained in the face representation, the representation should possess high discrimination power and stability subject to expression variations and other conditions. Ideally, a good descriptor should have a high variance among classes, but little or no variation within classes. Feature extraction approaches are divided into two categories: the geometric feature-based systems and the appearance-based systems [1].

978-1-5090-2361-5/16/$31.00 ©2016 IEEE

In case of geometric features, the shapes and locations of facial feature components are used to encode the face geometry using the position, distance, angle, and other geometric parameters. Under Geometric approaches, the existing methods extract the stable face features, such as line segment [2] and geometric invariants [3]. Method in [4] is based on dynamic link matching. It is robust under face rotation and deformation. Z. Riaz et al. [5] have presented a model based approach using the Active Appearance Model (AAM) [6,7], to address expression variations. Geometric feature-based approaches require accurate and reliable facial components detection which are difficult to detect and accommodate in terms of numerical features in many situations. However, in appearance- based methods, a single image filter or filter bank is applied to the whole face or some specific region of the face to extract appearance changes. This is quite feasible and reliable too. In [8] S. Bashyal et al. combined Gabor filter based features with learning vector quantization (LVQ) for face recognition across seven facial expressions. In [9] P. Yang et al. represented temporal variations of facial appearance using dynamic Harr-like features. Both these facial features are encoded into binary patterns and have been used for expression invariant face recognition. This approach is suitable for even weak classifiers [8,9]. Fusion of logarithmic Gabor filters and the local binary pattern (LBP) feature is investigated by Lajevardi et al. [10]. They have used Naïve Bayesian classifier that is comparatively primary. Appearance based methods result into high dimensional feature vectors.

Since the micro-patterns on the facial regions are source of information for facial emotion perception. Recently, methods based on local feature descriptors have been used for developing robust systems across expression variations. It includes Local Binary Pattern (LBP) [11] and its variants [12], Local Directional Pattern (LDP) [13], LDP variance (LDPv) [14], and Local Directional Number Pattern (LDN). LBP is computationally efficient and shows robustness to monotonic illumination change, but it is sensitive to presence of random noise and non-monotonic illumination change [14]. Better recognition performance than LBP has been achieved by a more robust descriptor, Local Directional Pattern (LDP) [13], which is derived from edge responses. A Variation of LDP is LDPv, which computes both spatial structure LDP and contrast variance of local texture information for more accurate facial expression recognition performance [14]. All the above mentioned descriptors are eight bit patterns, new compact six bit local feature descriptor, named, Local Directional Number Pattern (LDN) [15], has been proposed

ZIGBEE BASED INTEGRATED ALERTING AND MONITORING SYSTEM FOR INDUSTRIAL APPLICATIONS

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Abstract— This paper presents design and implementation of wireless sensor network for measuring environmental factors in industry surroundings. Industrial environment is regulated in varying degrees across the world by many environmental and safety policies. The adherence of these policies makes necessary a continuous and distributed measurement of different factors like temperature, oxygen levels and the presence of contaminants. The analysis of this data may help prevent violations in work conditions and environmental damage. A multi-platform and multi-layer sensor platform has been utilized using ZigBee for enhancing the wireless communication quality in a factory environment. It is mainly used for collecting and transferring the various monitoring information in any industrial sector. Then the data will be analyzed and processed in the monitoring system outside, so that we can ensure the safety of the person's life and effectiveness better.

Index Terms—Wireless Sensor Networks, Zigbee, Vibrations, Monitoring, Environmental Factors.

I. INTRODUCTION

With the increasing importance and following regulation of the impact the Industrial Environment has on the health of workers and denizens of nearby industrial areas, arises the necessity of monitoring environment factors.In the United States, the agency accountable for regulation work conditions is the Occupational Safety and Health Administration (OSHA). On sites many cases of work associated injuries and diseases which could be prevented with the correct Environment monitoring and alerting.

In today's competitive industrial sector, it's a challenge for the manufacturerto ensure that the plants function with full capacity and efficiently without zero downtime and withzero downtime output quality. To achieve their productivity goals, companies often tend to invest on complex IT systems with a network of sensors to support controlling and monitoring the production processes by real-time data collection. However, most existing sensor based data collection technologies in the market are based on rigid, wired-sensor network infrastructures that require high investments for installations and setup. In addition, the wired systems also do not provide flexibility. Conventional production machines often have to be converted and computerized in order to be able to collect data from them. To overcome these restrictions of wired-sensor networks, this paper proposes and develops a cost-effective technique using Wireless Zigbee Based Sensor Networks for real-time production monitoring and control.

Owing to the excellent cited characteristics, Zigbee technology has developed as a preferred technology for short-range communication in wireless industrial area. Within the industrial environments, remote switching, monitoring, supervisory or spread control are the key challenges that require wireless sensor networks for doing all those operations in which price, distance cover and speed of data transfer are the parameters to be considered.

Industrial environmental monitoring is the expansion to the mechanization process where various sensing devices like LDR, oxygen level, gas level, temperature sensors are processed by various control strategies. In a field level, all these sensors are connected with the communication bus which gathers all the parameter values to a main controller. In a control level, all these parameters are monitored and analyzed. Problem occurs when the distance is increased between the control room and monitoring system. That's where Zigbee comes into picture.

Zigbee is mainly designed for low cost, low data rate and low-power consumption wireless personal area networks (WPANs). It grips and stores the information for receiving and transmitting operations within the network. In the transmitter section, the Zigbee module is constructed in such a way that it receives the data collected from the microcontroller and sends it to the remote receiver. At the receiver side, the Zigbee module receives all the sent data from a Zigbee transmitter within the range of communication. This data is then analyzed. If any parameter exceeds its limit, then an alarming system sets to ON.

II. RELATED WORKS

While doing the survey the source of information issecondary data from different sources as thesis, articles and books.To validate the proposed networkimplementation test were realized.

Raj Kumar Boddu, P.Balanagu & N.Suresh Babu [2]presented a mine safety monitoring system based on wireless sensor networks and hardware and software design of wireless sensor network. Their system can detect Concentration of the gas, temperature, humidity, wind speed and trace the location of miners in underground Mine tunnels. Wireless sensor networks applied in monitoring mine security breaks through the traditional methods and ideas, which improves the practical ability and flexibility of monitoring system. This system not only monitor all kinds of parameters under the coal mine, but also alarm automatically when environment parameters are abnormal to exceed the limitation, which help improve the level of monitoring safety production and reduce accident in the mine.

Lauro Manoel Lima da Gama, Joao Batista, Hidaka de Oliveira Gaia, Antonio de Padua Soares Junior, and Almir Kimura Junior [1] have studied the Architecture for Wireless sensor networks for monitoring Environmental factors. Environmental monitoring through sensor networks is a promising technology. With the advances in the miniaturization of sensors and low power micro-controller systems. Become more prevalent and gain more applications. In the future other sensor nodes will be deployed in an office ambient to also monitor the luminance and noise.

Mert Bal [3] proposed a real-time production monitoring framework through ZigBee based wireless sensor network. The proposed approach uses vibration, acoustic noise, and motor current

WIRELESS CHARGING FOR MOBILE DEVICES

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Abstract— Our purpose is to develop a project in which an inductive charging pad allows a convenient, easy to use battery charging method for mobile phones and other mobile devices. This would significantly help in the reduction of e-waste. De-cluttering of home and office space can be achieved by eliminating the need for power cords through the implementation of wireless charging system.

Through this project, we intend to achieve timed power transfer between a power transmission pad and a compatible receiver in a portable device in order to charge the device's battery. In addition to this there would be an android based application installed in the Smartphone which would help in the monitoring of the battery status and would communicate to the transmitter side to transfer only the required charging for the phone. After that the transmitter circuit would switch off thus stopping the charging and the battery could be avoided from getting overheated and overcharged. With the need to constantly plug and unplug the device eliminated, the durability of the device and its battery life would increase and its usage would become more convenient. Also GSM would provide the information about the mobile phone that is getting charged currently to another secondary cell phone via message.

Keywords—Wireless Charging, Mutual Inductance, Inductive Coupling, Mobile Device

I. INTRODUCTION

The invention of mobile phones has completely revolutionized the communication methods among humans. The dawn of the portable battery-powered electronics and communication devices since the 1980s has brought huge benefits to us. However, each portable battery-powered electronic product comes with its own charger thus increasing electronic waste issue. Wireless power transfer allows a convenient, easy to use battery charging of mobile devices providing no hassle with cables and plugs, just place the device on a pad and charging begins. This wireless power transfer system uses inductive coupling i.e. the coupled magnetic fields are used to transfer electromagnetic energy from a charging base to receiver in a portable device. An application installed in the cell phone would monitor the charging of battery and provide a duplex communication so that once the cell phone gets charged completely it would inform the transmitter circuit to switch off the transmission process avoiding the overheating and overcharging of battery. A GSM module would provide the information about the mobile phone which is getting charged currently to another secondary cell phone via message that the charging is completed in case the owner is quiet far away from his cell when it is getting charged for e.g. at public charging booths.

II. INTRODUCTION TO WIRELESS CHARGERS

The basic principle behind the working of this project is mutual Inductance. Wireless charging technologies can be classified into non-radiative coupling-based charging and radiative RF-based charging. Whereas the former consists of three techniques-inductive coupling, magnetic resonance coupling and capacitive coupling, while the latter can be further divided into directive RF power beam forming and non-directive RF power transfer.

This concept of wireless power transfer was realized by Nikolas Tesla which could make a remarkable change in the field of the electronics engineering which eliminates the use of conventional copper cables and long current carrying wires. Based on this concept, the project is developed to transfer power within a small range of distance to maintain efficiency.

III. RELATED WORKS

The topic of Inductive power transfer has been looked upon by many researchers all around the world and presently it is one of the hot topic among the researchers. It has been known that as the distance increases between primary side and secondary side, transfer efficiency decreases and thus a better contactless transfer control mechanism and selection of good quality metal with high mutual coefficient is required. To increase the transfer efficiency compensated capacitors is used in both primary and secondary side.

Xiao Lu, Ping Wang, Dusit Niyato, Dong In Kim, and Zhu Han, "Wireless Charging Technologies: Fundamentals, Standards, and Network Applications", IEEE Communication Surveys and Tutorials, 14 Nov 2015 [1] have given a very detailed historical background, technological issues, engineering applications and fundamentals of inductive power transfer. Types of wireless charging technologies are discussed and compared to understand which one is better when used in applications. The authors had also shared their vision and arguments on the engineering challenges and future developments of charging using wireless mode.

S. Y. Hui, Fellow IEEE in his Invited paper "Planar Wireless Charging Technology for Portable Electronic Products and Qi", Vol. 101, No. 6, June 2013 [2] has given a review on the Recent Progress of planar charging system for portable electronic products and the Critical issues and technologies involved in planar wireless charging systems giving complete practical setup calculations for the wirelessly transferred power.

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, Vol. 3, Issue 5, May 2014 "Inductive Charging Pad", Elizabeth Sebastian, Biji B, Pranav V, Rahul A P, Vishnu N Nair [3] have provided a detailed overview on the respective number of turns of the primary and secondary and how it changes the value of voltage and current passing across it wirelessly in their paper.

IOSR Journal of Electronics and Communication Engineering (IOSR-JECE) Volume 9, Issue 1, Ver. VI (Feb. 2014 "Wireless Power Transmission for Mobile and Vehicle" Vithyaa.M, Marthandan.R [4] have developed this principle of wireless charging for charging of not only mobile devices but also for vehicles successfully and have provided the mechanism in the paper.

In ISTP Journal of Research in Electrical and Electronics Engineering (ISTP-JREEE) (IOCRSEM 2014), "Review paper based on Wireless Charging" Tripti Bijalwan, Ruhi Parveen, Pooja Uniyal, Kavita Panwar, Ashish Bagwari [5] the authors have have discussed the entire work which is done till date related to wireless charging. The Wireless Power Consortium standard is a set of guidelines that allows manufacturers to develop solutions with the confidence that their components will mesh with a variety of other Wireless Power Consortium certified components designed for inductive power transfer which are mentioned in this paper.

International Journal of Engineering Trends and Technology (IJETT) – Volume 4, Issue 4 April 2013, "Inductive Charging

Volume 5 Issue V, May 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

Language-Independent ORB (Oriented Fast & Rotated Brief) Algorithm for Handwritten Documents

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Abstract-Handwritten character recognition is a demanding task in the image processing because handwriting varies from person to person. And also handwriting styles, sizes and its orientation make it complex. Applications like, handwritten text in reading bank cheques, Zip Code recognition and for removing the problem of handling documents manually, digital data is necessary. Recognition of handwritten characters using either a scanned document, or direct acquisition of image using Mat lab, followed by the implementation of various other Mat lab toolboxes like Image Processing to process the scanned or acquired image. Here OCR block diagram explained that how character are recognize accurately.

Many feature-based algorithms are well-suited for character recognition like like SIFT, Language Independent Text-Line Extraction, Thresholding, Robust, Training, Ullman Algorithm, Structured Learning, ORB(oriented fast & rotated brief), SURF. But Oriented FAST and Rotated BRIEF (ORB) is a very fast binary descriptor which is faster than Scale-invariant feature transform (SIFT), it can be verified through experiments. Fast key point detector and BRIEF descriptor are important because of they have best performance and resonable cost. The recognize method for object recognition is Scale invariant feature transform (SIFT), which is very useful for feature extraction but it is computationally difficult due to its weighty workload required in local feature extraction and matching operation. Therefore for better performance and low complexity, ORB provides better solution.

Recently there is a growing trend among worldwide researchers to recognize handwritten characters of many languages and scripts. Much of research work is done in English, Chinese and Japanese like languages .However, on Indian scripts the research work is lagging; most of research work is available is mainly on Devanagri and Bangala scripts. The work on other Indian scripts is in beginning stage. Therefore we have proposed offline recognition of handwritten characters of differen languagest characters.

Keywords—Offline text-independent writer identification, ORB, word segmentation, scale and orientation histogram

I. INTRODUCTION

The automatic segmentation and recognition of text on scanned image documents has enabled many applications such as editing of previously printed documents and books, searching for words in that image documents etc. The off-line handwriting segmentation and recognition field are uses great interest in researchers, since there is a high level of ambiguity and complexity in such kind of image documents, and because of the necessity of Optical Character Recognition (OCR) in lots of application especially in office automation. Segmentation and Recognition of cursive handwritten text is the most difficult case in the field of OCR. Much less research has been done on the task of segmentation and recognizing of Marathi texts. The objective of this project is to provide a better way to segment and recognize off-line handwritten Marathi documents.

Automatic offline text-independent writer identification is very important. For example- forensic analysis, documents authorization etc. It is used to determine the writer of a text among a number of known writers using their handwriting images.

When writing a document, the structures of the whole word are stable and have a strong discretive for writers. Therefore, the structures between characters in the same word are very important for characterizing writer's individuality.

For these problems, scale invariant feature transform (SIFT) is used to extract the key point based structural features at word level from handwriting images, having their own structural phenomenon of whole words and it extracted codebook like dictionary based features to represent writers individuality . In SIFT, SIFT Descriptor and SIFT Orientation are very important to distinguish different writers. Therefore, these SIFT information will be used to extract features of handwriting for writer identification.

ORB is another feature based algorithm which is faster than SIFT. ORB uses the known FAST key point detector and the BRIEF

ISSN (Online) 2394-6849

International Journal of Engineering Research in Electronics and Communication Engineering (IJERECE)
Vol 4, Issue 1, January 2017

Identification of various writer's handwritten Marathi Text using ORB(oriented fast & rotated brief)

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Abstract: **- Handwritten character recognition is a demanding task in the image processing because handwriting varies from person to person. And also handwriting styles, sizes and its orientation make it complex. Applications like, handwritten text in reading bank cheques, Zip Code recognition and for removing the problem of handling documents manually, digital data is necessary. Recognition of handwritten characters using either a scanned document, or direct acquisition of image using Mat lab, followed by the implementation of various other Mat lab toolboxes like Image Processing to process the scanned or acquired image. Here OCR block diagram explained that how character are recognize accurately.**

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I. INTRODUCTION

The automatic segmentation and recognition of text on scanned image documents has enabled many applications such as editing of previously printed documents and books, searching for words in that image documents etc. The off-line handwriting segmentation and recognition field are uses great interest in researchers, since there is a high level of ambiguity and complexity in such kind of image documents, and because of the necessity of Optical Character Recognition (OCR) in lots of application especially in office automation. Segmentation and Recognition of cursive handwritten text is the most difficult case in the field of OCR. Much less research has been done on the task of segmentation and recognizing of Marathi texts. The objective of this project is to provide a better way to segment and recognize off-line handwritten Marathi documents.

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II. LITERATURE SURVEY

Plamondon et al. [1] explained a survey of early research literatures with respect to automatic writer identification.

IMPROVEMENT OF ACCURACY USING MFCC SPEECH RECOGNITION.

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ABSTRACT

This paper introduces a real time algorithm of MFCC (Mel frequency cepstral coefficients) for speech recognition. Whereas, PNCC a new feature extraction algorithm based on auditory processing is described in this paper. The features of PNCC processing include the use of a power-law nonlinearity that has been replaced by the traditional log nonlinearity used in MFCC coefficients. It also uses the medium-time power analysis, in which environmental parameters are estimated over a longer duration than is commonly used for speech, as well as frequency smoothing. PNCC is basically used for the improvement in recognition accuracy in noisy conditions. The presented results are of MFCC used for the improvement of the recognition accuracy. obtained using Matlab R2013.

Keyword: - *Speech recognition; feature extraction; Mel frequency cepstral coefficients; automatic speech recognition.*

1. INTRODUCTION

Automatic speech recognition by machine is an research area for speech recognition. There are several kinds of parametric representations for the acoustic signals. One of them is the Mel-Frequency Cepstrum Coefficients (MFCC) is the most widely used [1]. There are many kind of work done on MFCC, specially on the improvement of the recognition accuracy [3]. However, all these algorithms require large amount of calculations, which will increase the cost and reduce the performance of the hardware speech recognizer. The speech signal has a 10 dB signal-to-noise ratio and a spectrum between 0.3 kHz to 3.4 kHz at a sampling frequency of 8 kHz.Nowadays the performance of speech recognition systems in acoustical environments has drastically improved. Most speech recognition systems remain sensitive to the nature of the and their performance decreases sharply in the presence of sources of degradation such as additive noise, linear channel distortion, and reverberation. One of the most challenging problem is that recognition accuracy degrades significantly if the test environment is different from the training environment and if the acoustical environment includes disturbances such as additive noise, channel distortion, speaker differences, reverberation.

The presently developed systems for automatic speech recognition are based on two types of features mel frequency cepstral coefficients (MFCC) [2] and perceptual linear prediction (PLP) coefficients [4] .Spectro-temporal

Deshmukh and Deshmukh *EURASIP Journal on Advances in Signal Processing* (2016) 2016:105
DOI 10.1186/s13634-016-0399-y

EURASIP Journal on Advances in Signal Processing

RESEARCH Open Access

Design of resolution/power controllable Asynchronous Sigma-Delta Modulator

Anita Arvind Deshmukh* and Raghvendra B. Deshmukh

Abstract

This paper presents the design of a Programmable Asynchronous Modulator (PAM) with field control of resolution and power. A novel variable hysteresis Schmitt Trigger (ST) is used for external programmability. Asynchronous Sigma-Delta Modulator (ASDM) implementation with external control voltages is proposed to supervise the resolution and power. This architecture with reduced circuit complexity considerably improves the earlier realizations by eliminating multiple current sources as well switched capacitor circuits and results in power saving up to 87 %. Proposed PAM design demonstrates an improved SNDR of 115 dB, DR of 96 dB, and power consumption below 280 μW. It illustrates Effective Number of Bits (ENOB) to 18.81 and Figure of Merit (FoM) to 0.15 fJ/conversion step. Modulator is implemented in Cadence UMC Hspice 0.18 μm CMOS analog technology. Off-chip PAM control for resolution/power performance has potential applications in battery operated ultra low power applications like IoT; where ADC is one of the major power consuming components. It offers the promise for an efficient performance with power saving.

Keywords: Asynchronous circuit, Sigma-Delta Modulator, Schmitt-Trigger, Tunable hysteresis, CMOS analog technology

1 Introduction

With CMOS technology scaling, circuit implementation faces various challenges in integrating analog and mixed signal circuits. Reduced dimensions with low power, impacts negatively on analog and mixed-signal circuit performances. Particularly; transistors at non-optimal operating points, leak the currents through transistor gates. It leads to reduced input voltage swings and nonlinearity; during analog signal processing. Additional implementation challenges are imposed when analog and mixed signal processing functions must coexist with digital circuits. The switching noise from digital circuitry may couple into the analog blocks; thus corrupting the analog information [1].

With nano-scale technology, the major thrust is on design with reduced analog circuits; making Sigma-Delta Modulator (SDM) as one of the most popular architectures for ADC. SDM implementation is less sensitive to analog circuit imperfections due to reduced design complexity, oversampling and noise shaping techniques [2]. This inexpensive system also meets the constraints like compact design, minimum power, less noise and reduced conversion time. SDM performance can be further improved for power reduction by using asynchronous sampling technique.

ADCs using synchronous modulators, sample the input with minimum Nyquist rate decided by the maximum signal variation. As a result, most of the power is wasted; in signal processing terms, the signal is non-stationary and therefore the optimal sampling rate should be adapted based on the signal characteristics [3]. As many real-world signals vary irregularly, and asynchronous circuit processes only these relevant brief periods. It reduces the circuit activity and thus the dynamic power consumption. Also, the asynchronous modulator implementation is clockless and eliminates clock jitter as well the high-frequency injection problems. Since the restrictions imposed by a regular clock are not present in Asynchronous Sigma-Delta Modulator (ASDM), the requirements on the settling (bandwidth) and slew rate of the op-amps are significantly reduced [4]. Compared to synchronous modulators, it has other advantages like low susceptibility to Electro Magnetic Interferences (EMI), immunity to metastability, low power dissipation and recursive signal reconstruction etc. [5–7]. Thus, ASDM proved to be an efficient implementation.

ASDM dynamic power consumption depends on the resolution, alternatively on the switching activity. Minimum switching activity leads to minimum power consumption. So, to program the ASDM for minimum switching activity,

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ISSN(Online) : 2319-8753
ISSN (Print) : 2347-6710

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 5, May 2016

Experimental Study of a Exhaust Pipe Using FEM and FFT Analyzer

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ABSTRACT: While designing a new automobile exhaust pipe is to lengthen it's durability period, which can be measured. in terms of its life span and mileage. The exhaust pipe is subjected to several stresses, most of which are due to vibration.thereforeit is necessary to analyze the vibration modes and the response of vibrations. For this purpose, two methods are used, analysis using FEM package and analysis by FFT analyzer.

KEYWORDS:-FEM, Modal analysis, tail pipe, natural frequency, FFT analyzer.

I. INTRODUCTION

The purpose of the exhaust system is simple: to channel the fiercely hot products of fuel combustion away from the engine or generator and the car's occupants out into the atmosphere. The exhaust system has a secondary purpose- to reduce the amount of noise made. The exhaust gases leave the engine at incredibly high speeds. Moreover, with the opening and shutting of the exhaust valves with each cycle of combustion for each cylinder, the gas pressure alternates from high to low causing a vibration.Silencer has to reduce noise, vibrations. While doing so it is subjected to thermal, vibration and fatigue failures which cause cracks. So it is necessary to analyze the vibrations which would further help to pursue future projects to minimize cracks, improving life and efficiency of silencer.

II. MODAL ANALYSIS

Inorder to study the structure, modal analysis is used. It gives the natural frequency of the structure to be studied by which we can study the change in behavior of a structure from one phase to other depending upon the application. In this paper, modal analysis is used simply to find the natural frequencies at different modes of bent pipe. The modal parameters may be determined by analytical means, such as finite element analysis and one of the common reasons for experimental modal analysis is the verification/correction of the results of the analytical approach (model updating).Experimental modal analysis is used to explain a dynamics problem, vibration or acoustic.[1]

A. Methodology of Finite Element Analysis of Silencer:

- ❖Material properties were determined and defined with the help of material used.
- ❖The geometry was created for silencer.
- ❖Fine and smooth meshing was carried out on the model.
- ❖The meshed model was solved with constraints and boundary conditions.
- ❖The results were observed during post-processing.
- ❖Interpretation over the results for conclusions was done.[2]

ISSN(Online) : 2319-8753
ISSN (Print) : 2347-6710

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ABSTRACT: Bending operation is the most common mechanical operation performed nowadays to overcome the drawbacks of conventional process. The grain structure of the material drastically changes during bending operation. This results in change of natural frequency of the material. So it is very important to study the change in natural frequency of the material after bending. For this purpose FFT analyzer is used to obtain the spectrum and natural frequency.

KEYWORDS: - Bending, pipe, natural frequency, FFT analyzer, Crack formation**.**

I. INTRODUCTION

In mechanical joints with couplers or flanges, crevices are inevitable. Depending on the conditions, these may be undesirable because they can trap corrosive substances. The risk of corrosion must also be taken into account. Bent pipe ensures a continuous, even surface. Bent tube can therefore be the easiest and most efficient solution to design task. Indeed, tube bending is one of the most frequently used fabrication techniques for stainless steels. When a metallic pipe is bent, two things happen. The outside wall reduces in thickness, due to the stretching of the material, and the inside wall become thicker. In other words the material that forms the outside is stretched, while the inside bend is compressed. Due to this there is change in grain structure of the material. As a effect of this, natural frequency of also changes.

- ***Natural Frequency*** : If a system is disturbed and allowed to vibrate on its own, the frequency with which it vibrates without damping and without external forcing is known as its Natural frequency.
- ***Spectrum Analyzer****:* A spectrum analyzer is an instrument which measures the magnitude of an input signal versus frequency within the full frequency range of the instrument. The primary use is to measure the power of the spectrum of known and unknown signals.
- ***FFT Analyzer*** : The Fast Fourier Transform spectrum analyzer uses digital signal processing techniques to provide in depth waveform analysis with greater flexibility.
- ***Bending process***: Bending refers to the operation of deformation of a specimen around a straight axis where the neutral plane lies.

II. FFT SPECTRUM ANALYZER

The Fast Fourier Transform spectrum analyzer uses digital signal processing techniques to provide in depth waveform analysis with greater flexibility than other methods. The FFT or Fast Fourier Transform spectrum analyzer uses digital signal processing techniques to analyzer a waveform with Fourier transforms to provide in depth analysis of signal waveform spectra. An FFT spectrum analyzer works in an entirely different way. The input signal is digitized at a high sampling rate, similar to a digitizing oscilloscope. Nyquist's theorem says that as long as the sampling rate is

INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume3, Issue3)
Available online at www.ijariit.com

Conversion of Window Air Conditioner into Air Source Heat Pump and Experimentation on Heat Pump Setup

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Abstract: ***Air source heat pump water heaters are a promising technology and use the same mechanical principles as refrigerators and air conditioners. While refrigerators remove heat from the interior and discharge it to the environment, heat pump water heater take heat from the environment and concentrate it to heat water for service needs. The heat pump water heater, based on the vapour compression cycle, absorbs heat from a renewable energy source. Heat pump is a device that provides heat energy from a source of heat to a destination called a "heat sink". Heat pumps are designed to move thermal energy opposite to the direction of spontaneous heat flow by absorbing heat from a cold space and release it to a warmer one, and vice-versa. A heat pump water heater operates on an electrically driven vapor-compression cycle and pumps energy from the air in its surroundings to water in a storage tank, thus raising the temperature of the water. The hermetically seal compressor compress the refrigerant and send to the condenser. The evaporator absorbed surrounding heat and send to the compressor. The condenser gives heat to the water.***

Keywords: ***Heat pump, Vapour-compression, Heatsink, Condenser, Evaporator***

I. INTRODUCTION

A heat pump water heater operates on an electrically driven vapour compression cycle and pumps energy from the air in its surroundings to water in a storage tank, thus raising the temperature of the water. The hermetically seal compressor compress the refrigerant and send to the evaporator. The evaporator absorbed surrounding heat and send to the condenser. The condenser gives heat to the water. Heat pump water heaters collect energy from the ambient air, water, waste heat sources or the ground, and transfer it to water stored in an insulated storage vessel. The electricity is mostly used in the refrigeration compressor. A heat pump is a machine that transfers heat from a source to other by employing a refrigeration cycle. Although heat normally flows from higher to lower temperatures, a heat pump reverses that flow and acts as a pump to move the heat. Therefore, a heat pump can be used both for space heating in the winter and for cooling in the summer. In the refrigeration cycle, a refrigerant is compressed then expanded to absorb and remove heat. The heat pump transfers heat to a space to be heated during the winter period and by reversing the operation, extracts (absorbs) heat from the same space to be cooled during the summer period.

II. NEED AND PROCEDURE OF AIR SOURCE HEAT PUMP

A. Need of conversion

The heating system based on an air source absorption heat pump had been assessed to have great energy saving potential. However, the coal boiler is of low energy efficiency as well as high air pollution, which is regarded as one of the main sources of CO_2, SO_2, NO_x so it will produce hazardous effect on the environment. For instance, electric water heater is convenient for installation and operation, however, the overall efficiency in converting a potential energy of fossil fuels into electric energy, then into thermal

ISSN (Online) 2393-8021
ISSN (Print) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

2nd International Conference on Advances in Mechanical Engineering(ICAME-2016)

Amrutvahini College of Engineering, Sangamner

Vol. 3, Special Issue 1, March 2016

Optimization of Scorpio front suspension (W105) assembly line by using ECRS Principles

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Abstract: In today's competitive manufacturing environment, companies are constantly looking for ways to improve in their production process. A new flow of assembly line is proposed for suspension assembly line. An assembly line of a Front Suspension of Mahindra Scorpio is to be optimized to increase the productivity. This paper presents the improvement of production rate and balance loss ratio of the manual assembly line. Using ECRS four principles (Eliminate, Combine, Rearrange and Simplify) minimize the idle time or the percentage of line balance loss. The result shows that cycle time of the assembly line is reduced from 56 seconds to 48 seconds and Production rate increased from 250 to 293 pieces per hour.

Keywords: Assemble line, ECRS, work-study, balancing, optimization.

I. INTRODUCTION

Modern assembly lines are used in automobile industries in order to produce high quality and very complex products. These industries involve large number of input parameters which may affect cost and quality of final product. Selection of optimum parameters and process is very important objective in the present work.The mathematical models of assembly line of Scorpio (W105) considered for the optimization of respective assembly line. Assembly lines have been widely used in various production systems to produce high-volume standardized products. This kind of production lines includes a series of workstations arranged along a material handling system. The components are processed as specified by a set of tasks, for a given cycle time. Tasks are assigned to an ordered sequence of workstations in accordance with given precedence relationships among them. To increase the production rate, different techniques have been developed to solve problems from different areas such as work measurement, line balancing, method improvement, and quality improvement tools. In this paper the major focus is on balancing the line and reduce the ideal time. In order to do it, ECRS (Eliminate, Combine, Rearrange and Simplify) principle is used.

II. WORK STUDY

Work study may be defined as the analysis of a job for the purpose of finding the preferred method of doing it and also determining the standard time to perform it by the preferred (or given) method. Work study, therefore, comprises of two areas of study: method study (motion study) and time study (work measurement). In order to understand the role of work study, we need to understand the role of method study and that of time study. Method study (also sometimes called Work Method Design) is mostly used to improve the method of doing work. It is equally applicable to new jobs. When applied to existing jobs and existing jobs, method study aims to find better methods of doing the jobs that are economical and safe, require less human effort, and need shorter make-ready / put-away time. The better method involves the optimum use of best materials and appropriate manpower so that work is performed in well organized manner leading to increased resource utilization, better quality and lower costs.It can therefore be stated that through method study we have a systematic way of developing human resource effectiveness, providing high machine and equipment utilization, and making economical use of materials.Time study, on the other hand, provides the standard time, that is the time needed by worker to complete a job by the standard method. Standard times for different jobs are necessary for proper estimation of

- Manpower, machinery and equipment requirements
- Daily, weekly or monthly requirement of materials
- Production cost per unit as an input to better make or buy decision
- Labor budgets
- Worker's efficiency and make incentive wage payments.

By the application of method study and time study in any organization, we can thus achieve greater output at less cost and of better quality, and hence achieve higher productivity.

Work Study and Ergonomics: The work study and the ergonomics are the two areas of study having the same objective: design the work system so that for the operator it is safe, and the work is less fatiguing and less time taking.

ISSN (Online) 2393-8021
ISSN (Print) 2394-1588

IARJSET

International Advanced Research Journal in Science, Engineering and Technology

2nd International Conference on Advances in Mechanical Engineering(ICAME-2016)

Amrutvahini College of Engineering, Sangamner

Vol. 3, Special Issue 1, March 2016

Magnetic Mould Casting: Methodology and Comparison with Traditional Sand Casting Process

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Abstract: Casting is a manufacturing process, which is used directly or indirectly in almost every industry. It is a primary manufacturing process and has its effect on the properties of the resultant product. In this era there is a demand to innovate processes, which can reduce lead-time, reduce cost of production without compromising with the quality of the products and reduce ill effects on environment. Magnetic mould for casting (MMC) is an innovative process having a great potential to replace conventional casting methods due to various advantages associated with it. The setup of magnetic mould casting includes winding of copper wire such that it behaves like a solenoid with hollow cavity in which actual casting process is to be carried out. For making mould two cylinders are used, copper winding is done to outer cylinder and current is allowed to pass through the wire, this results in generation of magnetic field inside the cylinder. Ferrous powder is used as moulding material and thermocol as pattern material. The molten metal when poured, it replaces the pattern and takes its shape and once solidified it can be easily taken out of the mould. Magnetic mould casting reduces the time consumed for sand preparation, mould making and knocking required for casting removal by completely replacing sand with ferrous powder and use of magnetism. The process is eco-friendly as it eliminates the use of sand, successfully reduces the overall process time for casting and results in better properties too.

Keywords: Magnetic Mould, Sand casting, ferrous powder, Time study, Properties.

I. INTRODUCTION

Casting is a manufacturing process that can be performed in a number of ways. The type of process employed for casting has an effect over properties like surface finish, microstructure, hardness, toughness, etc. of the resultant product. In modern days industries there are many factors, which affects the decision of selecting the type of casting process to be used. This includes properties of cast product, time required for manufacturing and environmental effects of the process. Magnetic mould casting (MMC) is an application of electromagnetism to the process of casting. Ferrous Powderconstitutes the mould that is formed by application of magnetic field on it.

The application of magnetic field that induces magnetic bonds between Ferrous particles which gives strength to mould, this reduces the time elapsed in ramming process. Also, breaking of mould becomes easier by using magnetic field, as it is required to switch off the supply to turn down the magnetic field and mould breaks. MMC process employs a one-piece mould and a thermocol pattern, which gives an advantage of cast products being free of defects associated with joint line (Geffroyet. Al.). Also the products have better dimensional tolerances than the products obtained from conventional methods. The amount of machining required is less thus reducing the time and cost involved in finishing a product for use.

The mechanical properties like tensile strength, impact strength and hardness of the products cast from MMC have higher values as compared to sand casting products (P. Gnanvel). The reason behind this improved might be the higher solidification rate of Ferrous mould as its thermal conductivity is more than the sand mould (Geffroy et. Al.). A major concern related to casting is environmental pollution. In casting, foundry waste is releasedand sand once used gets burnt and is of no use, thus adding up to foundry waste whereas in MMC Ferrous powder can be reused and magnetic field had not any effect on the worker's health.

Therefore MMC is an eco-friendly process as waste generation is minimum and due to reusability of mould material. This process is still in its research phase. There is no evidence of its use in any industry till now but it can be used as a replacement of conventional methods of casting as this process has certain advantages over them.

Experimental Analysis of Boring Tool vibrations with Passive Damping using FFT Analyzer

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Abstract— **Boring is one of the machining operations, which is most widely used in industry. In the case whenever depth of the hole to be bored is more compared to diameter of hole, there is need of slender boring tool. For slender boring tools the ratio of length to diameter is higher due to which while machining tool may deflect. At the time of boring, forces are exerted at free end which finally results in vibration. As vibrations are always undesirable so it has adverse effects on surface finish and tool life. So to reduce vibrations there are various techniques which can be mainly categorized as active and passive damping. In this experimentation passive damping is used to analyze behavior of boring tool under vibration. So experimentation is done with and without passive damping. FFT analyzer is used to carry out frequency domain analysis. The operating parameters such as Depth of cut in mm (0.3, 0.5 and 0.7), Spindle speed in RPM (300,500,700) and Feed Rate in mm/min (80,100,120) are varied. On the other hand, passive damper characteristics are varied by using damping particles of different sizes. The results are collected in the form of vibration acceleration and surface roughness, comparison is made among boring tool without passive damper and tool with passive damper. Analysis results show that, passive damping reduces vibration and enhances the surface finish.**

Index Terms— **Passive damping, Boring Tool, FFT Analyzer, Vibration, Surface Roughness.**

I. INTRODUCTION

Machines are composed of various links and their assembly which are having relative motion, so vibrations are inherent.

Any motion that repeats itself after an interval of time is called vibration. Whenever system is left to vibrate after an initial disturbance, it is called as free vibration and whenever it is subjected to an external force, it is known as forced vibration. The maximum displacement of vibrating body from its equilibrium position is called the vibration amplitude. Vibration amplitude represents the severity of the problem. The time taken to complete one cycle of motion is known as the period of oscillation or time period and the number of cycles per unit time is called the frequency of oscillation. Frequency of vibration is the indication of source of problem.

Many times vibrations in machining may be desirable (for e.g. in case of shaker machine) but most of the times it is undesirable due to its adverse effect on quality parameters of job. Machining vibrations mainly depends on various parameters such as speed, feed rate, depth of cut etc. so it is desirable to minimize or control vibrations. Thus whenever it is not possible always to act on parameter which directly causes vibrations, there are two options available i.e. one can go for vibration isolation or vibration damping.

This paper focuses boring process, as boring is one of the machining processes which include enlarging the drilled hole. In the boring operation a single point or multi-point cutting tool is held with holding fixture called as boring bar. It is fitted in tool post against the rotating work piece. Boring is thus also called as internal turning. The tool holding fixture is fixed at one end and free at other end. Cutting forces exerted on tool at its free end. So, it acts as cantilever or Euler Bernoulli beam. So as the depth of hole to be bored increases, length of bar also increases resulting in lowering stiffness and thus resulting in more vibrations. Thus if rigidity of cantilevered boring bar is not sufficient; it would directly affects the dimensional accuracy, tool wear rate and surface finish. Such effect becomes prominent when the length to diameter ratio of boring bar exceeds 4:1.

II. LITERATURE REVIEW

In this paper passive damping (Particle impact damping i.e.PID) technique used, it is a method to increase damping by inserting particles in an enclosure attached to a vibrating structure. The particles absorb kinetic energy of the structure and convert it into heat through inelastic collisions between the particles and the enclosure. Additional energy dissipation may also occur due to frictional losses and inelastic particle-to-particle collisions amongst the particles.

The unique aspect of PID is that high damping is achieved by converting kinetic energy of the structure to heat. In conventional methods of damping the elastic strain energy stored in the structure is converted to heat.

S. Devaraj et al., (2014) proposed fine particle impact damping method in boring operation for surface quality enrichment of the work piece. Damping to suppress the vibrations was provided by embedding fine particles within small hole of a vibrating structure. Authors performed experimental investigation for the surface roughness measurement of work pieces using Copper, Aluminum, Zinc and Silicon particles at different densities. The results obtained proved that the usage of silicon and zinc particles showed less

International Journal of Current Engineering and Technology
E-ISSN 2277 – 4106, P-ISSN 2347 – 5161

Available at http://inpressco.com/category/ijcet

Research Article

Teaching Learning based Optimization Algorithm to Solve Assembly Line Balancing Problem

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Accepted 01 Sept 2016, Available online 02 Sept 2016, **Vol.6, No.5 (Oct 2016)**

Abstract

Modern assembly lines are used in automobile industries in order to produce high quality and very complex products. These industries involve large number of input parameters which may affect cost and quality of final product. Selection of optimum parameters and process is very important objective in the present work. The mathematical models of assembly line of Scorpio (W105) considered for the optimization of respective assembly line. A recently developed advanced optimization algorithm named as teaching–learning-based optimization (TLBO) is used for the parameters optimization of the assembly line, which is inspired by teaching-learning process and works on the effect of influence of teacher on output of learners in class. This technique is used to minimize the computational efforts and considerable improvements in results are obtained in the problem near to optimum results. We also provided a comprehensive comparative study along with statistical analyses in order to present effectiveness of TLBO algorithm on solving scheduling problems. Experimental results show that the TLBO algorithm has a considerable potential when compared to the best-known heuristic algorithms for scheduling problem.

Keywords: *Assembly line, Balancing, Teaching learning based Optimization, algorithm.*

1. Introduction

An assembly line is a sequential of workstations that are connected by material handling system and is commonly used in producing high quality products (Hindriyanto Dwi Purnomo, Hui-Ming Wee 2014). The desired performance of an assembly line can be controlled by assigning tasks to workstations in such a way the assembly objective is fulfilled, the demand is met and the constraints imposed on the line are satisfied. Assembly lines are used for effective mass production with homogenous standard (Ana S. Simaria, Pedro M. Vilarinho 2009). The configuration of assembly lines is important due to the higher investment cost and its advantages to achieve the competitiveness of product cost. Based on the task operation direction, assembly line can be classified into one-side assembly lines (OALBP) or two-sided assembly lines (TALBP). OALBP is the most widely studied of line balancing problem (Ana S. Simaria, Pedro M. Vilarinho 2009).

The first study on two-sided assembly lines was written by Bartholdi (1993), who conducted an interactive program with balancing algorithm using the first fit heuristic. Kim *et al*. (2000) and Kim *et al*. (2009) used genetic algorithm to solve two assembly line balancing problems. Lee *et al*. (2001) proposed a group assignment procedure focusing on the maximization of work relatedness and work slackness. Simaria and Vilarinho (2009) implemented ant colony optimization for mixed two-sided assembly line balancing. Özcan (2010) applied simulated annealing for stochastic two-sided assembly line balancing (Parames Chutima Wanwisa Naruemitwong (2014).

Teaching–learning-based optimization algorithm (TLBO) is a teaching–learning process inspired algorithm recently proposed by Rao *et al*. (2011, 2012) and Rao and Patel (2012) based on the effect of influence of a teacher on the output of learners in a class [3]. The algorithm mimics teaching–learning ability of teacher and learners in a class room. Teacher and learners are the two vital components of the algorithm and describes two basic modes of the learning, through teacher (known as teacher phase) and interacting with the other learners (known as learner phase). The output in TLBO algorithm is considered in terms of results or grades of the learners which depend on the quality of teacher. A high quality teacher is usually considered as a highly learned person who trains learners so that they can have better results in terms of their marks or grades. Moreover, learners also learn from the interaction among themselves which also helps in improving their results. TLBO is population based method. In this algorithm a group of learners are considered as population and

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A REVIEW OF PARTICLE IMPACT DAMPING FOR VIBRATION MITIGAION

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ABSTRACT

There are various machining operations such as boring, turning which are widely used in industry. In such operations dimensional accuracy, surface finish are some of the important attributes from customer point of view. To meet them it is important to control factors which deteriorate its value such as speed, depth of cut, vibration etc. Much work is being done to control adverse effect of speed, depth of cut on accuracy, surface finish but last factor that is vibration is having adverse impact if ignored. So, it is required to be minimized. So to reduce vibrations there are various damping techniques which can be mainly categorized as active and passive damping. Among these active damping requires cumbersome arrangement along with sensors which finally increases cost. On other hand passive damping can be easily combined with vibrating structure. There are various passive damping techniques such as viscous damping, viscoelastic damping etc. but each of it have certain limitations which may be environmental conditions or temperature variations or attachment with vibrating structure without changing its characteristics(such as its stiffness, weight etc.).So recently developed particle impact damping (PID) is proving to be one of the most promising technique which overcomes most of the limitations of above said passive damping techniques which is being reviewed in this paper

Keyword : - *Passive damping, Boring, Turning, Vibration, Surface Roughness.*

1. Introduction

Particle impact damping (PID) is a method to increase structural damping by inserting particles in an enclosure attached to a vibrating structure. The particles absorb kinetic energy of the structure and convert it into heat through inelastic collisions between the particles and the enclosure. Additional energy dissipation may also occur due to frictional losses and inelastic particle-to-particle collisions amongst the particles.

The unique aspect of PID is that high damping is achieved by converting kinetic energy of the structure to heat as opposed to the more traditional methods of damping where the elastic strain energy stored in the structure is converted to heat.

Viscoelastic materials have wide applications in vibration damping in a normal environment, i.e. under ambient temperature and pressure. However, they lose their effectiveness in very low and high temperature environments and degrade over time. Particle impact damping offers the potential for the design of a better passive damping technique with minimal impact on the strength, stiffness and weight of a vibrating structure. With a proper choice of particle material, this technique appears to be independent of temperature and is very durable. Earlier studies have investigated the energy loss mechanisms and characteristic of particle impact dampers under various excitation models.

A Review on Different Techniques to Solve Assembly Line Balancing Problem

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Abstract- *Assembly lines are widely used in all kind of industries where mass production is done. But there always arises an Assembly Line Balancing Problem (ALBP) i.e. improper assignment of tasks to the work stations. In this paper different techniques to solve this ALBP are reviewed. Overall development and trends of solving ALBP is studied and presented in this paper.*

Index Terms- *Assembly line, workstations, line balancing, cycle time, sequencing, algorithm.*

1. INTRODUCTION

Assembly lines are flow-line production systems, where a series of workstations, on which interchangeable parts are added to a product. The product is moved from one workstation to other through the line, and is complete when it leaves the last workstation. The productivity level of an assembly line generally depends on balancing performance.

Line Balancing is a classic Operations Research optimization technique which has significant industrial importance in lean system. The concept of mass production essentially involves the Line Balancing in assembly of identical or interchangeable parts or components into the final product in various stages at different workstations.

- *Definitions of Related Terms:-*

1) *Assembly line:*
An Assembly is made up of a number of workstations, arranged serially. These stations are linked together by a transportation system that aims to supply materials and move the production item from one station to next one.

2) Line Balancing:
Line Balancing is leveling the workload across all processes in a cell or value stream to remove bottlenecks and excess capacity. A constraint slows the process down and results if waiting for downstream operations and excess capacity results in waiting and absorption of fixed cost.

3) Cycle Time:
Cycle time is the Maximum amount of time allowed at each station. This can be found by dividing required units to production time available per day.

$$\textbf{Cycle Time} = \frac{\text{Production Time per day}}{\text{Units produce per day}}$$

4) *Lead Time* :
Summation of production times along the assembly line or Total time required to manufacture an item or it is the time that elapses between when a process starts and when it is completed.

5) Idle Time:
Idle time is the time specified as period when system is not in use but is fully functional at desired parameters.

6) Bottleneck:
Delay in transmission that slow down the production rate. This can be overcome by balancing the line.

7) Precedence:

The product can't be move to the next station if it doesn't complete at the previous station. The products flow from one station to the other station. In assembly line the products have to obey this rule. It can be represented by nodes or graph.

1) Smoothness Index :
This is the index to indicate the relative smoothness of a given assembly line

PROCESS PARAMETERS OPTIMIZATION OF CNC TURNING MACHINE FOR ALUMINIUM ALLOY USING TAGUCHI METHOD

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Abstract

In modern machining industries the challenge arises for manufacturing good quality product which is also cost effective. Turning is a major machining operation which is removing of material from the surface of rotating cylindrical work piece. Material removing rate and surface roughness are two important aspects concerning the quality of turning operation. In this paper Taguchi method is studied and implemented for system design and process parameters design such as selecting depth of cut, feed rate and speed of CNC turning machine for aluminium alloy. There are four parameters with three different suitable levels and based on this the orthogonal array was selected (L9). Nine runs were carried out using three different cutting tool insert with reference to the orthogonal array selected. The target material used in this paper was Al6061 T6. Result and analysis was carried out using regression modeling and polynomial equations were generated and optimum machining parameters were determined. Using this polynomial equation the surface roughness and material removing rate can be predicted.

Keywords: *Turning, Surface Roughness, MRR, Taguchi Method, Orthogonal Array, Al 6061 T6, Regression Modeling*

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1. INTRODUCTION

Turning is a vital machining operation, which removes material from the surface of a rotating cylindrical work piece using a single point cutting tool. Turning operation is done to reduce the diameter of the work piece according to required diameter, and also to achieve a good surface finish on the work pieces. The tool used for cutting is fed linearly, parallel to the axis of rotation of work piece. [1]

In modern industry, is to manufacture low-cost, high quality products with maximum productivity in a short time. Turning is the most common method for cutting and especially for the finishing of machined parts. Furthermore, in order to produce with desired quality and maximum productivity of machine, cutting parameters should be selected properly. [2]

1.1 Introduction to Taguchi Method

Taguchi method was proposed by Dr. Genichi Taguchi in 1950'sTaguchi method is statistical tool, adopted experimentally to investigate influence of surface roughness by cutting parameter such as feed, spindle speed and depth of cut. The Taguchi process helps to select or to determine the optimum cutting parameters for turning process. [3]

2. EXPERIMENTAL SETUP

2.1 Material Used

Aluminium Al6061 T6 was used as the target material in this paper. The chemical composition is mentioned in Table 1. The work piece were of dimensions, 40 mm diameter and total length of 150 mm out of which 90mm was machining length and rest was used for holding the work piece. (ASM Aerospace specifications Metals Inc. ASM.metweb.com)

Table-1 Chemical Composition of Al 6061 T6

Component	Wt. %	Component	Wt. %
Al	95.8-98.6	Mg	0.8-1.2
Cr	0.04-0.35	Mn	Max 0.15
Cu	0.15-0.4	Si	0.4-0.8
Fe	Max 0.7	Zn	Max 0.2
Ti	Max 0.15	Other total	Max 0.15

2.2 Equipment Used

The different equipment used in this investigation are listed below in Table 2

Table-2 Equipment List

Item	Specification
CNC Lathe	Hytech CNC Lathe trainer machine Spindle speed range: 50rpm minimum and 3000rpm maximum Feed rate: 400mm/min maximum
Surface roughness measurement device	Mitutoyo surface roughness tester Measuring unit: R_a in µmm Stylus travel: 4.8mm
Cutting tool insert	T1: Alumina K10 Coating layer- uncoated T2: Taegutech TT8020 Coating type- PVD Coating layer- TiCN T3: Taegutech TT5100 Coating type- CVD Coating layer-TiCN-Al_2O_3- TiN

International Journal of Modern Trends in Engineering and Research
www.ijmter.com
e-ISSN No.:2349-9745, Date: 28-30 April, 2016

Transmission Noise and Gear Rettle in Automotive Driveline

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Abstract— For many years, research efforts led to reduction of acoustic levels. Consequently, noise sources that were previously masked emerge. Specifically, gear rattle noise due to impacts between teeth of unloaded gears is particularly audible at low speed regime of the engine. [1]Gear rattling noise is one of the major problems facing the industry, and the car industry in particular, because cars spend so much time idling under no load very light loads. Minimizing noise is becoming an increasingly important factor in motor vehicle development. The importance of this development goal is increasing with rising customer expectations and increasingly stringent legal restrictions on noise emissions. The cause of rattling and clattering noise is torsional vibration of transmission components that are not under load, that move backwards and forwards within their functional clearances.

This paper describes a research work on classification of transmission noise, gear rattle phenomenon occurring in automobiles, Cause effect diagram of gear rattle, Effect of Gear rattle on human body, rattle criteria, rattle index, possible ways to reduce gear retelling.

Keywords- Neutral gear rattle, Transmission noise, external measures, internal measures, driveline etc.

I. INTRODUCTION

Gear rattle noise is an undesirable sound quality for passenger cars and light trucks equipped with manual transmissions. Unlike automatic transmissions, manual transmissions do not have the high viscous damping inherent to a hydrodynamic torque converter to suppress the impacting of gear teeth oscillating through their gear backlash. Therefore, a significant level of noise can be produced by the gear rattle and transmitted both inside the passenger compartment and outside the vehicle. Gear rattle, idle shake, and other noise generated in the automobile driveline have become an important concern to automobile manufactures in their pursuit of an increased level of perception of high sound quality.

The torsional vibration of driveline is a major source of gear rattle noise. The manual transmission produces gear rattle by the impacting of gears oscillating through their gear backlash. The impact collisions are transmitted to the transmission housing via shafts and bearings. The vibrations are then converted into an audible rattle.[7]

A. Classification of Transmission Noise:

The importance of minimizing noise in motor vehicle development is increasing with rising customer expectations and increasingly stringent legal restriction on noise emission. Vehicle transmission noise arises from the types of causes identified in Figure 1 [1, 2, 3, 4, 5].[7].

Volume-6,Issue-5 (Dec-16)
ISSN (O) :- 2349-3585

Optimization of Design Parameter & Vibration Analysis of Peristaltic Pump

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Abstract—A peristaltic pump, or roller pump, is a type of positive displacement pump used for pumping a variety of fluids. The fluid is contained within a flexible tube fitted inside a circular pump casing (though linear peristaltic pumps have been made). A rotor with a number of "rollers", "shoes" or "wipers" attached to the external circumference compresses the flexible tube. As the rotor turns, the part of tube under compression closes (or "occludes") thus forcing the fluid to be pumped to move through the tube. Additionally, as the tube opens to its natural state after the passing of the cam ("restitution" or "resilience") fluid flow is induced to the pump. This process is called peristalsis and used in many biological systems such as the gastrointestinal tract. Peristaltic pumping falls into the category of a positive displacement pump because the channel/tube walls deform in order to move the interior fluid. The different types of the peristaltic pumps operate on the simple logic of the rollers which are driven by the electric motors. Some of the pumps operate on the piezoelectric effect. In industry, peristalsis is used in mechanical pumps to move very viscous or non-Newtonian fluids through flexible deformable tubes. The peristaltic pumps have rotating parts, which induce the vibration in the pump. The vibration hampers the performance of the peristaltic pump. Considering the applications of peristaltic pump the most important is the performance of the pump. It is thus necessary to study the design for avoiding the vibration. Use of finite element analysis is done to find static adequacy of the design and find natural frequencies of the pump. In this we have taken four different design of the peristaltic pump, different parameters and different materials of the tube. Performed numbers of iteration and found the superior design of peristaltic pump, tube material by optimization methods.

Index Terms—Peristaltic pumps, Rollers, tubing, and fluids.

INTRODUCTION

A pump is a device used to move fluids, such as liquids, gases or slurries. A pump displaces a volume by physical or mechanical action. Pump is the oldest fluid-energy-transfer device known. Pumps are used in all types of industries and domestic purposes. A Peristaltic Pump is a type of a Positive Displacement Pump. It is often used to pump different types of fluids. The principle of positive displacement uses a mechanism to repeatedly expand a cavity so as to allow fluids to flow into the cavity, and then seal that cavity. The fluid then moves forward. The only pumping element of peristaltic pump is flexible tube. The pump works by squeezing the tube with rollers or shoes. This means that pump can run dry, self-prime and handle viscous or abrasive liquids, plus, as the tube is one complete unit, there are no seals. This makes the pump leak free and hygienic. The peristaltic pump is easily obtained at developed country rather than local market. This is due to the lack of Original Equipment Manufacturer (OEM) that is capable of manufacture such a product. Peristaltic pump has many domestic usages such as in medical sector and handling of critical fluid. Thus, a study is needed to systematically be conducted in order design and analyzed the principle operation of such device. A lot of equipment around us uses the mechanisms of pump, from the smallest pump used in the house to the biggest scales and specification pump used in industries. A peristaltic pump is a type of positive displacement pump used for pumping a variety of fluids. The fluid is contained within a flexible tube fitted inside a circular pump casing (though linear peristaltic pumps have been made). A rotor with a number of 'rollers', 'shoes' or 'wipers' attached to the external circumference compresses the flexible tube. As the rotor turns, the part of tube under compression closes thus forcing the fluid to be pumped to move through the

Dynamic machine layout for press tool operations using real coded genetic algorithm

Kailas V. Chandratre , Padmakar J. Pawar , Keshav N. Nandurkar

Abstract

In today's economy, manufacturing plants must be able to operate efficiently and respond quickly to changes in the product mix and demand. Layout design has a significant impact on manufacturing efficiency. A static plant layout if possible to be converted to dynamic layout may improve the efficiency of the plant significantly. Dynamic layout is a layout which can be rearranged with respect to time as per variation in product design, quantity and change in product mix. Dynamic layout problem is a quadratic assignment problem and is of non-deterministic polynomial-time hard problem. In this work, an attempt is made to solve this problem using real coded genetic algorithm (GA), which overcomes some of the limitations of traditional GA. This algorithm has been applied to the dynamic layout benchmark problems to prove its effectiveness. In addition, a real life example is considered to validate the presented approach.

International Journal of Metaheuristics

Print ISSN: 1755-2176 **Online ISSN:** 1755-2184

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 05 | May-2016 www.irjet.net p-ISSN: 2395-0072

STUDY OF HIGH STRENGTH TERTIARY BRAND CONCRETE WITH VARYING CONTENTS OF MICRO SILICA

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Abstract - *Concrete is the most important engineering material in construction industry because of its inherent strength properties. However, the addition of some other materials may change the properties of concrete. With increase in trend towards the wider use of concrete for pre-stressed concrete and high rise buildings there is a growing demand of concrete with higher compressive strength. Micro-silica, also called as silica fumes is produced in electric arc furnace as a by-product of the production of elemental silicon's or alloys containing silicon. The mineral admixtures with pozzolanic properties such as fly ash (FA), silica fume (SF), ground blast-furnace slag (GGBS) and metakaolin (MK) are commonly used as a partial substitution of Portland cement during construction. These admixtures are often added to modify the physical and chemical properties of cementitious mixes, performances and engineering properties of the concrete. In comparison to ordinary Portland cement, the collection of GGBS as a by-product requires less energy and it produces less greenhouse gases. Thus, GGBS blended concrete is a more environmentally friendly concrete compared to OPC concrete. This paper presents the study of variation of contents of micro silica in the mix consisting of cement, GGBFS (ground granulated blast furnace slag), and micro silica. Micro silica is used in three percentages 0%, 7%, and 10% and the compressive strength test of cubes is being conducted.*

Key Words: compressive strength, cementitious content, GGBFS, Micro silica, pozzolanic.

1. INTRODUCTION

Fly ash, ground granulated blast-furnace slag, silica fume, and natural pozzolans, such as calcined shale, calcined clay or metakaolin, are materials that when used in conjunction with Portland or blended cement, contribute to the properties of the hardened concrete through hydraulic or pozzolanic activity or both. Supplementary cementitious materials are added to concrete as part of the total cementitious system. They may be used in addition to or as a partial replacement of Portland cement or blended cement in concrete, depending on the properties of the materials and the desired effect on concrete. Traditionally, fly ash, slag, calcined clay, calcined shale, and silica fume were used in concrete individually. Today, due to improved access to these materials, concrete producers can combine two or more of these materials to optimize concrete properties. Mixtures using three cementitious materials, called ternary mixtures, are becoming more prominent.

2. MATERIAL

Ground granulated blast furnace slag (GGBS) is a by-product from the blast-furnaces used to make iron. These operate at a temperature of about 1,500 degrees centigrade and are fed with a carefully controlled mixture of iron-ore, coke and limestone. The iron ore is reduced to iron and the remaining materials form a slag that floats on top of the iron. This slag is periodically tapped off as a molten liquid and if it is to be used for the manufacture of GGBS it has to be rapidly quenched in large volumes of water. The quenching optimises the cementitious properties and produces granules similar to coarse sand. This 'granulated' slag is then dried and ground to a fine powder.

Silica fume, also known as microsilica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. Silica fume is an ultrafine material with spherical particles less than 1 μm in diameter, the average being about 0.15 μm.

Cement, type of cement is important mainly through its influence on the rate of development of compressive strength of concrete. The choice of the type of cement depends upon the requirements of performance at hand. The most commonly used cement is ordinary Portland cement. Variation in the cement quality will cause the compressive strength to vary more than any other single material.

2.1 Tests on material

The materials required and determining their various properties has been carried out in this phase. The Constituents of concrete viz. cement, fine aggregate, and

Scientific Journal Impact Factor (SJIF) : 3.518
International Journal of Modern Trends in Engineering and Research
ISSN (ONLINE) : 2349 - 9745 ISSN (PRINT) : 2393 - 8161

Stabilization of Black cotton soil by using Fly ash and Lime

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Abstract— Stabilization of soil is important to enhance the engineering properties of expansive soil like strength, volume stability and durability. The Black cotton soils are very hard when dry, but lose its strength completely when in wet condition Expansive soils (black cotton soil) are a worldwide problem that poses several challenges for civil Engineers. In this work an attempt has been made to stabilize the soil using Fly ash and Lime. Experimental work has been carried out with 5%, 10%, and 15% of Fly ash as well 4 %, 8 % and 12% of lime content. The experimental work is based on different percentages of Fly ash and lime content in soil on tests for soil Liquid limit, Plastic limit, C.B.R. test, Unconfined Compression Test and Standard Proctor Test. The aim is to improve the engineering properties of the black cotton soil.

Keywords— Stabilization, Black cotton soil, Fly ash, Lime, Unconfined Compressive Strength, Liquid limit, Plastic limit, OMC, MDD, CBR.

I. INTRODUCTION

Expansive soil (Black cotton soil) is mostly found in the arid and semi-arid regions and it cover very large area of the world. It covers nearly 30% of the land in India and includes approximately the entire Deccan Plateau. Andhra Pradesh, Karnataka, Maharashtra, Parts of Gujarat and Western Madhya Pradesh. The name "Black Cotton" as an agricultural origin. Most of these soils are black in color and are good for growing Cotton. These soils can be used as a construction material when it possesses engineering properties such as high strength, low settlement and high durability. Difficulty is often experienced while working with such soils particularly in its field compaction. Black cotton soil experiences volumetric changes due to changes in water content and suction.

Black cotton soil is a type of expansive soil with high plasticity and can maintain water throughout the summer season. However swelling occurs during rainy seasons and shrinkage occurs on evaporation of water during summer seasons. Due to its peculiar characteristic of high plasticity, excessive swelling, shrinkage and low strength when wet, the soil is regarded unsuitable for construction material. Heavy financial investments are required to be made for construction of roads, canals and embankments due to non-availability of suitable soil.

However in developing country like India, due to industrial development there is increase in a demand for energy which has resulted in construction of considerable thermal power plants. At the moment there are total 87 working thermal power plants in India. This development has resulted in production of by-product like fly ash in large quantity. The disposal of fly ash requires large holding ponds, lagoons, landfills etc. Utilization of such hazardous by-product is very important to prevent the environment from its effect. Though fly ash has little cementatious value but in the presence of moisture it reacts chemically and forms cementatious compounds and attributes to the improvement to the strength and compressibility characteristics of soils.

It has a long history of use as an engineering material and has been successfully employed in geotechnical engineering. Studies have been conducted in the past by many investigators regarding the use of fly ash alone or in addition with lime for improving the properties of soils.

ISSN (Online) : 2454-4159
International Journal of Advanced Research in Science Management and Technology
IJARSMT
Volume 1, Issue 6, November 2015

A Role Based Access Control Using Cardinality Constraint Of Role Mining

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ABSTRACT— Role-based access control (RBAC) has long been recognized as a normative access control model. The essential notion of RBAC is to decouple users and permissions, and then associate both to roles respectively. This substantially simplifies the complexity of users and permissions management, widely perceived as onerous operations by system administrators. Employing RBAC is not only convenient but reduces the complication of access control since the number of roles in an organization is significantly smaller than that of users. Moreover, the use of roles as authorization subjects, instead of users, avoids having to revoke and re-grant authorizations whenever users change their positions and/or duties within the organization. As a result, RBAC has been implemented successfully by numerous information systems. The trend is that RBAC will maintain its increasing prevalence since the growing demand for cost-e activeness in management and security mechanism calls for it. Roles, users, permissions, objects and operations are constituents in RBAC where roles represent organizational agents that perform certain job functions within the organization, users are human beings and permissions are a set of many-to-many relations between objects and operations. According to the RBAC reference model, roles describe the relationship between users and permissions. Roles can be hierarchically structured, where senior roles generally inherit the permissions assigned to junior roles. Additionally, constraints such as separation of duties may be associated with the roles.

KEYWORDS- RBAC, role mining, cardinality constraint, concurrent framework, post-processing framework.

I. INTRODUCTION

All prior work so far only considers role mining with a single constraint at a time. Organizations may also impose multiple constraints on roles simultaneously. So proposed system extends the current state-of-the-art by incorporating both RBAC constraints. In certain situations, enforcing one constraint can lead to creation of new roles, which in turn violates the other constraint. Thus, enforcing one constraint may preclude enforcement of the other. So this system primarily focuses on the problem of role mining in the simultaneous presence of two cardinality constraints. This also includes brief discussions on the individual constraints in order to introduce the design principles of this algorithm.

1.1 Role Engineering

The goal of role engineering, is to define a set of roles that is complete, correct and efficient. In particular, role engineering requires defining roles and assigning permissions to them. Role engineering is essential before all the benefits of RBAC can be realized. Meanwhile, role engineering, considered as one of the major challenges RBAC implementation, is a time-consuming and costly process. Due to this, organizations are often reluctant to move to

ISSN (Online) 2278-1021
ISSN (Print) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 4, Issue 7, July 2015

A Novel Technical Approach for Implementing Static Hand Gesture Recognition

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Abstract: This survey presents a summary of the difficult field of static hand gesture recognition, that primarily consists of the popularity of well-defined signs supported a posture of the hand. Since human beings tend to differ in terms of size and shape the foremost difficult drawback consists of the segmentation and also the correct classification of the information's gathered from the input image, captured byone or additional cameras. The aim of this paper is to indicate that techniques have with success been tested and employed in order to unravel the issues mentioned higher than yielding a strong and reliable static hand gesture recognition system.

Keywords: KSL, Image Capturing, ZM, PZM, HMM.

1. INTRODUCTION

The language (language of individuals with hearing disabilities), as a special communication system utilized by specific teams of individuals in definite things and d raw back areas, is associate attention-grabbing and promising object for linguistics. In several things and cases the language is that the solely doable chance of communication realization. Till recently the language was used solely within context of human communication. However currently with the event and wide implementation of laptop information technology, the problem of translation from signs (Gestures) to regular text language, following its transformation into sound kind while not a personality's translator became a degree of active analysis interest.

Our analysis is dedicated to creation of program and technological computerized applications that will enable considerably improve things regarding language, pa rticularly with in the cases once no different communication is out there. Things once one in every of the communication sides doesn't grasp the language; however the communication is to be effectively conducted. Although a static hand gesture may in theory be any doable posture of a humans hand, typically solely a restricted set of well-defined postures square measure thought about to be employed in the communication. Since similarities between postures with completely different that means tend to lift the amount of wrong detected / undQerstood gestures, and so the error rate. In general, gesture recognition is taken into account as a really difficult field since natural environments tend to be rather unsuitable for gesture recognition, because of dangerous illumination, non-uniform backgrounds, and so on. The various publications of the recent years show that static hand gesture recognition remains field of active analysis, whereas several of them attempt to face the antecedently mention discus so as to enhance the performance and quality of existing technologies. There exist manyfurther devices(e.g. information gloves), that sq uare measure accustomed solve the antecedently mentioned issues by providing a additional precise capturing of the hand data.

However, this report refers solely to camera primarily based static hand gesture recognition. A doable application of static hand gesture recognition is that the machine assisted communication victimization the Kannada Sign Language (KSL) so as to permit the communication between KSL- and non-ASL-speakers. one more application involves the management of shopper physics, like TVs, Hi Fi-systems, DVD/CD players and then on. A user may so use some management gestures so as to modify them kannada state or on, modification the radio or TV show or to pick out some show or music. combos of gestures may even be accustomed perform additional advanced tasks, like programing the recording of one's favorite TV-show.

This report aims to convey an outline of the technologies and ways accustomed acknowledge static hand posture recognition. Successive section summarizes the essential principles of static hand gesture recognition and shows the technologies that square measure used for all the various tasks, conjointly discussing the benefits and downsides of every technology. In section three some applications squaremeasure bestowed, whereas section fou r covers the discussion. The last section contains the conclusions.

2. GESTURE RECOGNITION PROCESS

There 2 basic approaches in static gesture recognition, as represented in [1];

1. The topdown approach, wherever a antecedently created model of collected data concerning hand configurations is rendered to some feature within

DOI 10.17148/IJARCCE.2015.4735

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 02 Issue: 09 | Dec-2015 www.irjet.net p-ISSN: 2395-0072

REVIEW PAPER ON COLLABORATIVE FILTERING

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Abstract - ***As more and more information became available electronically, the need for effective information retrieval and implementation of filtering tools have became essential for easy access of relevant information. This paper presents a literature review of the field of recommender system and the recommendation methods that are usually classified into three categories. Content based Filtering, Demographic and Hybrid systems. The proposed system incorporate users' response models into the probabilistic matrix factorization (PMF), a popular matrix factorization CF model, to establish the response aware probabilistic matrix factorization (RAPMF) framework***

Key Words: *PMF, RAPMF*

1. INTRODUCTION:

Recommendation system has become an important research field. The recommendation system is defined as the supporting system which is used to help users to find information services, or products (such as Books, Music, Movie, Digital Products, Web sites & TV Programs) by analyzing the suggestions from other users, that reviews from other authorities and user attributes. It provides the personalized recommendation services and contents to the different users. Recommendation system is an information filtering system, it is also called as recommendation engine, used to recommend informational items.

In everyday life, people rely on recommendation from other people by spoken words, news reports from news media, reference letters, general survey, travel guides etc. Recommender system assist & augment this natural social process to help people sift through available books, articles, web pages, movies, music, restaurants, jokes, grocery products & so forth to find the most interesting & valuable information for users. The recommendation system can be distinguished between 1) Recommendation class 2) Recommendation approach 3) Recommendation algorithm & 4) Recommendation implementation.

The "recommendation class" is broad concept that describes how recommendations might be given. The recommendation concepts i.e:. Collaborative filtering & content based filtering fundamentally differ in their underlying ideas. The idea of content based filtering is that users are interested in items that are similar to item the users previously liked. On the other hand the idea of collaborative filtering is that users like items that the users peers liked.

A "Recommendation Approach" is a model of how to bring a recommendation class into practice. The idea behind collaborative filtering, content based on collaborative filtering [1][2]. This approach are quite different but are each consistent with the central idea of collaborative filtering.

A" Recommendation Algorithm" precisely specifies a recommendation approach. An algorithm of a content based filtering approach would specify whether terms were extracted from the title of the document or from the body of text, & how terms are processed(e.g stop word removal or stemming) & weighted (e.g TF-IDF), pseudo-

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 02 Issue: 09 | Dec-2015 www.irjet.net p-ISSN: 2395-0072

A Review Paper on Content Based Image Retrieval

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Abstract - ***Content Based Image Retrieval is most recently used technique for image retrieval from large image database. The reason behind using CBIR is to get perfect and fast result. There are many technique of CBIR used for image retrieval. A Block Truncation Coding technique is the famous method used for image retrieval. BTC is an image compression method uses two stages namely encoding and decoding. BTC is also used to index the images in database. BTC further has been inspired by many coding techniques for achieving its stability and simplicity. In proposed system the advanced technique of BTC is used that is Ordered Dither Block Truncation Coding (ODBTC). In this approach the CBIR is applied on video instead of images. ODBTC technique is used as an indexing scheme for indexing the images from video and as the video is a collection of image frames so the ODBTC technique is directly applied on it.***

Key Words: *Bit pattern feature, color co-occurrence feature, content-based image retrieval, ordered dither block truncation coding.*

1. INTRODUCTION

1.1 Content Based Image Retrieval (CBIR):

Content Based Image Retrieval (CBIR) is the method of retrieving images from the large image databases as per the user demand. It is also known as Query By Image Content (QBIC) and Content Visual Information Retrieval (CBVIR). In CBIR, content based means the searching of image is proceed on the actual content of image rather than its metadata. The Content Based Image Retrieval System is used to extract the features, indexing those features using appropriate structures and efficiently provide answers to the user's query. To provide the satisfactory answer to the user query, CBIR provides some flow of work. Firstly CBIR system takes the RGB image as an input, performs feature extraction, performs some similarity computations with the images stored in database and retrieves the output image on the basis of similarity computation. There are some basic CBIR fundamentals and are divided into three parts such as feature extraction, multidimensional indexing and Retrieval system architecture.

Feature Extraction:

Features are divided into two categories respectively text based and visual based. Textual features are keywords, tags, annotations etc. Visual features are color, space and texture etc. Visual features are the important features of an image for pattern recognition.

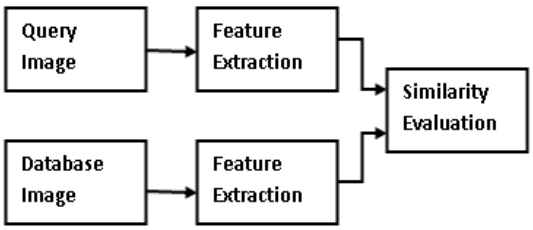

Fig 1: Block Diagram of CBIR

i. Color:

This is one of the most important feature of CBIR. Histogram, Block based, Color histogram moments are some examples where color features are used to retrieve images. It is widely used for image representation and independent of size of an image. Color feature extraction uses color space, color quantization and similarity measurement key components. RGB and HSV are two color based and hardware based color models used for feature extraction.

ii. Texture:

Texture describes visual pattern and it contains important information about structural arrangement of the surface including cloud, trees, bricks, hair and fabric and its relationship to the surrounding environment. Some methods of classifying texture include:

a) Color Co-Occurrence Matrix
b) Low Texture Energy.
c) Wavelet Transform.

International Journal of Applied Information Systems (IJAIS) – ISSN : 2249-0868
Foundation of Computer Science FCS, New York, USA
Volume 9 – No.7, September 2015 – www.ijais.org

Auto Conversion of Serial C Code into Cuda-C-Code for Faster Execution Utilizing GPU

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ABSTRACT
The primary accusative of this implementation is to expand the use of NVIDIA Graphics Processing Units (GPUs) to accelerate the all-purpose applications outside the graphics arena. CUDA is a programming language particularly designed for parallel computation to work. Now a day, C programming is glaringly used in industries to develop general purpose applications. Normally, a C program instruction executes sequentially and do not support data parallel computation, it increases the time complexity of a program. CUDA renders C like interface, configured for programming NVIDIA GPU which supports parallel computation of different parts of same instructions on different cores of GPU. For ordinary programmers it is very sticky to write CUDA programs because it involves various irksome tasks. Today, most of the machines come with NVIDIA graphics card which contains GPU having numerous processing cores. It is mainly used during execution of gaming, graphics and image processing kind of applications. It remains otiose during execution of general-purpose applications which results into surplus time. To properly employ the potential of available GPU cores on graphics cards for accelerating execution of applications outside graphics domain, the system implemented here provides an automatic tool that converts the directive based sequential C program and generates equivalent parallel CUDA program which will significantly enhance the speed of execution of program with help of parallel processing support. The C programmers can use this tool to enhance the speed of execution of their applications by transforming their directive based C code to CUDA C code. This tool provides simple user interface and helps to enhance the performance of the system.

Keywords
Parallel Computing, Serial Computing, CUDA, GPU, HPC

1. INTRODUCTION
Compute Unified Device Architecture (CUDA) is a parallel computing system and API designed and developed by NVIDIA. It permits to use a CUDA-enabled graphics cards (GPU) for all purpose processing a methodology recognized as GPGPU. Basically graphics card contains GPU having multiple processing units are used for performing computer graphics related applications like computer gaming, animation and playing movies.

The GPU [1] remains idle during running of general purpose applications. To enhance the system performance, the computing capability of the GPU available can get properly utilized during execution of applications outside the graphics domain. Brook [2] supports simple data-parallel statements and promotes the use of the GPU as a co-processor. GPUs have recently increased beamy popularity among investigators and creators as accelerators for applications outside the domain of conventional Computer Graphics [3]. This evolution, known as General-Purpose computing on the GPU or GPGPU, Largely outcomes from the big improvements in GPU programmability. Everyone is interested to get the fast response from computer for this purpose evolution of HPC is needed. Immediate outcome is the need of society whenever large amount of data processing taken place. A emblematic GPU is a multi-core architecture with each core capable of running thousands of threads concurrently. Hence, an petition with a large quantity of parallelism can use GPUs to understand essential performance benefits. GPUs have recently appeared as almighty platform for general purpose high performance computing. Programming for GPU is a complex task as compared to programming CPU and parallel programming models such as shared memory[4].

The CUDA is a programming language specifically designed to program NVIDIA GPUs. It is an enlargement to C, CUDA has rapidly become popular and drawn more and more non-graphics computer programmer to port existing applications to CUDA[5,6].

However, experience shows that the porting process is highly challenging task. In specific, CUDA places on the coder the burden of packaging GPU code in isolated functions of explicitly carry off data transfer between the host memory and several GPU memories, and of manually optimizing the utilization of the GPU memory. The experiment involve different schemes of partitioning computation among GPU threads, of optimizing single-thread code, and of utilizing the GPU memory. As a outcome, the coder has to make important code alterations, perhaps many times, before attaining coveted performance. Practically this operation is very irksome and error prone. Many of the tasks entangled are mechanical and can be automated by a this system, system is an attempt to attain such automation. In this work, research introduces methods for transfer the load from CPU to GPU for HPC[7][8].

Hardware accelerators, such as GPGPUs, are probable parallel platforms for HPC. While a GPGPU renders a inexpensive, highly parallel method to application coders, its programming complexity poses an essential challenge for programmer. Even though the CUDA[9] programming model, recently novice by NVIDIA, offers a more user friendly interface, programming GPGPUs is tough and error prone, compared to programming CPUs and parallel programming models such as OpenMP[10].

GPGPUs have lately appeared as compelling conveyance for general purpose High Performance Computing. CUDA programming framework [13,14] from NVIDIA offers improved programmability for common computing, hence, the manual development of high performance codes in CUDA is more participating than in other parallel programming [15] models such as OpenMP. Manual procedure places burden on programmer to port computation on processors. It is not bendable

INTERNATIONAL JOURNAL ON EMERGING TRENDS IN TECHNOLOGY

Reducing Data Skew with Round Robin Horizontal Partitioning of Data for Distributed Association Rule Mining of Large Data Set

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***Abstract*—** High growth in data size is observed due use of computer in all field. This data is not useful for decision making in business, unless is mined to extract interesting knowledge from it. For analyzing such data and extracting true knowledge from it, various data mining techniques are used. Association rule mining is one of them; it aims at finding associations or relations among data. As size of the data increase, knowledge discovery on this high volume data becomes slow, with conventional data mining technique, as it has to be done serially. The number of data records may make the learning process very slow. The solution to the problem is to speed-up the learning process with the help of parallel or distributed techniques. Through mining, interesting relations and patterns between variables of large database can be observed using the distributed mining algorithms. The performance in terms of time complexity data mining algorithm can be from O(N) to lower bound O(N/k) with parallel or distributed approach, where N = number of data instances and k = number of nodes in distributed system[1]. Partitioning and distribution of data on different nodes in distributed system may lead to data skew and intern a problem in computing support and confidence. This paper addresses the distributed association rule mining on large datasets and merging rules in single rule set. This system horizontally distributes large data set using round robin method and association rule mining using Apriori algorithm is performed with global support count at least s and confidence count at least c. Duplicate rules in the system create rule redundancy. Duplicate rules are found and redundancy is removed from rule set before final merger of the rules at central server. Data security issue in distributed mining has been handled by many researchers so it is not addressed here. The speed up is acquired with proposed method is significant along with utilization of available computing resources.

Keywords—Apriori Algorithm, Distributed Mining, Partitioning.

I. INTRODUCTION

Historical databases is are generally knowledge rich, and extracting this knowledge for enhancing the business is the most crucial aspect of business. Mining such data using association rule mining can lead to extraction of various relations and many new and hidden patterns in data, which can be useful for decision making purpose. Other applications of such knowledge can be stated as financial forecast, marketing strategies, customer retention and many more. The implicit function of Association Rule Mining (ARM) is finding the interesting associations or relations (usually known as patterns) among data. Association Rule mining focuses on finding patterns satisfying certain interestingness metric, which can be given as minimum support threshold and minimum confidence threshold. Any rule or pattern satisfying both these thresholds is considered as interesting association rule and delivered as outcome. Patterns with interestingness below the threshold are considered as not-interesting and can be removed [2].

The association rule mining is one of the most important and widely used techniques for mining data, but it consists of iterative scans of database, which can be costly for large databases. In today's age, data is growing at a fast rate. Tera-bytes of data from various organizations, institutions and agencies are being generated continuously. People are eager to discover useful and actionable information from this data, but still it is a challenge to make Association Rule Mining (ARM) algorithms cope with this large amount of data. Thus it is beneficial to go for partitioning such large database and then performing distributed association rule mining on the partitioned datasets. On the other hand many organizations are also storing their data in distributed manner itself, either in horizontal or vertical partitioned format. For mining such data again distributed association rule mining is essential.

Previous studies in this field focus on efficient mining of association rules. The most widely accepted algorithm for association rule mining that is Apriori algorithm. In this algorithm, downward closure property is used to find association rules. In this experimentation Apriori algorithm is used.

ASSOCIATION RULE MINING (APRIORI ALGORITHM)

The interestingness of patterns can be analyzed by using various interestingness metrics such as Support, Confidence and Lift.

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 02 Issue: 09 | Dec-2015 www.irjet.net p-ISSN: 2395-0072

Watermarking of relational databases: Survey

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Abstract - ***Watermarking techniques provides candidate solution to ensure security in terms of ownership protection and tamper proofing for a various types of data. Digital watermarking of multimedia content is more commonly known. There is rich body of literature for watermarking of multimedia data. But watermarking of relational databases is emerging area as compared to multimedia data. Though it is emerging various techniques are proposed to ensure security against variety of attacks, ownership right protection and data tampering. This paper focuses on different techniques that have been proposed to provide solutions for security problems related with relational data. This survey provides different techniques classified according to their intent along with type of watermarking.***

Key Words: *Relational database, watermarking*

1. INTRODUCTION

Now a day's digital data can be accessed and exchanged through computer via internet has growing extensively which is very simple task. As digital data available publicly it can be easily modified by unauthenticated user and can steal rights of it. So, data security is an essential area that provides variety of solutions for protection of different data formats.

Watermarking is one of the popular and extensively used techniques that ensure security in terms of ownership protection and tamper proofing for a various data formats. Fingerprinting, data hashing, serial codes are some other techniques used for ownership protection [2]-[4].Using these other techniques one can identify source of data leakage but can't protect data from being leaked. Digital watermarking provides a strong method of protecting digital data from modification, copyright protection by embedding a secret code directly into the data. The embedded secret code, called watermark, can be used in various applications. Watermarking has the property that it can provide ownership protection to digital content inserting watermark unique to the owner. The embedded watermark can subsequently be used for proving and claiming ownership. It is very important to protect the ownership of databases, many times making copy of databases may get ignored. We only care about is relational database is authentic and unmodified, and if modified discovered and recovered.

Initially watermarking is restricted only up to multimedia content such as images, audio, video [7]-[10] etc. Particularly image watermarking is used while transmission of messages from one party to another. Processing of relational database watermarking differs that of watermarking techniques that are applied to multimedia data, cause is difference in properties of data. As relational data is independent and discrete compared to multimedia data is continuous.

Thus watermarking particularly for relational databases was proposed very firstly by [11]. The technique was irreversible in nature i.e. it can't regenerate original data from watermarked data using secret key. Further after few years reversible watermarking techniques get proposed by [12] that can regenerate data without comprising original quality.

Watermarking techniques mainly used to protect publicly available data from being tampered, protect ownership [13] of that data, ensure integrity [14] and such other purposes.

Some of the important approaches of watermarking are introduced in this paper as follows: Section 2 gives general processing for watermarking that are explained using fig.1. Section 3 includes various Surveys' on variety of watermarking techniques and finally in Section 4 conclusion was made.

Design of Voltage Stability Indicator Using Continuation Load Flow, Modal Analysis and Schur's Inequality.

- **Source:** IUP Journal of Electrical & Electronics Engineering . Apr2015, Vol. 8 Issue 2, p7-24. 18p.

- **Author(s):** Rai, D. K.; Koshti, Atul; Gupta, Rajeev

- **Abstract:** Estimating the proximity of power system to voltage collapse in real time still faces difficulties. Besides the data management and computational issues, any central-control method is subject to the reliability of long-distance data communications. In this paper, Schur's inequality indicator for the voltage stability in the electrical power system is implemented. Many times under emergency state, it is necessary to improve voltage stability by rescheduling the minimum number of control variables from implementation viewpoint. One way of achieving this is by suitable choice of indicator and adequate load bus voltages. A reactive power planning incorporating voltage stability methodology was developed.

Load Flow Analysis for Radial Distribution System Using Forward Backward Sweep Method.

- **Source:** IUP Journal of Electrical & Electronics Engineering . Oct2015, Vol. 8 Issue 4, p51-61. 11p.

- **Author(s):** Shrivastava, Chitransh; Gupta, Manoj; Koshti, Atul

- **Abstract:** The problem of enhancing the voltage profile and decreasing power losses in radial distribution systems is an important task that must be solved in an optimal way. Therefore, to improve the voltage profile and stability of the existing distribution system, load flow analysis is carried out. In this paper, IEEE-33 bus system is considered for optimally allocating the distributed generation source at some of the buses. The following effort explains that by placing distributed generation at the most sensitive buses, the real power losses in the system can be reduced drastically and voltage profile can also be improved. The sites for distributed generation are selected on the basis of sensitivity and the amount of real power source at that bus is decided by applying local search method.

Statistical Evaluation of Frequency of Transient Oscillation in Circuit Breaker Using Monte Carlo Simulation.

- **Source:** IUP Journal of Electrical & Electronics Engineering . Apr2015, Vol. 8 Issue 2, p62-71. 10p.

- **Author(s):** Arya, L. D.; Koshti, Atul

- **Abstract:** The paper presents a statistical methodology for evaluating the probability and frequency of transient oscillations under the resistance switching conditions across circuit breaker contacts, which are used to reduce restriking voltage. The methodology is based on Monte Carlo Simulation (MCS). The transient oscillation in circuit breaker depends on various uncertain variables, e.g., resistance to be connected across circuit breaker contacts and circuit conditions. The uncertainty for these conditions of severity was accounted for along with uncertainties in inductance and capacitance with shunt resistance. The results were obtained on a 220 KV system.

Ain Shams Engineering Journal (2014) 5, 1071–1081

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ELECTRICAL ENGINEERING

Regression model for tuning the PID controller with fractional order time delay system

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Received 5 September 2013; revised 7 April 2014; accepted 16 April 2014
Available online 13 June 2014

KEYWORDS

Regression model;
PID controller;
Iterative algorithm;
Fractional order;
Time delay and system

Abstract In this paper a regression model based for tuning proportional integral derivative (PID) controller with fractional order time delay system is proposed. The novelty of this paper is that tuning parameters of the fractional order time delay system are optimally predicted using the regression model. In the proposed method, the output parameters of the fractional order system are used to derive the regression function. Here, the regression model depends on the weights of the exponential function. By using the iterative algorithm, the best weight of the regression model is evaluated. Using the regression technique, fractional order time delay systems are tuned and the stability parameters of the system are maintained. The effectiveness and feasibility of the proposed technique is demonstrated through the MATLAB/Simulink platform, as well as testing and comparison using the classical PID controller, Ziegler–Nichols tuning method, Wang tuning method and curve fitting technique base tuning method.

1. Introduction

In different regions, Time-Delay Systems (TDS) encounter along with engineering, the field of biology, and also economics [1,2]. A time delay is usually a footing regarding unsteadiness and also fluctuations within a process [3]. Two sorts of time delay devices are there as follows: retarded and also fairly neutral [4]. Throughout TDS, wherever time-delays existing between the features regarding input on the process and also the ensuing result, could be suggested simply by delay differential equations (DDEs) [5]. Programs along with delays reveal any category in inexhaustible dimensions mostly requested the actual modeling as well as the research regarding transportation and also propagation phenomena [6]. Time-delays on top of things loops normally mortify process display and confuse case study and also strategy regarding feedback controllers [7].

The actual solidity of time-delay methods is often a problem of chronic interest due to a number of functions of communication systems in the field of biology in addition to population dynamics [8]. Generally, solidity review of time-delay methods could be classified straight into two varieties. First is the particular delay-dependent stability review which often contains the data in the length of the particular delay, and one much more is the delay-independent stability review [9,10]. The actual delay independent stabilization comes with a controller which will temporarily relieve the system in spite of the length of the particular delay [11]. However, the delay

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Peer review under responsibility of Ain Shams University.

Production and hosting by Elsevier

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http://dx.doi.org/10.1016/j.asej.2014.04.007

Iterative algorithm and curve fitting technique for tuning with time delay system PID controller

Article type: Research Article

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Abstract: In this paper, hybrid technique proposed for tuning Time Delays System with proportional–integral–derivative (PID) controller. So, the performance and the robustness for a class of Time Delay System are improved. The proposed hybrid technique is the combination of the iterative algorithm and curve fitting technique. The proposed iterative algorithm is improved, performance of the feedback tuning iterative technique; so the computational complexity of the iterative algorithm reduced. By using the iterative technique, the best polynomial coefficients of curve fitting technique is determined. Using the curve fitting technique, the Time Delay System is tuned and the stability parameters of the system is maintained. The curve fitting technique is one of the non linear programming techniques which can be constructed that approximately fits the data from the extract data. The proposed hybrid technique is implemented in MATLAB working platform and the tuning performance is evaluated. Then, the system performance of the proposed hybrid technique is compared with classical PID controller, Ziegler–Nichols tuning method.

Keywords: Hybrid technique, iterative algorithm, curve fitting, PID controller, fractional order, time delay, and system

DOI: 10.3233/IFS-151632

Journal: Journal of Intelligent & Fuzzy Systems (https://content.iospress.com:443/journals/journal-of-intelligent-and-fuzzy-systems), vol. 29, no. 4, pp. 1527-1537, 2015

Published: 2015

Price: EUR 27.50

International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 02 Issue: 09 | Dec-2015 www.irjet.net p-ISSN: 2395-0072

An Overview of Approaches Used In Focused Crawlers

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Abstract - ***Web is a repository n where there is variety of information available provided by millions of web content providers. Numerous WebPages are added to web every day and the content keeps changing. Search engines are used to mine this information and the most important part of search engine is a web crawler also known as web spider. A web crawler basically is software that crawls or browses the WebPages in the World Wide Web. There are many types of crawlers having different methods of crawling like parallel crawler, distributed crawler, focused crawler, parallel crawler, and incremental crawler. In recent years, focused crawling has attracted considerable interest in research due to the increasing need of digital libraries and domain-specific search engines. This paper reviews different researches done in focused crawler which are also known as topic specific web crawler.***

Key Words: *Crawler, Search Engine, Focused Crawler*

1. INTRODUCTION

A search engine has become an important source for mining the data in the World Wide Web (WWW). Since the web crawler is the main part of the search engine it needs to browse WebPages that are topic specific. A web crawler is basically a software or program which browses the internet and collects data in a repository. In process of crawling the web crawler gathers WebPages from the web and stores them in a proper way so that the search engine can retrieve them quickly and efficiently.

A web crawler starts with a URL also called as seeds which are stored in the crawler frontier. Then it identifies the hyperlinks while parsing the web pages and adds them to the list of URLs that already exists and the collected data by crawler is sent to storage. This process of crawling depends on the policies defined for the crawler. The general architecture of crawler is shown in figure 1. The frontier consists of the list of unvisited URLs. The crawler fetches a URL from the frontier which has the list of unvisited URLs. The page which corresponds to that URL is fetched from the Web and the unvisited URLs from that page are added back to the frontier. The process of retrieving and extracting the URL goes on till the frontier is empty or some other situation causes it to stop [1-3].The main job of the page fetcher is to fetch the pages from World Wide Web corresponding to the URLs which has been retrieved from the crawler frontier. For that purpose, the page fetcher requires a HTTP client for sending the HTTP request and to read the response. Web Repository stores the web pages in the database which it receives from a crawler. All other multimedia and document types are avoided by the crawler .It stores the browsed pages as different files and the storage manager stores the updated version of each page fetched by the crawler.

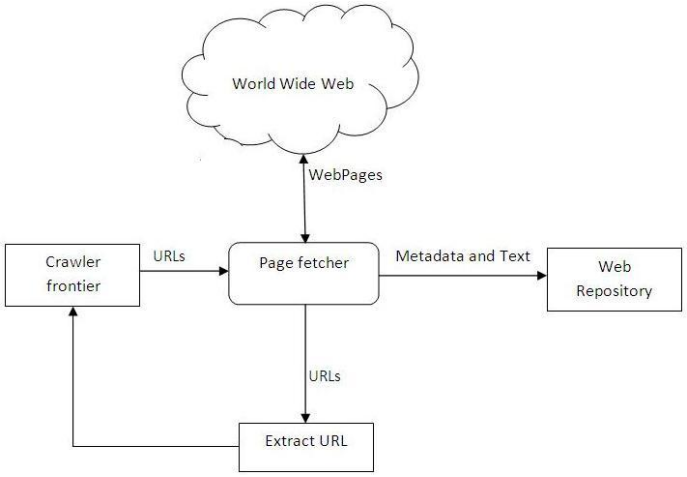

Fig -1: General Architecture of Web Crawler

Generic crawlers do not specialize in specific areas. A traditional crawler periodically crawls the URLs that are previously crawled and replaces the old documents with the newly downloaded documents to refresh its collection. On the contrary, an incremental crawler refreshes the already existing collection of pages gradually by visiting them frequently. This is based upon an estimation of the rate at how often pages change. It also replaces old and less important pages by new and more relevant pages. It resolves the problem of freshness of the data. The advantage of incremental crawler is that only valuable data is provided to the user [4-8].

Implementation of Cohesive Zone in ABAQUS to Investigate Fracture Problems

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Abstract –In a Specimen with a crack, cohesive zone is the area between two separating but still sufficiently close surfaces ahead of the crack tip. Cohesive zone is described by means of cohesive zone models most modern emerging area in computational mechanics to get Traction-Separation law. In this research, cohesive zone is implemented in a standard finite element framework of ABAQUS to investigate the crack initiation and its propagation in solids. Implementation procedure of cohesive zone through inbuilt cohesive elements, cohesive interaction and UEL-(User defined element) along with various case studies such as elastic-plastic analysis of rectangular plate, debonding of Double Cantilever Beam and Patch test to get traction-separation curve is discussed.

Keywords— Crack, Cohesive zone, Traction-Separation

1. Introduction

The Cohesive zone models are the most important evolutions in the area of Fracture mechanics.It is widely used to simulate the crack initiation and its propogation in solids and It is also an alternative method for model sepeartion. For CZM fracture formation is regarded as a gradual phenomenon in which the separation of the surfaces involving in the crack takes place across an extended crack tip, or cohesive zone, and is resisted by cohesive tractions. (Kyoungsoo and Paulino, 2012) Thus cohesive zone elements do not represent any physical material, but describe the cohesive forces which occur when material elements (such as grains) are being pulled apart, therefore cohesive zone elements are placed between continuum (bulk) elements, as shown in fig.

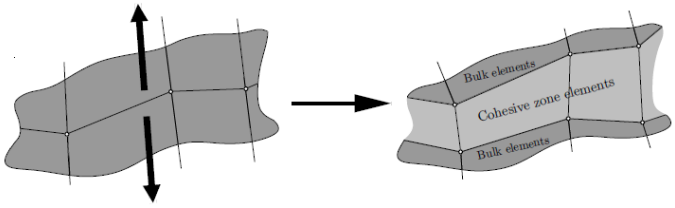

Fig 1 -Application of cohesive zone elements along bulk element boundaries

The Concept of CZM is introduced by the Barenblatt in 1959 for brittle fracture and this is followed by Dugdale in 1960,

The CZM are represented by Traction i.e. Force and Seperation i.e. Displacement. The variation in traction in relation to displacement is plotted on a curve and is called the traction (σ)-separation (δ) curve. In CZM Cohesive traction-separation relationships may be classified as either nonpotential-based models or potential-based models. (Kyoungsoo and Paulino, 2012) And its nature may be Bilinear, Parabolic, Sinusoidal and Exponential depending upon Constitutive Equations used to define Potential function, Traction and Seperation1.2, 1.3, 1.4, 1.5 below (Volokh, 2004)

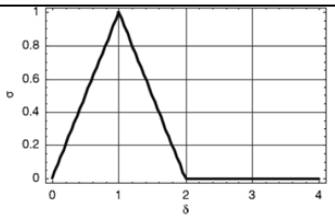

Fig2a -Bilinear CZM [2]

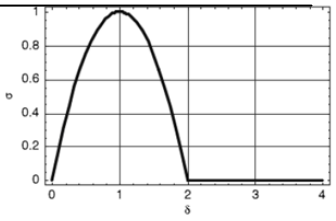

Fig 2b-Parabolic CZM[2]

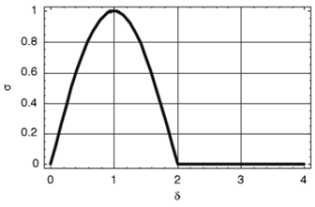

Fig2c-Sinusoidal CZM[2]

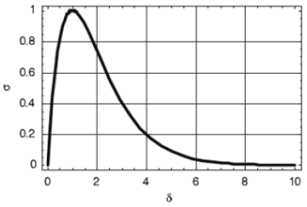

Fig2d-Exponential CZM[2]

The area under Traction(σ)- separation (δ) curve is equal to the energy needed for separation i.e. Fracture energy G.For Normal Traction(T_n)-Normal Seperation (δ_n) it is Normal Fracture energy (G_n) and for Tangential Traction (T_t)-Tangential Seperation (δ_t). The Traction-Displacement curve gives the constitutive behavior of the fracture. The amount of fracture energy dissipated in the work region depends on the shape of the model considered. Also, the ratio between maximum stress and the yield stress affects the length of fracture process zone. Smaller the ratio, longer is the process zone while larger is the ratio, smaller is the process zone (Volokh, 2004). The CZM allows the energy to flow into the fracture process zone, where a part of it is spent in the forward region and rest in the wake region

1.1 Advantages of CZM

The CZMs are having the major advantages over the conventional methods of fracture mechanics like LEFM(Linear Elastic Fracture Mechanics), CTOD(Crack Tip Opening Displacement) etc.as follows(Kyoungsoo and Paulino, 2011):

© 2016 IJSRSET | Volume 2 | Issue 4 | Print ISSN: 2395-1990 | Online ISSN : 2394-4099
Themed Section : Engineering and Technology

Springback Prediction and Its Influencing Parameters - Review

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ABSTRACT

Most widely operation on the sheet metal is sheet metal Bending process. Occurrence of springback during the manufacturing of the bending products is seen most of the time. The deviation of the component part dimensions from its tool dimension after the forming process is known as the springback phenomenon. This sringback causes deviation of the dimension from the desired dimension causes rejection in the production. To reduce this rejection of the part and to make the part acceptable there is need to know the springback phenomenon for that part. To reduce or investigate the springback phenomenon the trial and error method is widely used in industrial practice. This trial and error is also known as geometrical compensation method & it required many trials causes increase in cost to develop the tool dimensions. Hence there is need to predict the springback effect for the component in tool design process. This paper is based on review of the various researches on the springback phenomenon its influencing parameters. In this paper the review of the previous researches on springback prediction and its influencing parameters is carried out. The research gap is concluded within the reviewed papers.

Keywords: Springback, Bend Angle, Sheet thickness, Regression analysis, FEA

I. INTRODUCTION

The springback is the phenomenon referred with the deviation of the part dimensions after the forming process from the desired or tool dimension. Most of the shapes and parts shows the deviation after the unloading of the blank component from the punch and die assembly. This deviation causes rejection of the part as its dimensions are not acceptable. Hence to reduce this springback phenomenon most of the time in industrial practice geometrical compensation method is widely used. In this geometrical compensation method the trial and error method is used to reduce the springback effect by compensating the dimensions of die and punch. This geometrical compensation method required many trials & it causes increase in cost and delay in the production process. Hence there is need to evaluate the springback effect in the design stage of the press tool. In this paper various researches on the springback of the material in forming process is studied and the conclusion is developed based on The research studies.

II. REVIEW AND DISCUSSION

Various researches had been carried out to evaluate springback by the researchers. In this paper the review of their researches are carried out. **C. C. Weng et.al (1990)** present an experimental investigation of the residual stresses in severely cold bent thick high-strength steel plates is presented. Tension residual stresses on the inside surface of the bend range from 46% to 92% of the yield stress of the material. A zigzag-type residual stress distribution pattern through the plate thickness was observed. The test results were then compared to the values predicted by equations proposed in 1980. The cold-bending behaviors of the thick steel plates were also studied and the results were presented in a companion paper[1] **Nan Song et.al. (2001)** presented study on the prediction of springback angle with focus on the straight flanging operation. The objective of this work was to evaluate the reliability of different methods of prediction. An experiment of straight flanging operation is conducted. Major prediction approaches such as analytical model, numerical simulation using the Finite Element Method (FEM) and the Mesh free Method using the Reproducing Kernel Particle Methods (RKPM) are discussed. The numerical analysis shows that the prediction from the

International Journal of Innovative Research in Science and Engineering
Vol. No.2, Issue 03, March 2016
www.ijirse.com
ISSN: 2454-9665

DESIGN AND ANNALYSIS OF COMBI-SWITCH BRACKET

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ABSTRACT

Design Combi- switch design bracket die, and analyses in Hyper mesh software. Also find out the stresses developed. Reduce the cost of the progressive dies without compromising on the quality of output. Also find the stresses produces in die. These stresses are compared to yield stress and considering minimum factor of safety 2.0, the thickness of frame of the progressive dies selected to reduce the volume of material utilized for building the structure and hence to reduce the cost of the machine.

Keyword: Bend, Blank Tool, Bracket, Piercing Tapping, Progressive Tool.

I. INTRODUCTION

Now a day's a very large variety of sheet metal forming processes are used in modern sheet metal product manufacturing company. Many of these sheet metal forming processes are used in making the parts of aircraft, automobile, ship, and other products, by using complex equipment derived from the latest discoveries. With the ever increasing knowledge of science and technology, future deformation processes promise to be even more intricate to meet the need for high productivity, cheap price, and greater accuracy. However, for the unique advantages, the more sophisticated deformation processes of today have not replaced the need for basic sheet metal forming processes and dies.

Sheet metal stamping dies are used for both serial and mass production. Their characteristics are: high productivity, optimal material usage, easy servicing of machines, not required skilled operator, and economic advantage. Parts made from sheet metal have many attractive qualities: good accuracy of dimension, ample strength, light weight, and a broad range size is possible to manufacture.

Design of sheet metal dies is a large division of tool engineering, used in varying degree in manufacturing industries like automobile, electronic, house hold wares and in furniture. There is no doubt that accuracy achieved by the new ideas in design and construction applied by the press tool designer, coupled latest development made in related fields made more productive, durable and economical[1].

1.1 Types of sheet metal works

a. Punching: Punching is the sheet metal forming process that uses a punch press to force a tool.
b. Embossing: Embossing is the operation used in making raised figures on sheet with its corresponding relief on the other side.

IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 3 Issue 6, June 2016
ISSN (Online) 2348 – 7968 | Impact Factor (2015) - 4.332
www.ijiset.com

Determination of Damping Coefficient of Engine Oil by Adding Viscosity Index Improver

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Abstract

Oil acts as good damping material. Three types of engine oil 10W30, 15W40 and 20W50 are taken. Two type of viscosity index improver (olefin copolymers) are added in the three types of oil by varying the percentage weight of additive. Free vibration test is carried out for all the above mentioned types of oil at different percentage weight of additives for finding the damping coefficient in Universal Vibration testing machine. It can be seen that as the percentage weight of additive increases the damping coefficient of respective engine oil also increases.

Keywords*: Damping coefficient, engine oil, free vibration, viscosity index improver, etc.*

1. Introduction

Viscous damping is the most common used damping mechanism in vibration analysis. When mechanical system vibrate in a fluid medium such as air, gas, water and oil, the resistance offered by the fluid to the moving body causes energy to be dissipated. In this case, the amount of dissipated energy depends on many factors, such as the viscosity of the fluid, the frequency of vibration and velocity of vibrating body. The viscosity of a fluid is resistance to gradual deformation by shear stress. An ideal fluid has no resistance to shear stress. However, a viscous liquid has substantially greater viscosity than that of water. Engine oil is used for lubrication of internal combustion engines. Lubricants reduce wear on moving parts. The other properties are to clean, inhibit corrosion, improve sealing, and for cooling of the engine.

Friction and wear is caused due to vibration of the component. Form the study it can be seen that there is no experimental evaluation of effect of engine oil viscosity on damping coefficient. The principal of viscous damping is to convert kinetic energy due to vibration to heat. Dampers have been widely used to reduce the amplitude of vibration by absorbing or dissipating energy. Viscous damper designs are adaptable to many applications such as shock absorber in vehicle, viscous torsional damper in engine. Hydraulic oil used for viscous damping is also used to reduce engine wear under severe operating conditions, reduced bearing related wear, good piston deposit control, protection against rust and corrosion. We will focus on viscous damping in this paper and carry out experimental investigation of damping coefficient of different engine oil after adding additives.

2. Material and Method

Oil samples were prepared by adding viscosity index improver. The experiments were preformed in room temperature for different experimental combination for different oil samples. The experiments were performed three times for each run and average of damping coefficient is considered.

2.1 Selection of Viscous Fluid

The viscous fluids are engine oil of viscosity grade SAE10W30, SAE15W40 and SAE20W50 used in four stroke engine with and without additives with the purpose of obtaining the damping coefficient.

The physical properties of engine oil are shown below in table-1 as

ISSN 2395-1621

Effective Parameters Analysis of Heat Transfer Coefficient in Nano fluids by Taguchi Method

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ABSTRACT

In this new era, a nanofluid serves as energy efficient fluids over traditional heat transfer fluids. In this paper the water based metal oxides Al_2O_3, TiO_2, and SiO_2 are analyzed as a three different nanofluids using Taguchi methodology. Numerical investigations for heat transfer coefficient were done at three levels of four different parameters like Reynolds Number, Tube Diameter, Nanoparticle Concentration, and Nanoparticle Diameter Size. For experimental analysis L9 orthogonal array was selected. It is found that these parameters have a significant influence on heat transfer coefficient. Geometrical configuration consist circular cross sectional pipe of one meter length and forced turbulent internal flow with constant temperature (350K) wall condition. The predicted experiment shows up to 42% increment in heat transfer coefficient by using nanofluid flow than conventional fluid water. Furthermore randomly selected combinations of parameters were compared with actual results of experiments and it shows that less error and successfully tuning of Taguchi method for prediction of heat transfer coefficient.

Keywords— Heat transfer coefficient, Nanofluids, orthogonal array, Taguchi method, turbulent flow.

ARTICLE INFO

Article History

Received :18th November 2015

Received in revised form :

19th November 2015

Accepted : 21st November , 2015

Published online :

22nd November 2015

I. INTRODUCTION

The thermal conductivity of heat transfer fluids plays vital role for the development of energy efficient devices. The low heat transfer performance of conventional fluids such as water, engine oil and ethylene glycol puts a fundamental limit in improving performance and the compactness of many engineering equipments. The conventional way to enhance the heat transfer rate is to increase the area of heat transfer but it's contradicted to compactness. To overcome this disadvantage, there is the need to develop advanced heat transfer fluids with substantially having higher thermal conductivities. [1-4]

Nanofluids are engineered by suspending a small quantity of nanosized (average size below than 100 nm) particles in conventional fluids. A very small amount of guest nanoparticle, when uniformly and suspended stably in host fluid can shows remarkable improvement in thermal properties of host fluid. Choi, conceived the novel concept of nanofluid (nano particle fluid suspension), a new class of engineered fluids with higher thermal conductivity and stably suspended in conventional fluids. More than a century, Scientist and researchers have made great effort for preparation of nanoparticle and adding it in liquids for understandable and drastic enhancement of thermal conductivity. [5-7]

The suspended nanoparticles are divided into three groups: ceramic particle, pure metallic particle, and carbon nanotubes. This research paper has focus on only ceramic particles Al_2O_3, TiO_2 and SiO_2 for thermal performance. From the past researches and literatures, conclude that properties of nanofluids are strongly depends on nanoparticle material, volume concentration of particle, particle dimension, Reynolds number and flow area. This paper attempts combinations of these nanofluid parameters

Modal Analysis of Cracked Beams Using Ansys

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Abstract-The beam undergoes different kinds of loading which causes cracks in the beam. These cracks and their location effect changes the natural frequency and mode shapes of the beam. In the current work the natural frequency of cracked and uncracked beam having one end fixed and other is simply supported is investigated numerically by using ANSYS software. The cracked beam having triangular crack of depth 2mm.Different crack locations are considered and results are compared with the beam having no crack. Structural steel and aluminum are considered as beam materials.

Index Terms- Crack, ANSYS, natural frequency, mode shape, simply supported.

I.INTRODUCTION

Many engineering components used in the aeronautical, aerospace and naval construction industries are considered by designers as vibrating structures, operating under a large number of random cyclic stresses. Cracks found in structural elements like beams and columns have different causes. They may be fatigue cracks that take place under service conditions as a result of the limited fatigue strength. They may be also due to mechanical defects, as in the turbine blades of jet engines. In these engines the cracks are caused by sand and small stones sucked from the surface of runway. Another group involves cracks which are inside the material. They are created as a result of manufacturing processes. The presence of vibrations on structures and machine components leads to cyclic stresses resulting in material fatigue and failure.

Major characteristics of structures, which undergo change due to presence of crack, are the natural frequency , Mode shape. Hence it is important to use natural frequency measurements to detect crack and its effects on the structure.

II.LITERATURE SURVEY

P. Yamuna [1] published a paper on vibration analysis of beam with varying crack location The objective of this study is to analyze the vibration behavior of a simply supported beam using FEM software ANSYS subjected to a single triangular crack under free vibration. Material properties of steel are considered for the simply supported beam. Besides this, information about the variation in location and depth of cracks in cracked steel beams is obtained using this technique. It can be found that at symmetric positions of the crack position of the beam the lowest fundamental frequencies have almost equal value. This shows that the dynamic response of crack at symmetric locations of the beam is similar.

A local flexibility will reduce the stiffness of a structural member, thus reducing its natural frequency. Thus most popular parameter applied in identification methods is change in natural frequencies of structure caused by the crack. In this paper, the natural frequencies of cracked and un-cracked beams have been calculated using Finite element software ANSYS.

J.Fernad Ndez-Sad Ez [2] has formulated approximate calculation of the fundamental frequency for bending vibration of cracked beam. A simplified method of evaluating the fundamental frequency for the bending vibrations of cracked Euler Bernoulli beams is presented. The method is based on the well-known approach of representing the crack in a beam through a hinge and an elastic spring, but here the transverse deflection of the cracked beam is constructed by adding polynomial functions to that of the uncracked beam. With this new admissible function, which satisfies the boundary and the kinematic conditions, and by using the Rayleigh method, the fundamental frequency is obtained. This approach is applied to simply supported beams with a cracked section in any location of the span. For this case, the method provides closed-form expressions for the fundamental frequency. Its validity is confirmed by comparison with numerical simulation results. In all the cases considered in this paper, the results are very close to those obtained numerically by the finite-element method.

Dr. Ravi Prasad et al. [3] proposed a work on a Modal analysis for process of describing a structure in terms of its natural characteristics which are the frequency, damping and mode shapes –its dynamic properties. The change of modal characteristics directly provides an indication of structural condition based on changes in frequencies and mode shapes of vibration. This paper presents results of an experimental modal analysis of beams with different materials such as Steel, Brass, Copper and Aluminum. The beams were excited using an impact hammer excitation technique over the frequency range of interest, 0-2000 Hz. Response functions were obtained using vibration analyzer. The FRFs were processed using NV solutions modal analysis package to identify natural frequencies, damping and the corresponding mode shapes of the beam.

Ranja Behra [4] has analyzed Aluminium cantilever beam specimen with & without crack having inclined crack at different crack location & crack depth

Vibrational Analysis of Cracked Cantilever Beam Subjected to Harmonic Excitation with Nonlinear Parameters

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***Abstract*-Vibrational Analysis of Cracked Cantilever Beam Subjected to Harmonic Excitation is carried out to obtain its dynamic response by considering nonlinearities present in it. Many practical systems are sufficiently nonlinear so that the important features of their performance may be completely overlooked if they are analyzed and designed through linear techniques. A nonlinear structural behavior may arise because of geometric and material nonlinearities, as well as change in the boundary conditions and structural behavior may arise because of geometric and material nonlinearities, as well as change in the boundary conditions and structural integrity .In order to carry out nonlinear dynamic analysis first of all nonlinearities present in the dynamic system are found out. The nonlinearities present in cantilever beam are obtained by doing theoretical, numerical and experimental static analysis of cantilever beam. For numerical, static analysis ANSYS software is used.**

An experimental setup for Vibrational Analysis of Cracked Cantilever Beam is developed and results of both are compared and verified. In this verification it is observed that the results of numerical and experimental are verified. In this verification it is observed that the results of numerical and experimental analysis are closer to each other.

Keywords –Cantilever Beam, Mode Shape Frequency, Theoretical Analysis, Numerical and Experimental Analysis, Validation by ANSYS , Dynamic System, Nonlinearity.

I. INTRODUCTION

Vibration analysis is very important for constructions as well as designing of structural and mechanical system .This information helps us to predict the behavior of structure under different load distribution and helps to design system to control the excessive amplitude of vibration [1] is used to analyze the vibrations of construction, a cantilever beam instead of the construction itself. Therefore the process of analyzing is simplified. Using cantilever beam is just one the numerous methods for analyzing the vibration of unknown systems.

This investigation focuses in the study of the vibration analysis of cracked cantilever beam subjected to free and harmonic excitation at the base. The objective of the study is to identify the effect of nonlinearities namely Material, Geometric, and Damping on the natural frequency and mode shapes of cracked cantilever beam by theoretical, numerical and experimental methods.

Many practical systems are sufficiently nonlinear so that the important features of their performance may be completely overlooked if they are analyzed and designed through linear techniques. A linear Cantilever Beam is one with a linear relationship between force and displacement, meaning the force and displacement are directly proportional to each other. A graph showing force vs. displacement for a linear Cantilever Beam will always be a straight line, with a constant slope. A nonlinear Cantilever Beam has a nonlinear relationship between load and displacement. A graph showing load vs. displacement for a nonlinear Cantilever Beam will be more complicated than a straight line, with a changing slope.

The Non-linearity of Cantilever Beam can stem from two: their material, in which one speaks of material nonlinearities or their geometry, in which case one speaks of geometric nonlinearities. Note, moreover that a mechanical system composed of linear Cantilever Beams can exhibit geometric nonlinearity in presence of large relative displacements at the ends of the Cantilever Beams. Hard Cantilever Beam s exhibit a force-displacement curve whose absolute value of force increases as absolute value of displacement increases. The slope at any point of a force-displacement plot represents, in fact, the local Cantilever Beam stiffness of the nonlinear Cantilever Beam at hand. Thus, hard Cantilever Beams become stiffer as

ISSN: 2278 – 7798

ISSN: 2277-9655
(I2OR), Publication Impact Factor: 3.785

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

AN OVERVIEW OF VIBRATION ANALYSIS OF CRACKED SIMPLY SUPPORTED BEAM WITH NONLINEAR PARAMETERS

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ABSTRACT

The objective of this paper is to update its readers the various vibration based Crack diagnosis techniques presented by various researchers for a cracked structures. These methods use "theoretical finite element analysis techniques, together with experimental results, to detect damage in different types of beam like cantilever, fixed-fixed beam, simply supported beam. Damage in structure alters its dynamic characteristics. It results in reduction of natural frequencies and changes in mode shapes, stiffness of the beam. An analysis of these changes makes it possible to determine the position and depth of cracks.

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KEYWORDS: Beam, Crack Detection, Vibration analysis, FEA, Natural frequency, Mode shapes, Cantilever, Fixed-Fixed beam, Simply Supported Beam.

INTRODUCTION

A beam is an elongated member, usually slender, intended to resist lateral loads by bending [1]. Structures such as antennas, helicopter rotor blades, aircraft wings, towers and high rise buildings are examples of beams. These beam-like structures are typically subjected to dynamic loads. Therefore, the vibration of beams is of particular interest to the engineer. For beams undergoing small displacements, linear beam theory can be used to calculate the natural frequencies, mode shapes, and the response for a given excitation. However, when the displacements are large, linear beam theory fails to accurately describe the dynamic characteristics of the system. Highly flexible beams, typically found in aerospace applications, may experience large displacements. These large displacements cause geometric and other nonlinearities to be significant. The nonlinearities couple the (linearly uncoupled) modes of vibration and can lead to modal interactions where energy is transferred between modes [2].

This investigation focuses in the study of the vibration analysis of cracked simply supported beam subjected to free excitation at the base. The objective of the study is to identify the effect of non-linearity's on the natural frequency and mode shapes of cracked simply supported beam by theoretical, numerical and experimental methods.

VIBRATION ANALYSIS OF CRACKED CANTILEVER BEAM WITH NON-LINEAR PARAMETERS AND HARMONIC EXCITATION.

Mr. R. S. Pawar [3] has presented Experimental Static Analysis of A Cantilever Beam With Nonlinear Parameters. The beam-like structures are typically subjected to dynamic loads. In this paper classical problem of deflection of a cantilever beam of linear elastic material, under the action of a uniformly distributed load along its length (its own weight), is experimentally and numerically analyzed. Paper presents the differential equation governing the behavior of this system and shows that these equations are difficult to solve due to the presence of nonlinear term. The experiment described in this paper is an easy way to introduce the concept of geometric nonlinearity in mechanics of material. Finally numerical result is carried out by ANSYS program and compared with the experimental results. Comparative static analysis of cantilever beam for mild steel material is carried out. The numerical results from Finite Element analysis showed in general a good agreement with the experimental static values.

International Conference On Emerging Trends in Engineering and Management Research
NGSPM's Brahma Valley College of Engineering & Research Institute, Anjaneri, Nashik(MS) (ICETEMR-16)
23rd March 2016, www.conferenceworld.in ISBN: 978-81-932074-7-5

COMPARATIVE STUDY OF VIBRATION ISOLATORS USING PARAMETER ABSORPTIVITY

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ABSTRACT

In this paper, the concept of the output frequency response curve (OFRC) is applied to conclude the absorptivity of vibration isolators with a non-linear anti-symmetric damping curve. Materials wood, natural rubber, polyurethane, wood with rubber pad combination used for damping the vibrations from test rig. The result reveals that a non-linear anti-symmetric damping can significantly increase the absorptivity of the vibration isolators over the resonant frequency region. FFT analyser is used for Vibration and frequency measurement. Results indicate that absorptivity of material is maximum at resonance frequency.

Keywords: Wood, natural rubber, polyurethane, wood combination, Absorptivity, resonant frequency, FFT analyser.

I. INTRODUCTION

A vibration isolator is a device that is use inserted between a support base and equipment to reduce the vibration energy transmission from the support base so as to protect the equipment from non-linear vibrations. A magnitude (force, displacement, or acceleration) which oscillates about some specified reference where the magnitude of the force, displacement, or acceleration is alternately smaller and greater than the reference. Vibration is commonly expressed in terms of frequency (cycles per second or Hz). [1] The FFT spectrum analyser samples the input signal, computes the magnitude of its sine and cosine components, and displays the spectrum of these measured frequency components.The advantage of this technique is its speed. Because FFT spectrum analysers measure all frequency components at the same time, the technique offers the possibility of being hundreds of times faster than traditional analogue spectrum analysers. In the case of a 100 kHz span and 400 resolvable frequency bins, the entire spectrum takes only 4 Ms to measure. To measure the signal with higher resolution, the time record is increased. But again, all frequencies are examined simultaneously providing an enormous speed advantage. In order to realize the speed advantages of this technique we need to do high speed calculations. And, in order to avoid sacrificing dynamic range, we need high-resolution ADCs. SRS spectrum analysers have the processing power and frontend resolution needed to realize the theoretical benefits of FFT spectrum analysers. [2]

ISSN 2395-1621

Vibration Analysis of Diesel Engine with Three Speed, Four Speed Gearbox and Condition Monitoring

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ABSTRACT

The energy produced by road roughness is dissipated through shock absorbers. Energy-harvesting shock absorber is capable for recovering that energy. It absorbs road vibrations and converts it into electrical energy. In this paper, design of regenerative suspension system is proposed, for improving the energy harvesting efficiency. Mechanical motion rectifier is used to convert oscillatory vibration into unidirectional rotation of generator. Static structural analysis is carried out to identify displacement and stresses by using software. In this project, a mechanical rack and pinion system is used to generate power through regenerative shock absorber. The validation is done by using experimental evaluation. The model achieved more than 50% efficiency at high frequency in oscillatory motion. This model can be used effectively in vehicles for power generation.

Keywords— **a DC motor, Energy harvesting shock absorber, Mechanical motion rectifier, Regenerative shock absorbers, Rack and pinion.**

ARTICLE INFO

Article History

Received :18th November 2015

Received in revised form :

19th November 2015

Accepted : 21st November , 2015

Published online :

22nd November 2015

I. INTRODUCTION

Engine vibration measurement plays a very important role in automobile industry, the reason is, it indirectly related to two important parameters one is human comfort and other is failure of engine due to excessive of vibration. Engine consists of different components which have their own vibrations. The knowledge of numeric vibration data is very important to give importance to above two points. Some vehicle's engine comes with different kinds of gear boxes, meaning some automobile engine class (e.g. class A, Class B etc) are having three speed gear box and same automobile but different class have four speed or five speed gear box. So, if same engine is fitted with different gear box, how it will impact on the vibration of the engine is the area of interest. As per sensitive vibration measurement, it is accepted that vibrations are reduced with higher number of gear box that is three speed to four speed or four speed to five speed. Hence the aim of this is to measure and analyze what is the impact of converting the engine from three speed to four speed gear box and the effect of fault in gearbox on engine vibration by using FFT analyzer.

II. LITERATURE REVIEW

Lech Sitnik, Monika Magdziak–Toklowicz, Radoslaw Wróbel carried out tests on two spark-ignition engines: 1.4BZ 90CV CD and 1.4BZ120CV CD installed in new Fiat Bravo (model 198, version 54A) motor cars. The latter engine model (120CV) was equipped with a supercharging system. The research consisted in comparing engine vibrations measured in specific and representative points.. They found that the vibrations generated by the engine have a stationary character, the maximum vibration velocities are higher in case of the engine equipped with a supercharger[2]. L.Barelli,G.Bidini, C.Buratti, R.Mariani worked on a diagnosis methodology for internal combustion engines (I.C.E.) working conditions, by means of non-invasive measurements on the cylinder head, such as acoustic and

ISSN:0975-9646

A Review on Recommendations and Overlapping Communities for Location Based Social Networks

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***Abstract*— Today, a location based social networks is a drastically growing area which attracts users attention towards itself. Location based social networks(LBSN) assist between real world and online social networks by allowing users to check-in at a physical place and share the locations/location related contents with their friends. This Location sharing can be through GPS, mobile email or text. Location related contents can be geo-tagged photos and notes. LBSN sites includes foursquare, brightkite, GyPSii, Citysense etc. Many other online social networks provides activities (such as following, grouping, voting, tagging, etc.) that helps to interact with the virtual world but, "check-in" reflects a user's geographical action in the real world, residing where the online world and real world intersect. Location data helps to understand the users preferences and behaviour.**

People in the social structure naturally forms a community among themselves. For example, a person usually belongs to several social groups such as family, friends, and colleges. Usually, these communities in a social network can overlap each other. Detecting overlapping communities is very important to understand and analyze the structure of social network.

Recommendations help to suggest the opinions to the friends and family members. Friends have a good relationship among themselves. Hence, they try to recommend the things that can be useful to the persons closest or nearer to them. This paper reviews the overlapping communities structure, algorithms for overlapping community detection and recommendation based on location and friend.

***Keywords*— Location Based Social Networks, Overlapping Communities, Friend Recommendation, Location Recommendation.**

I. INTRODUCTION

With the extensive use of mobile devices and location-based services in the world, there is new way for online social interaction, namely location-based social networks (LBSNs). Location-based social networking sites uses GPS, Web 2.0 technology and mobile devices to allow people to share their locations (usually referred to as "check-in"), find out local Points of Interest and discounts, leave comments on specific places, connect with their friends, and find other friends who are nearby.

The distinct location-based social networking sites (e.g., Foursquare and Facebook Places) have attracted billions of users around the world and generated massive location-based social network data, providing us with both opportunities and challenges for investigating a user's mobile behavior, with the purpose of designing more advanced location-based services such as location-based marketing [1]. and disaster relief[2].

People in LBSN are structured in the form of community. Community is a group of nodes which has dense and sparse relations with other parts of a network[3]. Identifying these communities helps to better understand the structure of social network. There can be two types of groups one, where each user can belong to one or more communities. Another, where a user can belong to more than one group, also called as overlapping communities. First group is unable to represent the as it is structure of social network. But overlapping communities provides a clear understanding about the structural aspects of social networks. So, over the recent years, detection of overlapping communities is a key attention.

Recommendations are designed to recommend items to users in various situations such as online shopping, dating, and social events. Recommendation helps for decision making by filtering the uninterested things. By recommendation, one can save time in selecting the item which he/she wants. Recommendations also assist to establish communications in between two users, by allowing friend recommendation. Furthermore, recommendations could also benefit virtual marketing, since the appropriate recommendations could attract users with specific interests. Recommender systems on location-based social networks are comparatively new and mainly locations and friends are recommended.

Section II presents related work. Section III discusses overlapping communities detection algorithms. Section IV reviews details on recommendation systems over LBSNs. Finally, section V concludes the paper.

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II. RELATED WORK

In this section , research works on location based social networks is discussed. Scellato et al. [4], presented a graph analysis based approach to study social networks with geographic information and new metrics to charaterize how geographics distance affects social structure. Noulas et al. [5] gives a details about a users behavior in foursquare. This users behavior helps to know the users check-in nature. Also the author reveals spatio-temporal patterns and urban spaces demonstration. He also conveys ideas about recommender systems.

Noulas et al. [6] provides a way of modeling human activity and geographical areas. For this, place categorization needs to be performed. Foursquares dataset

and spectural clustering algorithm is also applied. It helps to find user communities visiting to similar categories of places. Also demonstrates way of using semantic information for applications such as recommender systems.

Huiji Gao et.al [7] introduced the first extensive study of temporal effects on LBSNs. Here, a general structure to utilize and deal with temporal cyclic patterns is provided. Two real world datasets are used to generate the results. Results demonstrate the frameworks ability to choose the effective location prediction algorithm among various other prediction models

Eunjoon Cho et.al [8] presents a model towards human mobility. Model combines users regular short range movements in a travel due to the social network structure. Also describes how the model gives better performance by reliably estimating the dynamics and location of the future human movement.

Zhu Wang et.al [9] provides a framework to trace the overlapping as well as hierarchical communities in LBSNs. Work is done based on the user check-in traces at venues. Framework groups same interests or like minded users from social perspectives. For this intermode and intramode features are extracted from social network. Foursquare dataset is used to evaluate the performance of the framework.

III. Overlapping Communities

Community overlapping is an important characteristic of many real-world social networks. A user may be a part of more than one community. Communities are of family members, friends and can be of co-workers. An individual/user can belong to a number of communities. There is no limit on a number of communities to a user as it is a users choice to associate with a group to which he/she wishes.

A multimode multi-attribute edge-centric coclustering framework : This is the recent work to detect overlapping communities in LBSNs. In this framework, 1) LBSNs dataset is collected and based on the characteristics of this dataset features are extracted to perform fusion as well as feature normalization. 2) the edge clustering algorithm is proposed to detect the overlapping community structure. Finally, detected communities are combined together by considering data about user/venue. This obtained community profiles helps to understand the social and semantic structure/meaning of communities in LBSNs. Following are the early overlapping communities detection algorithms, based on different categories.

Overlapping Community Detection Algorithms

Overlapping community detection algorithms are reviewed in this section. The work on community overlapping was started by Palla in 2005[10]. Focus is on finding overlapping communities where each node can belong to one or more communities. After this work, many algorithms were found for the overlapping community detection. There are five classes namely Clique Percolation algorithms, Agent and Dynamic based algorithms, Fuzzy based algorithms, Local expansion and Optimization algorithms and Line graph and Link partitioning algorithms .

A. Clique Percolation Method

Clique Percolation Method (CPM) is a deterministic community detection method, which allows for overlapping communities. CPM exploits local topological properties of a network [10]. It is a first attempt over an overlapping community. CPM identifies all cliques of size *k* in a network at the initial stage. Once CPM done with identification, a new graph is formed where each vertex represents one of these *k-cliques*. If the *k-cliques* representing the vertex shares *k-1* members, then only two nodes can connect to each other. The connected components from the resultant graph seeks which cliques compose the communities. There can be overlapping between communities, as a vertex can be in multiple *k-cliques* simultaneously. There is an assumption in CPM that the graph has huge number of cliques and it is suitable only for networks which considers densely connected segments. If a graph involves a few cliques, then it is not possible for CPM to detect meaningtful social structure.

CPM is conceptually simple, but CPM-like algorithms are seems to be for pattern matching rather than finding overlapping communities as they aim to find specific and restricted/limited structure in a network

B. Fuzzy Detection Algorithm

Fuzzy community detection algorithms evaluate the strength of association between all pairs of nodes and communities. These types of algorithms calculates, a soft membership vector, or belonging factor [Gregory 2010], for each node. There is a need to find out the dimensionality *k* of the membership vector, this is the drawback of such algorithms. The value *k* can be determined from the data and provided as a parameter to the algorithm. These algorithms include proposing a method for combining spectral mapping, fuzzy clustering and optimization of a quality function[12], allowing each vertex of the graph to belong to multiple communities at the same time[13], disjoint community detection[14].

C. Agent and Dynamic based algorithms

Label Propagation Algorithm (LPA) is an agent and dynamic based algorithm proposed by Raghavan et al in 2007. LPA finds communities from a large networks and runs linearly in the number of edges. At first, a unique label is assigned to each node in a network. The vertex replaced the label which is used by same maximum number of neighbors and updates its own label. This process is repeated after every iteration. The neighbor is chosen randomly. After the several iterations performed, all the members of a community is assigned with a label and all the vertices having similar label are added to one separate community. LPA uses only the network structure to guide itself, it does not require optimization details and prior information about the communities in a network. The drawback of LPA is, it can detect only disjoint communities.

Gregory S provides a Cluster-Overlap Newman Girvan Algorithm (CONGA) which is an "overlapping" version of existing disjoint community detection algorithm[15]. CONGA is an extension to the Girvan and Newman's algorithm, which divides a vertex into two

vertices repeatedly during the process of divisive clustering. This algorithm considers both split betweenness and the conventional edge betweenness.

D. Local Expansion and Optimization

Algorithms in this category trust on a local benefit function that characterizes the quality of a densely connected group of nodes. Baumes et al. [2005] uses a two phase method to iteratively improve the candidate cluster of CONGA. The method first smashed the network into a number of disjoint seed communities and keeps adding and removing vertices to and from candidate set respectively. The process continues till the density of a candidate set is not maximixed[16]. It depends on finding a local maximum of density.

Lancichinettia A., Fortunato S, proposed LFM method to find both overlapping communities and the hierarchical structure[17]. In this method, after identifying the highest fitness value the node is distributed to different communities. There can be many visits to one node, this places the node in more than one community. Proper tuning of resolution parameter determines the size of each community. This gives a meaningful hierarchical communities. After comparing this algorithm with that of Baumes[16], the only difference found is that a seed community is only a vertex that is not yet allotted to any community. This algorithm provides a way to yield a large class of algorithms by choosing a different expression for the fitness function or a different optimization procedure of the fitness as a single cluster.

E. Line Graph and Link Partitioning[11]

Not only the nodes but also partitioning of links helps to discover the community structure in LBSNs. A node in the original graph is called overlapping if links connected to it are put in more than one cluster.

In Ahn et al. [2010][2], link partitioning is done via hierarchical clustering of edge similarity. Given a pair of links e_{ik} and e_{jk} incident on a node k, a similarity can be computed via the Jaccard index defined as
$S(e_{ik}, e_{jk}) = |Ni \cap Nj| / |Ni \cup Nj|$, where Ni : is in proximity of node i including i. A link dendogram is form using a single-linkage hierarchical clustering. At some threshold when this dendogram is cut, it produces link communities.

Evans and Lambiotte [2009, 2010] forms a network having a weighted line graph, where nodes are the links of the original graph. Further, the disjoint community detection algorithms can be applied. The node partition of a line graph results into an edge partition of the original graph. CDAEO [Wu et al. 2010] gives a further processing procedure to determine the extent of overlapping. Once the prior partitioning on the line graph is done, for a node i with $|Eicmin|/|Eicmax|$ below some predefined threshold, where $Eicmin(cmax)$ is the set of edges in the community with which i has the minimum (maximum) number of connections, links in $Eicmin$ of the line graph are removed. This essentially reduces node i to a single membership.

Kim and Jeong [2011] provides the line graph by extending the map equation method (also known as Infomap [Rosvall 2008]), which applies Minimum Description Length (MDL) principle to the path of random walk on the line network. Clique graph [Evans 2010] is an extension work of line graph, wherein given order cliques are represented as nodes in a weighted graph. Fraction of cliques gives the membership strength of a node i to community c. Fraction of cliques contains i and assigned to c.

As these algorithms rely on cryptic definition of community, there is no surity that it can perform better than node based overlapping detection [Fortunato 2010].

IV. RECOMMENDATION SYSTEMS OVER LBSNS

A. Location Recommendation

Location recommendations purpose is to recommend a set of locations to a user based on the user's interests. In the context of location recommendation, location prediction is one another concept. Location prediction usually predicts the next location to an existing location that the user has been before and location recommendation aims to recommend a new location to which the user has never visited. From a research point of view a location prediction on LBSNs is about utilizing the social information, while the research in location recommendation on LBSNs mainly focuses on the geo-spatial and temporal influence, and the social network information is usually utilized through traditional collaborative filtering[18],[19], which considers the location as an item such as that on Epinions[20],[21]. For evaluation, performance@N[22] is usually adopted to assess the location recommendation performance. The performance@N is a metric which consists of precision@N and recall@N, where "N" is the top highest ranked point of interests(POIs) as recommendation to a target user. It consider all the locations that should be recommended as uncovered locations, and the set of correctly recommended locations as recovered locations. The precision@N evaluates the ratio of recovered locations to the N recommended locations, and the recall@N calculates the ratio of recovered locations to uncovered locations

Location recommendation in location based social networks is primarily introduced by Ye et al.[23]. In this, the major focus is on efficiency of location recommendation. There are two essential contents : 1) only friendship information was used for collaborative filtering; and 2) instead of calculating the user similarity based on historical behavior (e.g., check-in history), the correlations between geographical distance and user similarity were captured, and leveraged them for user similarity calculation. This work is later extended in[22], which considers both spatial influence and social friendships for location recommendation. Three factors are investigated and combined together to recommend locations. The first factor represents influence from similar users, the second factor indicates influence from friends, and the third factor captures geographical influence, under the hypothesis that people tend to visit close places more often than distant places. A spatial constraint is generated to capture the geographical influence by exploiting the relationship

between a user visiting two places and the geographical distance of these two places. These three factors are then represented by three probabilities, and linearly combined together with corresponding weights. The results demonstrated that the most influential factor actually comes from the similar users, while friendship and geographical distance together have around 30% influence.

B. Friend Recommendation

Friend recommendation is a way to suggest one user to another user having similar properties among themselves. Friend recommendation aims to inspect the similar patterns between a target user and other users, and then recommends users with the most similar patterns to the target user. Similarities between two users are in terms of common interests, travelling trajectories, shopping habits etc. For link prediction between two users in LBSN, supervised learning is used mostly. By analyzing historical data for each pair of users, a features set is first extracted and based on the extracted features a classifier is trained to predict the link between two users. To evaluate proposed approaches the social network information is used as base and ROC curves[24],[25] are usually used as evaluation metrics.

Ongoing work on friend recommendation vary in how to choose the feature space and classifier. To predict the link among two users having co-locations, logistic regression by Jonathan et al.[19] is used. Feature extraction was based on the tuples. Touples consist of place x, actor1, actor2. Touples indicates that actor1 and actor2 have checked-in into place x at least once. Based on the touple, three features are extracted : 1. the total number of check-ins at place x, 2. Numbers of check-ins of actor1 and 3. Numbers of check-ins of actor2. For each co-location inspection among two users Justin et al.[26] extracted 67 features from the data on Locaccino[27]. With respect to user attributes and co-location properties, extracted features include structure properties, location diversity, intensity and duration, mobility regularity, etc. Once, they have completed with features extraction, three classifiers are selected for predicting the link between two users. But Final results shows that AdaBoost has the best classification performance. Their opinion is that only considering the number of co-locations is not enough for friend recommendation and also reported that there is a positive correlation between the location diversity and the number of social ties a user has in the social network. Sadilet et al.[25] takes the same scenario while in addition considered the content features from tweets. Scellato et al.[24] utilizes the place features such as common check-ins, social features like common friends, and global features such as distance between homes, then selected various classifiers in WEKA for link prediction on Gowalla. Their results demonstrated that the purely social based features contribute least to the prediction performance, while space features and global features lead to better performance, indicating the importance of location-based activities on location-based social networking analysis.

V. CONCLUSIONS

In this paper, to understand what the LBSN is, we have discussed the research work on Location based social networks. We have also reviewed an overlapping community detection algorithms based on five different categories. Overlapping communities provides the structure of real world social networks, so to understand the relationship structure among nodes/users it is essential to identify an overlapping communities in a LBSNs. Recommendations plays an important role by giving suggestions to the users. This reduces time to seek new things at a location nearer to user. Recommendations also assist users to make a new friends. So, in this paper recommendations over LBSNs and their algorithms are also discussed. Furthermore, recommendations based on overlapping communities profiling can also be possible.

ACKNOWLEDGMENT

We are glad to express our sentiments of gratitude to all who rendered their valuable guidance to us. We would like to express our appreciation and thanks to Prof. Dr. P. C. Kulkarni, Principal, G. E. S. R. H. Sapat College of Engg., Nashik. We are also thankful to Prof. N. V. Alone, Head of Department, Computer Engg., G. E. S. R. H. Sapat College of Engg., Nashik. We thank the anonymous reviewers for their comments.

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Anticipatory load shedding for line overload alleviation using Teaching learning based optimization (TLBO)

Article *in* International Journal of Electrical Power & Energy Systems 63:862-877 · December 2014 *with* 20 Reads

DOI: 10.1016/j.ijepes.2014.06.066

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Abstract

This paper presents a load shedding algorithm for alleviating line overloads employing Teaching learning based optimization (TLBO). The buses are selected for load shed based on the sensitivity of severity index with respect to load shed. Load shed is based on the next interval predicted load which could cause emergency situation from thermal limit consideration. Line flow constraints have not only considered for next predicted interval but in present base case loading conditions also. Optimum load shed at the selected buses have been obtained for 30-bus, 39-bus standard test systems. Further another technique modified version of bare bones particle swarm optimization known as (BBExp) has been used to validate the algorithm for load shedding.

Static Load Model Determination Using Functional Approximation Based on Gaussian Pulses and its Comparison with ZIP Load Model

Journal of The Institution of Engineers (India): Series B

April 2014, Volume 95, Issue 2, pp 129–133 | Cite as

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Original Contribution
First Online: 04 June 2014

Abstract

This paper describes a static load model based on functional approximation. The functional approximation has been achieved by selecting Gaussian pulses as basis function. Based on this a single layer neural network has been constructed, which can easily trained using δ-rule. A case study has also been reported. The load model as obtained using the proposed neural network has been compared with ZIP load model as obtained by least square estimator.

International Journal of Emerging Technology and Advanced Engineering
Website: www.ijetae.com (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 4, Issue 9, September 2014)

Implementation of Lossless Image Compression Using FPGA

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***Abstract*—This work represents hardware implementation of Lempel Ziv algorithm for lossless image compression. In this paper, hardware-based encoder and decoder have been used. In the proposed system Altera DE-I Board have been used for implementation of an image compression algorithm. The architecture of compression and decompression algorithm design has been created using the hardware description language (VHDL) in Quartus II 9.0. For the processor the supporting software has been written in C is developed. Altera NIOS II 9.0 embedded processor system has been used to perform all hardware interaction tasks necessary on the DE-I board. The custom hardware have been constructed as elements inside the NIOS II system. The experimental results are checked with medical images, stock exchange images, geostationary images and standard images. For the complete analysis, qualitative measures viz. PSNR (peak signal to noise ratio), MSE (Mean square error) and CR (Compression ratio) are calculated. The proposed LZW algorithm on hardware keeps very significant PSNR, lowest MSE.**

***Keywords* – Data compression, Field programmable gate arrays, Image compression, Compression Ratio, MSE**

I. INTRODUCTION

Image compression is an application of data compression that encodes the original image with few bits. The objective of image compression is to reduce the redundancy of the image and to store or transmit data in an efficient form.

Image compression is an important topic in medical, business, industrial, and academic applications. Organization of large data can involve substantial overhead in computational complexity, storage, and data processing. Access speeds for storage mediums are inversely proportional to size. Through data compression, such tasks can be optimized. Now the focus has shifted to reconfigurable hardware to implement the image compression algorithm to increase its efficiency and consequently reduce the cost of this technique. Thus the image compression algorithm is implemented with Field Programmable Gate Array. A substantial research is reported in this area.

A. Lossy and Lossless Compression

By using Lossless data compression scheme the exact original data can be reconstructed from the compressed data. This can be different than lossy data compression, which cannot allow the exact original data to be reconstructed from the compressed data. Lossless data compression is used in many applications where minor changes in reconstructed image are also not tolerable. For example, it is used in the medical image compression, Satellite image compression and images which show statistical data. It is also often used as an element in Lossy image compression technologies.

Composite document images may be composed of text, graphics and photographs and may be stored in gray scale or color format. When such documents are compressed without any information loss, they present a challenge, because the chosen compression method should perform well in regions with text or graphics and in regions with photographic content. Lossless compression algorithms have received increasing attention in the past decade.

An image is a two dimensional signal processed by the human visual system. The signals representing images are usually in analog form. However, for processing, storage and transmission by computer applications, they are converted from analog to digital form. The digital image is represented by the matrix of digits denoting the light intensity of each picture element named pixel. The basic model of lossless image compression is as shown in Fig.1.

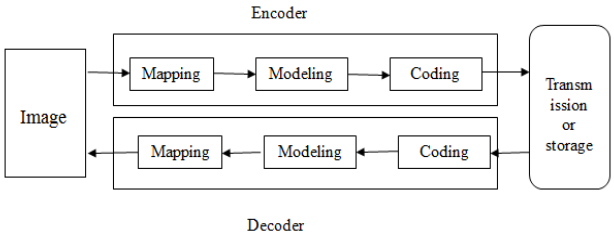

Fig. 1 Basic Model for lossless image compression

The encoder converts the original image file into a compressed data file in sequence of bits from.

A NOVEL APPROACH FOR GENERATING FACE TEMPLATE USING BDA

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ABSTRACT

In identity management system, commonly used biometric recognition system needs attention towards issue of biometric template protection as far as more reliable solution is concerned. In view of this biometric template protection algorithm should satisfy security, discriminability and cancelability. As no single template protection method is capable of satisfying the basic requirements, a novel technique for face template generation and protection is proposed. The novel approach is proposed to provide security and accuracy in new user enrollment as well as authentication process. This novel technique takes advantage of both the hybrid approach and the binary discriminant analysis algorithm. This algorithm is designed on the basis of random projection, binary discriminant analysis and fuzzy commitment scheme. Three publicly available benchmark face databases are used for evaluation. The proposed novel technique enhances the discriminability and recognition accuracy by 80% in terms of matching score of the face images and provides high security.

KEYWORDS

Cancelability, discriminability, revocability and fuzzy commitment

1. INTRODUCTION

Biometric systems are being deployed in various applications including travel and transportation, financial institutions, health care, law enforcement agencies and border crossing, thus enhancing security and discriminability of biometric template. The human face is a feature that can be used by biometric systems. Human face recognition by analyzing the size and position of different facial features is being pushed for use at several airports to increase security. In spite of many advantages, biometric systems like any other security applications are vulnerable to a wide range of attacks. An attack on a biometric system can take place for three main reasons:

A person may wish to disguise his own identity. For instance, an individual/terrorist attempting to enter a country without legal permission may try to modify his biometric trait or conceal it by placing an artificial biometric trait (e.g. a synthetic fingerprint, mask, or contact lens) over his biometric trait. Recently, in January 2009, the Japanese border control fingerprint system was deceived by a woman who used tape-made artificial fingerprints on her true fingerprints.
An attack on a biometric system can occur because an individual wants to attain privileges that another person has. The impostor, in this case, may forge biometric trait of genuine user in order to gain the unauthorized access to systems such as person's bank account or to gain physical access to a restricted region.

ISSN: 2319-5967
ISO 9001:2008 Certified
International Journal of Engineering Science and Innovative Technology (IJESIT)
Volume 3, Issue 4, July 2014

Air Impurity Measurement System

Komal Awasthi, M. D. Kokate

***Abstract*—In the last decade pollution has increased at quite a tremendous rate. People are exposed to air toxins both indoors and outdoors depending on the activities of individuals. It is important to measure the exposure of people to different gas toxins, especially for the wellbeing sensitive or susceptible individuals such as children, aged people and persistently ill people. To evade adverse imbalances in the nature, an air contaminant monitoring system is utmost important. Recent enhancement in technology have made it conceivable to deploy cost-effective wireless sensor nodes for environmental monitoring, indoor climate control, scrutiny, structural monitoring, gathering sensing information in unreceptive locations and ambient air monitoring.**

We propose an online pollutants concentration monitoring system centered on the technologies of sensor networks. We will attempts to develop an effective solution for air pollution monitoring using WSN that is featured by its low-cost, renewable power source, simple to set up, without excessive maintenance etc., and it can achieve assortment of various regional low-cost unmanned continuous monitoring. This system helps us to monitor various air constituents eliminating need to visit distant sites for data collection. The data is collected to a central server and displayed automatically to a formed data base online.

***Keywords*—Sensor, Pollution, Monitor, AQI, WSN**

I. INTRODUCTION

Air pollution is the mixture of elements, particulate matter, or bioticconstituents that cause damage or discomfort to humans and other living organisms, or cause offence to the environment of the atmosphere. The atmosphere is a complex dynamic natural gaseous system that is essential to support life on planet Earth. Stratospheric ozone layer depletion due to air pollution has been recognized as a threat to human health as well as to the Earth's ecosystems. Indoor air pollution and urban air quality are listed as two of the world's worst pollution problems in the 2008 Blacksmith Institute World's Worst Polluted Places report [1].

The air pollution caused by exhaust gases from automobiles has become a critical issue. In some regions, fossil fuel combustion is a problem as well. The dreadful conditions of air are affecting the health of more than 120 million people globally. In India the growing commercial progress and a rapidly mounting population from 300 million people to more than one billion people today is laying a stress on the environment, economical framework, and country's natural resources. India is among the world's worst troupes when it comes to the overall environment management. Environmental deprivation costs India about 80 billion dollar per year that is nearly 6 per cent of gross domestic product, stated on July 17th, 2013 in a report bid by the country's environment ministry. Additional inspections show that India has the world's nastiest air pollution, and has 13 most polluted cities out of the 20 among big world economies. Therefore monitoring Air Quality is essential for State & Central authorities like air pollution regulatory body, MNC's as well as major Public and Private industries to comprehend and take suitable steps to prevent air pollution and consider emission sources, in order to preserve health and help to the round against the greenhouse effect.

The first decade of the 21st century has been labelled by some as the Sensor Decade. Sensors represent part of the interface between the physical world and the world of electrical devices, such as computers. In recent years, sensors have received people's attention as one of the important devices in electronic systems and enormous capability for information processing has been developed within the electronics industry. Of all sensors, gas sensors and light sensors have been most actively studied. Gas sensors are defined as a device that can substitute for human olfaction, and there are many researches being conducted to monitor air pollution by using these gas sensors.These sensors can be deployed in WSN to monitor and collect air environmental parameters [2]. The information is then wirelessly transmitted to data center server where they are integrated and analyzed. In the India, all main cities have networks of observing stations providing real time measurements of the most important pollutants. However, the number of these posts is usually very limited [3].

RESEARCH ARTICLE OPEN ACCESS

Review on Implementation of Digital Music Equalization (Echo & Reverberation) Model Using Simulink and TMS320C6713 DSK

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ABSTRACT
Audio equalization is a technique which consists of boosting or cutting certain frequency components of a given signal for sound quality enhancement. Equalizer is an electronic device or type of software that increases and decreases the power of sound waves. The paper deals with the analysis of audio signals to develop insight on its frequency bands and auditory perception. This paper shows the implementation of the echo and reverberation effects using the TI's C6713 DSK. The effects are simulated using SIMULINK (The Mathworks, Inc.). Those simulation models are used to generate the DSP code for the real-time implementation. Once any of the models is complete and built, it automatically opens Code Composer Studio and compiles the Simulink block sets model. This gives us added advantage of easily writing codes on MATLAB and implementing it on the DSP processors. Echo and Reverberation are two of the simplest applications of Digital Signal Processing. DSP allows artificial echoes and reverberation to be added during mix down to simulate various ideal listening environments.

Keywords:- Code Composer Studio, Echo, Reverberation, Simulink, TI's C6713 DSK.

I. INTRODUCTION

Digital signal processing is the core technology, in rapidly growing application areas, like wireless communications, audio and increased popularity because of the various advantages like reprogramability in the field, cost-effectiveness, speed, energy efficiency etc. The key factor behind this success is the development of low-cost software. The DSP processors have gained software and hardware support [3].

This paper shows how models of Echo and Reverberation can be designed using MATLAB and Simulink and run them in real-time on the Texas Instruments C6000 DSPs family processor C6713.

Simple echo resembles FIR response whereas reverberation like IIR response which implies that echo does not implement feedback structures whereas reverberation requires feedback. Thus the frequency response of the echo system results in a comb filter. Notion behind the implementation of Reverberation is direct sound arrival is followed by reflections from all over room surfaces. Overlapping reflections are observed as reverberation. To implement reverberation, re-circulating delay lines are employed to create an artificial impulse response which gives less computation and storage, but complex to get satisfactory audio quality [1].

Music equalizers are either devices or software which are used for amplifying and/or attenuating predetermined frequency bands. In many areas of sound processing like audio recording studios, or voice/music signals transmission to the audience during a concert, equalizers are assembled for sound control and enhancement [2].

Equalizers can be classified in two main categories:

1. Graphic equalizers
2. Parametric equalizers

Parametric equalizers can adjust parameters of the filters, whereas graphic equalizers can adjust the relative positions of the sliders to build a graphic picture of the desired magnitude response. For graphic equalizers, only boost or cut can be controlled with sliders by keeping the centre or middle frequency unchanged. A graphic equalizer comprises a bunch of band-pass filters each with fixed centre frequency and a predefined bandwidth,

'NAMIC PLANT LAYOUT OPTIMIZATION

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economy, manufacturing plants must be able to operate efficiently and respond quickly to changes in the product mix and demand.
sign has a significant impact on manufacturing efficiency [6]. Initially it was treated as static decision but due to improvement in
ies, it is possible to rearrange the manufacturing facilities in different scenarios [12]. A comprehensive review of the research work for
ayout planning has been undertaken in this paper with a study of different algorithms to optimize it. Hybrid algorithms can also be used to
he plant layout. An attempt has also been done to categorize the literature with possible future research areas.

ISSN: 2277-9655
Scientific Journal Impact Factor: 3.449
(ISRA), Impact Factor: 2.114

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

Design and Analysis of Poppet Engine Valve for Enhanced Mechanical Properties with Varied Geometric Parameters and Materials

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Abstract

Poppet engine valve is a precision engine component which blocks gas flow ports and controls the exchange of gases in internal combustion engines. The functionality of the valve is to seal the working space inside the cylinder against manifolds by continuously opening and closing of valve according to valve timing diagram. Existing difficulties with poppet engine valve being that it tend to fail due to fatigue after executing about 300 million operating cycles. Thus this research paper aims to establish effect of varied materials and Geometric parameters on mechanical properties of poppet engine valve to improve its performance over life and fatigue life using Ansys software.

Keywords: Poppet engine valve, Geometric parameters, Fatigue life, Mechanical properties, Materials.

Introduction

Design of poppet engine valve intrinsically affects the performance of internal combustion engine. With this view this research paper aims to explore the effect of variation of geometric parameters and materials on the mechanical properties of poppet engine valve with mainly to improve its fatigue life.Both exhaust and inlet valve are vital components of an IC engine and which are controlling the flow of fresh air and burnt gases in and out of engine cylinders. In four stroke engine during suction stroke inlet valve remains in open condition which allows the flow of fresh air insidethe combustion chamber and exhaust valve is kept closed. In power stroke both valves remain closed. At the end of power stroke exhaust valve gets opened to remove burnt gases from combustion chamber.

Basic terminology of Poppet engine valve,

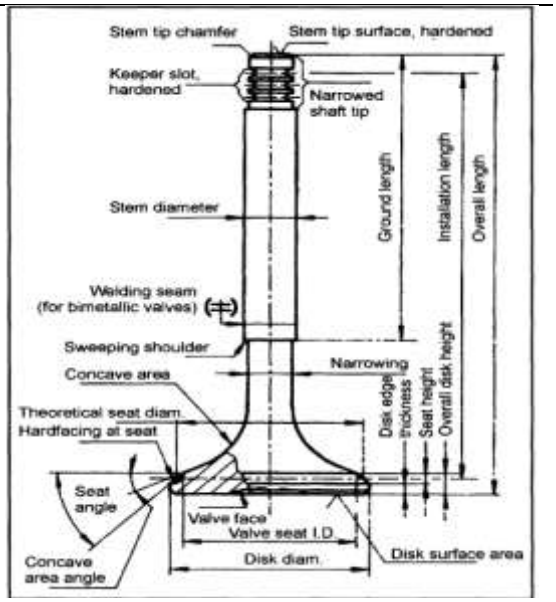

Figure1: Basic terminology of popet valve.[1]

that they bring to the vehicles. A Four Wheel steering (4WS) System named as "Quadra Steering System". Here in this System both front as well as rear wheels can be steered according to space available for turning. If a car could automatically compensate for an under steer/Over steer problem, the driver would enjoy nearly neutral steering under varying operating conditions. Four-wheel steering is a serious effort on the part of automotive design engineers to provide near-neutral steering. For parking and low-speed manoeuvres, the rear Wheel steer in the opposite direction of the front wheels, allowing much sharper turns. At higher speeds, the rest wheels steer in the same direction as the front wheels. The result is more stability and less body lean during fast lane changes and turns because the front wheels don't have to drag non-steering rear wheels onto the path. Quadra steer is system that gives full size vehicles greater ease while driving at low speed, and improves stability, handling and control at higher speed. The scope includes commonly used methods found in practice as well as some theoretical methods found in various literatures from other areas of research. A multi-functional four-wheel steering system could improve directional stability, sharp turning performance, and parking performance of a vehicle. From concept validation and controller design of the active pinion, the models have been proven effective to explain dynamic phenomena related to Quadra Steering systems.

FATIGUE ANALYSIS FOR MONO LEAF SPRING USING FINITE ELEMENT METHODOLOGY FOR EVALUATING THE VARIATIONS IN MATERIAL AND THE GEOMETRY AFFECTING THE PERFORMANCE OVER LIFE

IJAERS/Vol. III/Issue IV/July-Sept., 2014/07-09

Authors:Roshan Megharaj Dabhade, Mr. V.C. Kale, Swapnil S. Kulkarni

ABSTRACT

The failure of leaf spring is attributable to its fatigue loading. Cyclic loads of a constant or varying magnitude and direction act and on the suspension system of the automotive that is sustained and borne by the leaf spring while the vehicle runs along the road. Pot-holes and bumps add the shock loads. This work aims to focus its research over assumption of the constant amplitude loading of the case study of the leaf spring for a passenger car. Finite element modeling would be employed to evaluate the existing design while offering a precursor to the alternatives for design. Feasible design alternatives would be started using F.E. methodology. The benchmark design would be validated in advance for offering credibility to the F.E. model. Further analysis would be done for recommend of the most suited design for leaf spring.

HyperMesh/ Nastran & MSC Fatigue are considered for solving fatigue is considered for solving the FE model & simulating results.

BEHAVIOUR OF CIRCULAR FOOTING RESTING ON SKIRTED LOOSE SAND

Review Article

FATIGUE ANALYSIS FOR MONO LEAF SPRING USING FINITE ELEMENT METHODOLOGY FOR EVALUATING THE VARIATIONS IN MATERIAL AND THE GEOMETRY AFFECTING THE PERFORMANCE OVER LIFE

[1]Roshan Megharaj Dabhade, [2]Mr. V.C. Kale, [3]Swapnil S. Kulkarni

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ABSTRACT:

The failure of leaf spring is attributable to its fatigue loading. Cyclic loads of a constant or varying magnitude and direction act and on the suspension system of the automotive that is sustained and borne by the leaf spring while the vehicle runs along the road. Pot-holes and bumps add the shock loads. This work aims to focus its research over assumption of the constant amplitude loading of the case study of the leaf spring for a passenger car. Finite element modeling would be employed to evaluate the existing design while offering a precursor to the alternatives for design. Feasible design alternatives would be started using F.E. methodology. The benchmark design would be validated in advance for offering credibility to the F.E. model. Further analysis would be done for recommend of the most suited design for leaf spring.

HyperMesh/ Nastran & MSC Fatigue are considered for solving fatigue is considered for solving the FE model & simulating results.

INTRODUCTION:

The leaf spring is widely used in automobiles and one of the components of suspension system. It needs to have excellent fatigue life. As a general rule, the leaf spring must be regarded as a safety component as failure could lead to severe accidents. The purpose of this paper is to predict the fatigue life of semi-elliptical steel leaf spring along with analytical stress and deflection calculations. The suspension leaf spring is one of the potential items for weight reduction in automobile as it accounts for ten to twenty percent of the unstrung weight. This helps in achieving the vehicle with improved riding qualities. It is well known that springs, are designed to absorb and store energy and then release it. Hence, the strain energy of the material becomes a major factor in designing the springs. We can find leaf springs in almost all four wheelers. A leaf spring protects a four wheeler from the unevenness of the road. Thus a leaf spring necessarily serves the following purposes:

- Increase service life of a four wheeler
- Increase user comfort

Nowadays, CAD andFEA tools are used extensively in the industry for the design of leaf spring.The vehicles need a good suspension system that can deliver a good ride and handling. At the same time, the component must have an excellent fatigue life. Fatigue is one of the major issues in automotive components. It must withstand numerous numbers of cycles before it can fail, or never fail at all during the service period. The suspension leaf spring is one of the potential items for weight reduction in automobile as it accounts for ten to twenty percent of the unstrung weight. This helps in achieving the vehicle with improved riding qualities. It is well known that springs, are designed to absorb and store energy and then release it. Hence, the strain energy of the material becomes a major factor in designing the springs. The introductionof composite materials was made it possible to reduce the weight of the leaf spring without any reduction on load carrying capacity and stiffness.

This present work describes static and fatigue analysis of a modified steel leaf spring of a light commercial vehicle (LCV). The dimensions of a modified leaf spring of a LCV are taken and are verified by design calculations. Leaf springs are commonly used in the vehicle suspension system and are subjected to millions of varying stress cycles leading to fatigue failure

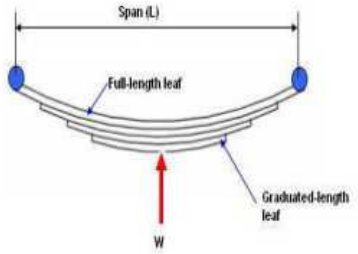

Fig. Showing a typical leaf spring arrangement

LITERATURE REVIEW:

1. Subrata Banerjee[a], Dinkar Prasad[b], Jayanta Pal[b], this paper describes the design and implementation of a single axis DC attraction type suspension system, where a platform (vehicle structure) of around 14 kg mass is made to remain suspended at the desired operating gap under a ferromagnetic guide-way. The prototype has four electromagnetic actuators of attraction type and four inductive gap sensors, all located at the corners of the platform.

2. A. González Rodríguez[a], J.M. Chacón[b], A. Donoso[c], A.G. González Rodríguez[d] in this paper an adjustable-stiffness actuator composed of two antagonistic non-linear springs is proposed. The elastic device consists of two pairs of leaf springs working in bending conditions under large displacements. Owing to this geometric non-linearity, the global stiffness of the actuator can be adjusted by modifying the shape of the leaf springs. A mathematical model has been developed in order to predict the mechanical behavior of our proposal.

3. M.A. OsipenkoYu.I. Nyashin, R.N. Rudakov, in this paper the weak joint bending (unbonded contact without friction) of the stack of slim non-uniform curved beams (leaves) with rectangular cross-sections is considered. Each leaf has one end clamped and the other free. The leaves have the same widths and different lengths (the lengths decrease upwards). The given loading is pplied (upwards) to the lower leaf. This structure is the model of a leaf spring. The basic problem is to find the shapes of the leaves under bending.

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Investigations on a new internally-heated tubular packed-bed methanol–steam reformer

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ARTICLE INFO

Article history:
Received 8 January 2015
Received in revised form
22 February 2015
Accepted 24 February 2015
Available online 19 March 2015

Keywords:
Hydrogen production
Internal heating
Methanol reforming
Packed-bed type reformer

ABSTRACT

Small-scale reformers for hydrogen production through steam reforming of methanol can provide an alternative solution to the demand of continuous supply of hydrogen gas for the operation of Proton Exchange Membrane Fuel Cells (PEMFCs). A packed-bed type reformer is one of the potential designs for such purpose. An externally heated reformer has issues of adverse lower temperature in the core of the reformer and significant heat loss to the environment thus impacting its performance. Experimental and numerical studies on a new concept of internally heated tubular packed-bed methanol–steam reformer have been reported in this paper with improved performance in terms of higher methanol conversion and reduced heat losses to surroundings. $CuO/ZnO/Al_2O_3$ is used as the catalyst for the methanol–steam reforming reaction and a rod-type electric heater at the center of the reactor is used for supplying necessary heat for endothermic steam reforming reaction. The vaporizer and the reformer unit with a constant volume catalyst bed are integrated in the annular section of a tubular reformer unit. The performance of the reformer was investigated at various operating conditions like feed rate of water-methanol mixture, mass of the catalyst and reforming temperature. The experimental and numerical results show that the methanol conversion and CO concentration increase with internal heating for a wide range of operating conditions. The developed reformer unit generates 50–80 W (based on lower heating value) of hydrogen gas for applications in PEMFCs. For optimized design and operating conditions, the reformer unit produced 298 sccm reformed gas containing 70% H_2, 27% CO_2 and 3% CO at 200–240 °C which can produce a power output of 25–32 W assuming 60% fuel cell efficiency and 80% of hydrogen utilization in a PEMFC.

Introduction

A significant attention is currently being paid towards the development of newer technologies for renewable energies and for increasing the efficiency of overall energy usage. Fuel cell can be one such device for mobile and stationary applications due to their high theoretical efficiency and only steam as a by-product in case of fuel cells operating with hydrogen as fuel. Hydrogen based Proton Exchange Membrane Fuel cells

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http://dx.doi.org/10.1016/j.ijhydene.2015.02.114

Chemical Engineering Journal 277 (2015) 168–175

Contents lists available at ScienceDirect

Chemical Engineering Journal

journal homepage: www.elsevier.com/locate/cej

Solution Precursor Plasma Spray (SPPS) technique of catalyst coating for hydrogen production in a single channel with cavities plate type methanol based microreformer

Prashant Nehe [a,*], G. Sivakumar [b], Sudarshan Kumar [a]

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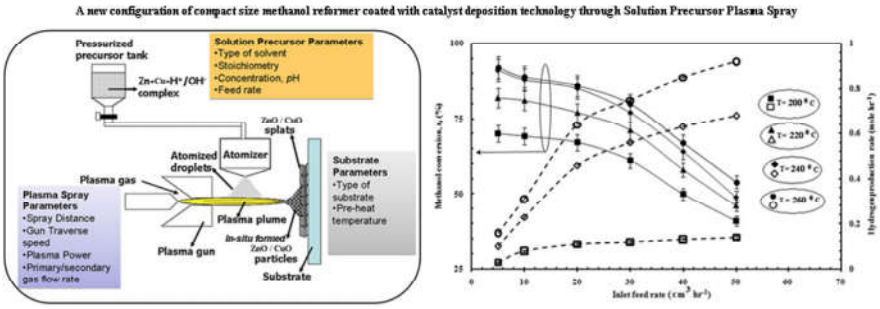
[b] International Advanced Research Centre for Powder Metallurgy and New Materials, Balapur PO, Hyderabad 500 005, AP, India

HIGHLIGHTS

- New concept of single channel with cavities plate type wall-coated microreformer.
- A promising method for catalyst deposition, Solution Precursor Plasma Spray (SPPS).
- The proposed design appears simple and suitable from fabrication viewpoint.
- The developed unit is able to generate hydrogen to produce a power output of 27 W.

GRAPHICAL ABSTRACT



ARTICLE INFO

Article history:
Received 6 January 2015
Received in revised form 18 April 2015
Accepted 24 April 2015
Available online 30 April 2015

Keywords:
Hydrogen production
Methanol reformation
Plate type microreformer
Solution Precursor Plasma Spray (SPPS)

ABSTRACT

This paper proposes the development of a new and innovative configuration based on single channel with cavities plate type wall-coated microreformer (dimensions: 90 mm × 50 mm × 30 mm). Microchannels are patterned on the SS plate and fabricated to make a vaporizer unit. The reformer is in the form of two SS plates placed one above the other. The water–methanol mixture enters from the top cover plate and gets vaporised in the channels cut on the vaporiser plate. The mixture then flows through the reformer plates on which the cavities are engraved to enhance mixing of water–methanol vapors. The catalyst is deposited on the fins of the reformer plates using a new promising technique for depositing nanostructured films namely, Solution Precursor Plasma Spray (SPPS) technique. The performance of the microreformer unit is investigated at various operating conditions of inlet feed flow rate, molar ratio of water to methanol and reforming temperature. The developed microreformer unit is able to generate enough hydrogen to produce a power output of 27 W. The proposed design can also overcome the issue of shape and size of manifolds and ensure equi-flow distribution for multiple microchannel type microreformer designs and appears simple and suitable from fabrication viewpoint.

1. Introduction

The improvement in the performance of many portable electronic devices in terms of miniaturization has become significant during the last decade. Therefore, nowadays researchers have been focussing on the development of portable power sources capable of delivering power in 0.1–100 W range for potential usage in combat situations as well as small electronic devices. Recent growth toward the development of fuel cells proposes an alternative power source due to their high-energy efficiency and eco-friendly nature [1]. Fuel cells need a continuous supply of hydrogen gas for

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http://dx.doi.org/10.1016/j.cej.2015.04.121
1385-8947/

Technique for Detection of Cooperative Black Hole Attack using True-link in Mobile Ad-hoc Networks

Gayatri Wahane[1], Ashok M. Kanthe[2], Dina Simunic[3]
[1, 2] Sinhgad Institute of Technology, Lonavala, Pune, India
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Abstract - Mobile Ad-hoc Network (MANET) is a collection of communication devices or nodes that wish to communicate without any fixed infrastructure and pre-determined organization of available links. Security is a major challenge for these networks owing to their features of open medium, dynamically changing topologies. A black hole is a malicious node that falsely replies for any route requests without having active route to specified destination and drops all the receiving packets. Sometimes the black hole nodes cooperate with each other with the aim of dropping packets. These are known as cooperative black hole attack. This proposed work suggests the modification of Ad-hoc on Demand Distance Vector (AODV) routing protocol. We used a technique for detecting as well as defending against a cooperative black hole attack using True-link concept. True-link is a timing based countermeasure to the cooperative black hole attack. This paper shows the performance of MANET decreases for end-to-end delay, normalized routing overhead and increases throughput and packet delivery ratio.

I. INTRODUCTION

A Mobile Ad hoc network (MANET) is a self - configuring network [1, 2] that does not require any fixed infrastructure, which minimizes their cost as well as deployment time. As each node in this network is free to move that makes the network to change its topology continuously. These infrastructure-less mobile nodes in ad-hoc networks dynamically create routes among themselves and form own wireless network on the fly. Because of the dynamic nature, these networks are more vulnerable to attacks so security is an important as well as serious issue in MANET. One of the most critical problems in MANETs is the security vulnerabilities of the routing protocols. A set of nodes in a MANET may be compromised in such a way that it may not be possible to detect their malicious behavior easily. Such nodes can generate new routing messages to advertise non-existent links, provide incorrect link state information, and flood other nodes with routing traffic.

One of the most widely used routing protocol in MANETs is the Ad hoc on-demand distance vector (AODV) routing protocol. AODV is vulnerable [2] to the well known black hole attack. Most authors have proposed a solution to identify single black hole attack. However in their proposed solution many of them found multiple black hole nodes. Some author have suggested solution for detecting cooperative black hole attack but due to multipath routing it require more end to end delay and more routing overhead. The proposed technique works with modified AODV protocol and routing information table for searching trustful node with the help of tru-link.

This paper is organized as follows. In Section II related work for detecting cooperative black hole attack has been discussed. Section III provides AODV and its work in which discuss overview of AODV protocol with the description of black hole attack characteristics. Section IV describes the proposed solution for detecting cooperative Black hole attacks in mobile ad hoc networks and shows the working of the algorithm with the help of an example. Section V shows the simulation results of the proposed work. We conclude plan for future work in section VI.

II. RELATED WORK

In this section we will discuss research work has been done by various authors.

J. Sen, S. Koilakonda and A. Ukil [3] proposed a mechanism for defending against a cooperative black hole attack. The mechanism modifies the AODV protocol by introducing two concepts, (I) data routing information (DRI) table and (II) cross checking. In the DRI scheme, two bits of additional information are sent by the nodes which respond to the RREQ message of a source node during route discovery process. Each node maintains an additional data routing information (DRI) table. In the DRI table, the bit 1 stands for "true" and the bit 0 stands for "false". The first bit "From" stands for the information on routing data packet from the node (in the Node filed), while the second bit "Through" stands for information on routing data packet through the node. The process of cross checking the intermediate nodes is a one-time procedure which should be affordable for security. The cost of crosschecking the nodes can be minimized by allowing the nodes to share the DRI table of their trusted nodes with each other.

J. Eriksson, S. V. Krishnamurthy, M. Faloutsos [4] proposed an algorithm to detect a wormhole attack by

Proc. of the Intl. Conf. on Advances In Engineering And Technology - ICAET-2014

ISBN: 978-1-63248-028-6 doi: 10.15224/ 978-1-63248-028-6-02-125

Technique for Detection of Cooperative Black Hole Attack in Mobile Ad-hoc Networks-Survey

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[1, 2] Sinhgad Institute of Technology, Lonavala, Pune, India
[2, 3] Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia

***Abstract*— Mobile Ad Hoc Network (MANET) is a collection of communication devices or nodes that wish to communicate without any fixed infrastructure and pre-determined organization of available links. Security is a major challenge for these networks owing to their features of open medium, dynamically changing topologies. The black hole attack is a well known security threat in MANET. However, it spuriously replies for any route request without having any active route to the specified destination. Sometimes the black hole nodes cooperate with each other with the aim of dropping packets. These are known as cooperative black hole attack. In this paper, we have reviewed different techniques for detection against Cooperative Black hole attacks in Mobile Ad-Hoc networks and thoroughly compare these schemes to find out their various advantages and disadvantages.**

Keywords— AODV, Black hole attack, MANET, routing protocols, Security.

I. INTRODUCTION

A Mobile Ad hoc network (MANET) is a self –configuring network [1,2] that does not require any fixed infrastructure, which minimizes their cost as well as deployment time. As each node in this network is free to move that makes the network to change its' topology continuously. These infrastructure-less mobile nodes in ad hoc networks dynamically create routes among themselves to and form own wireless network on the fly. Because of the dynamic nature, these networks are more vulnerable to attacks so security is an important as well as serious issue in MANET. One of the most critical problems in MANETs is the security vulnerabilities of the routing protocols. A set of nodes in a MANET may be compromised in such a way that it may not be possible to detect their malicious behaviour easily. Such nodes can generate new routing messages to advertise non-existent links, provide incorrect link state information, and flood other nodes with routing traffic. One of the most widely used routing protocols in MANETs is the Ad hoc on-demand distance vector (AODV) routing protocol. We use AODV protocol because it is widely used and vulnerable to these attacks. Security in Mobile Ad-hoc Network is the most important for the network. Therefore, efficient detection techniques must be deployed to facilitate the identification and isolation of attacks. In this paper we have surveyed various detection techniques in MANET against Cooperative black hole attack. According to how the information is acquired, the routing protocols can be classified into proactive, reactive and hybrid routing.

The proactive routing protocols are table-driven. In this routing protocol, mobile nodes periodically broadcast their routing information to the neighbour's nodes. Each node needs to maintain their routing table of not only adjacent nodes and reachable nodes but also the number of hops. Therefore, the disadvantage is the rise of overhead due to increase in network size, a significant big communication overhead within a larger network topology. However, the major advantage is of knowing the network status immediately if any malicious attacker joins. The most familiar types of the proactive routing protocol are: - Destination sequenced distance vector (DSDV) routing protocol and Optimized link state routing (OLSR) protocol.

The reactive routing protocols (e.g. AODV) create and maintain routes only if these are needed, on demand. They usually use distance-vector routing algorithms that keep only information about next hops to adjacent neighbours and costs for paths to all known destinations. In compare to the proactive routing, the reactive routing is simply starts when nodes desire to transmit data packets. The disadvantage of reactive routing protocol method is loss of some packet. The most familiar on-demand routing protocols are: - Ad hoc on-demand distance vector (AODV) and Dynamic source routing (DSR) protocol.

The hybrid routing protocol as the name suggests have the combine advantages of proactive routing and reactive routing to overcome the defects generated from both the protocol when used separately. Design of hybrid routing protocols are mostly as hierarchical or layered network framework. In this system initially, proactive routing is employed to collect unfamiliar routing information, and then at later stage reactive routing is used to maintain the routing information when network topology changes. The familiar hybrid routing protocols are: - Zone routing protocol (ZRP) and Temporally-ordered routing algorithm (TORA).

This paper is organized as follows. In Section II related work for detecting cooperative black hole attack has been discussed. Section III provides AODV and its work in which discuss overview of AODV protocol with the description of black hole attack characteristics. Section IV presents a

Statistical Evaluation of Restriking Voltage Characteristics Using Monte Carlo Simulation

The IUP Journal of Electrical & Electronics Engineering, Vol. VI, No. 3, July 2013, pp. 7-16

Posted: 31 Oct 2013

Atul Koshti (https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=1262508)
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IPS Academy, Indore

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IPS Academy, Indore

Date Written: October 31, 2013

Abstract

The paper presents a statistical methodology for evaluating the severity of Restriking Voltage (RV) and Rate of Rise of Restriking Voltage (RRRV). The methodology is based on Monte Carlo Simulation (MCS). The peak value of RV and RRRV depends on various uncertain variables, e.g., power factor, current asymmetry, armature reaction and circuit conditions. The uncertainty for these conditions of severity has been accounted for along with uncertainties in inductance and capacitance. Results have been obtained taking a sample case study.

Keywords: Restriking Voltage (RV), Rate of Rise of Restriking Voltage (RRRV), Monte Carlo Simulation (MCS), Armature reaction, Circuit conditions

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A. Koshti

L. D. Arya

S. C. Choube

Abstract

A procedure for selection of buses have been developed in this paper for sub

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SP Agnihotri

Laxman Madhavrao Waghmare

Abstract

In this paper, hybrid technique proposed for tuning Time Delays System with

International Journal of Applied Operational Research

Volume 1, Issue 3 (12-2011)

2011, 1(3): 1-11

Back to browse issues page

Applying Genetic Algorithm to Dynamic Layout Problem

K. V. Chandratre , K. N. Nandurkar

Abstract: (5928 Views)

In today's economy, manufacturing plants must be able to operate efficiently and respond quickly to changes in the product mix and demand.[1] Layout design has a significant impact on manufacturing efficiency. Initially, it was treated as a static decision but due to improvements in technology, it is possible to rearrange the manufacturing facilities in different scenarios. The Plant layout affects on the total cost in the industry. Nowadays Dynamic layout is becoming an important issue. Dynamic layout is the different layout at different time periods to satisfy the needs of industry due to change in product, or reduced product life cycle, or change in demand. Layout problem is a quadratic assignment problem, and for larger size problems it becomes impossible to be solved. So, for solving this problem Meta heuristic algorithms are used. In this paper, Dynamic layout problem is solved using Genetic algorithm. This Dynamic Problem is restricted up to two-time periods only. Keywords: Dynamic Layout, Heuristics, Genetic Algorithm.

PMCID: 18599919

Type of Study: Research | **Subject:** General

Received: 2011/12/6

International Journal of Hydrogen Energy
Volume 38, Issue 30, 8 October 2013, Pages 13216-13229

Methanol reformation for hydrogen production from a single channel with cavities

Prashant Nehe, Sudarshan Kumar
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https://doi.org/10.1016/j.ijhydene.2013.07.119

Highlights

- We propose methanol reformation using a novel single channel with cavities.
- Detailed numerical studies are carried out to understand steam reforming of methanol.
- Higher methanol conversion is obtained within a shorter channel length.
- Improvement in operating range for higher feed rates and gas phase mixing.