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Criteria 3- Research, Innovations and Extension

3.3- Research Publications and Awards

3.3.1 Number of research papers published per teacher in the Journals notified on UGC care list during the last five years

Pradeep Patil

Principal, Adsul's Technical Campus, Ahmednagar Maharashtra, India

Image Processing
Artificial Intelligence
Power Electronics

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Citations	1920	749
h-index	17	11
i10-index	31	13

1 article not available

1 article available

Based on funding mandates

TITLE	CITED BY	YEAR
Image registration techniques: an overview MV Wyawahare, PM Patil, HK Abhyankar International Journal of Signal Processing, Image Processing and Pattern …	357	2009
Offline recognition of Devanagari script: A survey R Jayadevan, SR Kolhe, PM Patil, U Pal IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and …	212	2011
A review of automatic fabric defect detection techniques PM Mahajan, SR Kolhe, PM Patil Advances in Computational Research 1 (2), 18-29	132	2009
Rotation, scale and translation invariant handwritten Devanagari numeral character recognition using general fuzzy neural network PM Patil, TR Sontakke Pattern Recognition 40 (7), 2110-2117	122	2007
Automatic processing of handwritten bank cheque images: a survey R Jayadevan, SR Kolhe, PM Patil, U Pal International Journal on Document Analysis and Recognition (IJDAR) 15 (4 …	82	2012
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Rotation and intensity invariant shoeprint matching using Gabor transform with application to forensic science PM Patil, JV Kulkarni Pattern Recognition 42 (7), 1308-1317	59	2009
Robust and secured image-adaptive data hiding SN Mali, PM Patil, RM Jalnekar Digital Signal Processing 22 (2), 314-323	55	2012
Blood glucose measurement using bioimpedance technique DK Kamat, D Bagul, PM Patil Advances in Electronics 2014	48	2014
Dynamic time warping based static hand printed signature verification SR Kolhe, PM Patil Journal of Pattern Recognition Research 1, 52-65		

Dineshkumar Uttamrao Adokar

Associate Professor in E & TC Dept ,ATC Chas

Micropocessor
Microcontroller
VLSI

	All	Since 2018
Citations	7	2
h-index	2	1
i10-index	0	0

TITLE	CITED BY	YEAR
Design & implementation of remotely managed embedded digital signage using raspberry pi for railway system D Nandedkar, D Adokar International Journal of Electronics, Communication and Soft Computing …	5	2015
“Generation of Electricity by OSMOSIS”. AG Dineshkumar U. Adokar, Dhanesh S.Patil “International Journal of Emerging Technology and Advanced Engineering …	2 *	2012
Image Compression Using Vector Quantization DAAG D.U.Adokar Eleventh Interational Conference on Advances in Computing, Control,and …		2020
Efficient Compression of Video using Vector Quantization DAAG Dineshkumar U.Adokar #1 ACT2020 7 (ISSUE 9), 91-96		2020
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AN EFFICIENT ALGORITHM FOR AUDIO/ IMAGE/ VIDEO COMPRESSION DAAG D.U.ADOKAR		2020
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Realization of Distributed Arithmetic based reconfigurable digital FIR filter MK D U Adokar 46th Mid-Term Symposium on Impact of Technology on Skill Development, 8		2015
ANALYSIS OF POWER SYSTEM USING SUPERCONDUCTING FAULT CURRENT LIMITERS (SFCL) IN SINGLE PHASE TRANSMISSION LINE” DUP Mahajan ICGTETM		2015
“Wireless Evolution with 4G Technology” PJR Dineshkumar U. Adokar “International Journal of Advanced Research in Electrical, Electronics And …		
“Can Communication Based Accident Emergency Supervisory System”		

TITLE	CITED BY	YEAR
MPRR Prof. D. U. Adokar International Conference and Workshop on Emerging Trends in Technology 2013 …		
“Can Communication Based Accident Emergency Supervisory System” PJR Dineshkumar U. Adokar “International Journal of Advanced Research in Electrical, Electronics And …		2013
“Short Term Load Prediction Considering the Effect of Temperature as a Weather Parameter Using A Combinatorial Model Of Wavelet And Recurrent Neural Network” DUA Anand B. Deshmukh “International Journal of Science, Spirituality, Business and Technology …		2012
“A case study on comparison of LVDS & HVDS in Agriculture Sector” SMS D.U.Adokar “International Journal of Emerging Technologies And Applications In …		2010
“Energy Efficient Motor” PDUA Prof. V.S. Pawar International Conference on “Science, Engineering and Spirituality”		2010
Changing Market Environment in Gujarat Agriculture for Sustainable Development A Anita		2008
An Efficient Compression of Video using Vector Quantization DAAG D.U.ADOKAR Strad Research, an UGC-CARE and Web Science Journal		

Evolutionary Intelligence (2018) 11:73–87
https://doi.org/10.1007/s12065-018-0160-6

SPECIAL ISSUE

Crow search algorithm with discrete wavelet transform to aid Mumford Shah inpainting model

Balasaheb H. Patil[1] · **P. M. Patil**[2]

Received: 25 April 2018 / Revised: 6 July 2018 / Accepted: 12 July 2018 / Published online: 10 August 2018

Abstract
Inpainting plays a significant role in solving a variety of image processing issues that comprises zooming, removal of impulse noise, removal of scratches etc. These specified significances are all associated to inpainting in image domain. Even though more advanced inpainting models have been introduced, it suffers from problem of having low quality. Hence this paper intends to develop a novel inpainting model on the basis of MS modeling. Initially, the pre-processing of the image is done by Discrete Waveley Transform (DWT) and further, its given to MS inpainting model. Moreover, the filter coefficient in DWT algorithm is optimized by Crow Search Algorithm (CSA), that is being considered as the main objective. As the resultant image involves more scratches, this proposed model necessitates smoothening image model using Reproducing Kernel Hilbert Smoothing (RKHS). With all these techniques, the proposed inpainting model is termed as Crow Search Optimized DWT Kernel-based MS (CODWTK-MS). During the performance analysis, the proposed method is compared over various traditional inpainting models like MS, DWT-based MS, DWT Kernel-based MS, and Dragonfly Optimized DWT Kernel-based MS (DODWTK-MS) in terms of several measures and proves the superiority of proposed inpainting model.

Keywords Image inpainting · Mumford Shah model · Discrete wavelet transform · Filter coefficient · Crow search optimization

1 Introduction

Inpainting addresses the issues in filling the missing image parts, and it is designed owing to certain factors like, from eliminating scrapes in photos, reinstating prehistoric sketches, and filling in the lost pixels of images conveyed by means of noisy channels [1–3].In the imaging field, the name "inpainting" refers to the recuperating of images with loosed or missing data [4]. It remains as a significant work in a variety of image reinstatement issues together with impulse noise removal, zooming, and scratch removal, and so on. In the image domain, these stated significances are all associated with the inpainting technique [5]. On the other hand, in the actual transmission and storage of the digital pixels, the DWT is an extremely admired technique for the coding of sparse [6]. The region with lost parts is said to be the area of inpainting [7], and it must be filled in such a manner that both texture information and edges (structure) [8] of the image stay consistent.

Digital inpainting could be adopted in numerous applications, like, removal of objects, image restoration, or to raise the resolution of the image. The research is concentrating on finishing areas with missing details which have been missing or removed deliberately. Performers counterfeited the conception of inpainting technique by means of their individual awareness and capabilities for renovating or fixing reimbursements in monuments or paintings. Nowadays, the capability of numerous digitalizing kinds of visual information generates the requirement for methods that further refurbish digital malfunctions, as performed with paintings [9]. On considering several video, communication or audio applications, it has been required to recuperate a signal ruined by narrowband intervention, like electric hum [10]. These kinds of interventions can be o
symbolized in the domain of frequency

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A COMPREHENSIVE REVIEW ON STATE-OF-THE-ART IMAGE INPAINTING TECHNIQUES

BALASAHEB H. PATIL *AND P.M. PATIL†

Abstract. Image inpainting is the process of restoring missing pixels in digital images in a plausible way. A study on image inpainting technique has acquired a significant consideration in various regions, i.e. restoring the damaged and old documents, elimination of unwanted objects, cinematography, retouch applications, etc. Even though, limitations exist in the recovery process due to the establishment of certain artifacts in the restored image areas. To rectify these issues, more and more techniques have been established by different authors. This survey makes a critical analysis of diverse techniques regarding various image inpainting schemes. This paper goes under (i) Analyzing various image inpainting techniques that are contributed in different papers; (ii) Makes the comprehensive study regarding the performance measures and the corresponding maximum achievements in each contribution; (iii) Analytical review concerning the chronological review and various tools exploited in each of the reviewed works. Finally, the survey extends with the determination of various research issues and gaps that might be useful for the researchers to promote improved future works on image inpainting schemes.

Key words: Image inpainting; Region Filling; Performance Measures; Chronological review; Tools; Research Gaps.

AMS subject classifications. 94A08

1. Introduction.

"Inpainting refers to the art of restoring lost parts of the image and reconstructing them based on the background information, i.e. image inpainting is the process of reconstructing lost or deteriorated parts of images using information from surrounding areas" [66, 67, 68, 91]. It comprised of tasks like object disocclusion, filling holes and image restoration, etc. At first, the theory of digital inpainting was established by Bertalmio et al [90]. According to this technique, higher-order PDE was exploited for restoring purposes. Here, the areas to be filled are based on the assistance of gradient direction. The two most important classification of inpainting consists of textural and structural inpainting [69, 70, 71].

The regions outside the area to be inpainted are modelled by the texture inpainting approaches [72]. This was exploited to the textures with randomized 2D models. Consequently, the structural inpainting schemes attempt to rebuild the structures such as object and line contours. Usually, structural inpainting is deployed when the portion to be inpainted is small [73, 74, 92, 93]. It concerns on linear structures that could be considered as 1D pattern such as object and line contours. Moreover, image compression could be done effectively by neglecting certain portions at the encoder side and inpainting those portions by a similar technique at the decoder side [75, 94].

Also, morphological processes namely corrosion could be exploited for inpainting the smaller portions of missing values. In fine painting museums, inpainting of corrupted painting were usually done by skilled artists and generally, it is found to be much time-consuming. There were numerous techniques implemented for image inpainting [76, 77, 78]. "Microsoft Kinect sensor" is an inexpensive device, which has influenced a lot of analysts to handle with deep data. However, issues exist with this device in terms of its resolution and accuracy [79, 80, 81].

The main contribution of this paper is depicted below:

1. This work conducts a survey of diverse techniques related to various image inpainting schemes that are contributed to each paper.

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Phased-array antennas using novel PSoC-controlled phase shifters for wireless applications

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Aparna B. Barbadekar and Pradeep M. Patil

Abstract

The paper proposes a system consisting of novel programmable system on chip (PSoC)-controlled phase shifters which in turn guides the beam of an antenna array attached to it. Four antennae forming an array receive individual inputs from the programmable phase shifters (IC 2484). The input to the PSoC-based phase shifter is provided from an optimized 1:4 Wilkinson power divider. The antenna consists of an inverted L-shaped dipole on the front and two mirrored inverted L-shaped dipoles mounted on a rectangular conductive structure on the back which resonates in the ISM/Wi-Fi band (2.40–2.48 GHz). The power divider is designed to provide the feed to the phase shifter using a beamforming network while ensuring good isolation among the ports. The power divider has measured S_{11}, S_{21}, S_{31}, S_{41}, and S_{51} to be −14, −6.25, −6.31, −6.28, and −6.31 dB, respectively at a frequency of 2.45 GHz. The ingenious controller is designed in-house using a PSoC microcontroller to regulate the control voltage of individual phase shifter IC and generate progressive phase shifts. To validate the calibration of the in-house designed control circuit, the phased array is simulated using s_p^2 touchstone file of IC 2484. This designed control circuit exhibits low insertion loss close to −8.5 dB, voltage standing wave ratio of 1.58:1, and reflection coefficient (S_{11}) is −14.36 dB at 2.4

Original Paper | Published: 15 December 2021

Fabric Defect Detection Using Competitive Cat Swarm Optimizer Based RideNN and Deep Neuro Fuzzy Network

Maheshwari S. Biradar, Basavaprabhu G. Sheeparamatti & Pradeep Mitharam Patil

Sensing and Imaging **23**, Article number: 3 (2022)

Abstract

The rising rates of costs in labor and growth of computerization in fabric industries made defect detection in fabric a promising domain. For a huge time, manual discovery is extensively utilized in textile industries by trained staff that results in high cost. Meanwhile, the strict quality assessment is done by modern textile industries, which made automatic fabric defect detection a reliable choice. Since defect detection is an important and challenging aspect of modern industrial manufacturing, it is necessary to determine the quality and acceptability of garments and to reduce the cost and time waste caused by defects. Different methods are in practice for effective detection of fabric defects, however, they limit due to many reasons. Thus we proposed a new method

A Study on Ad Hoc Networks for Efficient Multipath Routing Survey

Hemant Jadhav, Asst. Professor , VACOE, Ahmednagar, India, hemantvacoe@gmail.com

Abstract: Mobile ad hoc networks (MANETs) pose particular challenges in terms of Quality of Service (QoS) and performance. This is due to the effect of numerous parameters such as; bandwidth and power constrains, delays, security issues, etc. On the their hand, the degree of freedom enables the wireless mobile nodes to enter and leave the network dynamically. The latter offers redundant paths and dynamic coverage. Particular attention is given to the multipath transmission capability as well as load balancing to have efficient routing possible for heavy multimedia traffics. Multi-path routing represents a promising routing method for wireless mobile ad hoc networks. Multi-path routing achieves load balancing and is more resilient to route failures. Recently, numerous multi-path routing protocols have been proposed for wireless mobile ad hoc networks.

Keywords **— AD HOC Networks, Multipath Routing,MANETs, Service, performance, load balancing, wireless, protocols, functionality, etc**

I. INTRODUCTION

An ad-hoc network is a local area network (LAN) that is built spontaneously as devices connect. Instead of relying on a base station to coordinate the flow of messages to each node in the network, the individual network nodes forward packets to and from each other. In Latin, *ad hoc* literally means "for this," meaning "for this special purpose" and also, by extension, improvised or impromptu.Wireless networks are an emerging new technology that will allow users to access information and services electronically, regardless of their geographic position. Wireless networks can be classified in two types: - infrastructure network and infrastructure less (ad hoc) networks [1]. Infrastructure network consists of a network with fixed and wired gateways. A mobile host communicates with a bridge in the network (called base station) within its communication radius. The mobile unit can move geographically while it is communicating. When it goes out of range of one base station, it connects with new base station and starts communicating through it [2]. This is called handoff. In this approach the base stations are fixed.This study discusses proposed routing protocols for these ad hoc networks. These routing protocols can be divided into two categories: table-driven and on-demand routing based on when and how the routes are discovered. In table driven routing protocols consistent and up-to-date routing information to all nodes is maintained at each node whereas in on-demand routing the routes are created only when desired by the source host. Next two sections discuss current table-driven protocols as well as on-demand protocols [3].

A mobile ad hoc network (MANET) is a collection of mobile nodes with no pre-established infrastructure forming a temporary network. Each device in a MANET is free to move independently in any direction, and will therefore change its links to other devices frequently. Because of the limited transmitter range of the nodes, multiple hops may be needed to reach other nodes. Due to the mobility of the nodes, the structure of the network changes dynamically [1]. In MANET, each node participates in routing by forwarding data for other nodes, and so the determination of which nodes forward data is made dynamically based on the network connectivity. Mobile Ad Hoc networks find its application in many areas and are useful for many cases. Routing protocols in MANETs are classified under two major fields of protocols: Proactive or table-driven and Reactive or on-demand. Some of reactive or on-demand protocols are Dynamic Source Routing (DSR), Ad-hoc On-demand Distance Vector Routing (AODV) and Ad-hoc On demand Multipath Distance Vector Routing (AOMDV). These protocols employ a minimum-hop metric for choosing a route and do not consider energy. DSR is a simple and on-demand routing protocol for MANET. DSR uses source routes to control the forwarding of packets through the network [2].

II. REVIEW OF LITERATURE

Most routing protocols maintain routing tables to store the next hop towards the desired destination. Many routing protocols preserve a caching mechanism by which multiple routing paths to the same destination are stored. Multipath routing is essential for load balancing and offering quality of service. Other benefits of multipath routing include [4]: the reduction of computing time that routers' CPUs require, high resilience to path breaks, high call acceptance ratio (in voice applications) and better security. Special attention should be given to transport layer protocols as duplicate acknowledgments (DUPACKs) could occur, which might lead to excessive power consumption and congestion.

A. Multipath routing in Reactive Protocols:

On-demand routing protocols are inherently attractive for multipath routing, because of faster and more efficient recovery from route failures. MSR "Multipath Source Routing Protocol" [5] is an example of such protocols that supports multipath routing. MSR is a direct descendant of DSR. By incorporating the multipath mechanism into DSR and employing a probing based load-balancing mechanism, the throughput, end-to-end delay, and drop-rate have been improved greatly. The drawback of MSR would be the processing overload of originating the packets, which could become more negligible as the processing power of computers increase day-by-day. Another routing protocol offering multipath routing in this category is the [illegible] Multipath Distance Vector Protocol" [6] path AODV protocol to compute multip parts in AOMDV contributing to multipa is the notion of an advertised hop-count t

Survey of Content Based Image Retrieval using Local Binary Patterns

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Amit Jadhav, PG Student , VACOE, Ahmednagar, India, amitjadhav184@gmail.com

Abstract: This paper, describes a survey of using local binary patterns for feature extraction. It focuses on a new coding scheme, local Gabor maximum edge position octal patterns (LGMEPOP) which is proposed for content based image retrieval. The standard local binary pattern (LBP) collects the sign edge (binary code) information between the center pixel and its surrounding neighbors in an image. Further, the concept of LBP is extended to local maximum edge binary pattern (LMEBP) which collects the sign code (binary code) using the magnitude edges. These magnitude edges are collected based on the maximum edges between the center pixel and its surrounding neighbors in an image. The octal code is coded based on the maximum edge positions (MEP) on Gabor responses. Specially, each pixel of every Gabor response gains eight edges based on the relationship between the referenced pixel and its neighbors. LGMEPOP utilizes the first three dominant (maximum) edge positions in an octal code generation. Then, these three maximum edge positions are encoded into three-eight octal numbers to produce the LGMEPOP. Further, the LGMEPOP is classified into two categories which are named as sign maximum edge position octal pattern (SMEPOP) and magnitude maximum edge position octal pattern (MMEPOP)

Keywords —CBIR, Text, Color, Shape, Local Binary Pattern Introduction

I. INTRODUCTION

Content-based image retrieval, a technique which uses visual contents to search images from large scale image databases according to users interests, has been an active and fast advancing research area since the 1990s. During the past decade, remarkable progress has been made in both theoretical research and system development [1]. However, there remain many challenging research problems that continue to attract researchers from multiple disciplines. Researchers from the communities of computer vision, database management, human-computer interface, and information retrieval were attracted to this field. Since then, research on content-based image retrieval has developed rapidly [2-7].

Early techniques were not generally based on visual features but on the textual annotation of images. In other words, images were first annotated with text and then searched using a text-based approach from traditional database management systems. Text-based image retrieval uses traditional database techniques to manage images. Through text descriptions, images can be organized by topical or semantic hierarchies to facilitate easy navigation and browsing based on standard boolean queries. However, since automatically generating descriptive texts for a wide spectrum of images is not feasible, most text-based image retrieval systems require manual annotation of images. Obviously, annotating images manually is a cumbersome and expensive task for large image databases, and is often subjective, context-sensitive and incomplete. As a result, it is difficult for the traditional text-based methods to support a variety of task-dependent queries.

As a result of advances in the Internet and new digital image sensor technologies, the volume of digital images produced by scientific, educational, medical, industrial, and other applications available to users increased dramatically. The difficulties faced by text-based retrieval became more and more severe. The efficient management of the rapidly expanding visual information became an urgent problem. This need formed the driving force behind the emergence of content-based image retrieval techniques.

Content based image retrieval uses the visual contents of an image such as color, shape, texture, and spatial layout to represent and index the image. Among very popular local image descriptors which has shown interesting results in extracting soft facial biometric traits is the local binary patterns (LBP) [8,12,19,20]. LBP can be seen as statistics of labels computed in the local pixel neighborhoods. The LBP method describes each pixel's neighborhood by a binary code which is obtained by first convolving the image with a predefined set of linear filters and then binarizing the filter responses. The bits in the code string correspond to binarized responses of different filters. The LBP-like methods showed very good results in different computer vision tasks, including nontraditional texture problems such as face recognition, gender classification, age estimation and motion analysis [12, 13, and 20]. The LBP method can be seen as a unifying approach to the traditionally
structural models of texture analysis.
Perhaps the most important property of
world applications is its invariance agai

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Variable air gap membrane distillation for hybrid solar desalination

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ARTICLE INFO

Keywords:
Solar still
Hydrophobic membrane
AGMD
Evaporation
Meniscus
Condensation pattern
Exergy

ABSTRACT

While a low temperature solar still for water production is simple in design, the accompanying productivity is quite low. This factor has necessitated development of enhancement techniques for water production. Alternatives suggested are the use of porous media in a solar still such as sponge, blackened jute cloth, pebble pieces, and floating carbonaceous material for absorbing solar energy. The use of a hydrophobic porous membrane in a solar still has not been investigated systematically thus far. The formation of a convex liquid meniscus alters vapor pressure across the pores of the membrane and is the origin of increased evaporation rates. The goal of the present study is to examine the performance of a solar still configuration towards water production in the presence of a surface-mounted hydrophobic membrane. Vertical arrangement is possible in a prototype but is inconvenient to setup in a laboratory-scale experiment. Hence, the device is compared with another without a membrane in a horizontal solar still configuration. Variable air gap is necessary to drain the condensed drop from an inclined condensing surface. The air gap membrane distillation system (AGMD) thus configured is selected for investigation and further comparison with a mathematical model. Experiments carried out in the present work show that a 40–70% increase in water production is obtained with the use of a membrane. The increase in evaporation rate is visible in the dropwise condensation patterns over the condensing surface. The present study thus confirms the utility of using a hydrophobic membrane in increasing water productivity of a solar still apparatus. Exergy analysis of the solar still when a chiller is used for the condensing surface is also presented.

1. Introduction

Thermal processes raise the evaporation rate of water in devices such as the solar still whereas membrane distillation of salt water is based on the appearance of a differential pressure across the membrane. In addition, a temperature difference jointly enhances mass transfer in an air gap membrane distillation process by increasing the differential partial pressure. To cater to the need of drinking water, either a thermal process or a membrane has been used for purification. Khalifa et al. [1] presented the performance of an air gap membrane distillation system when the incoming solution is salt water. Shirsath et al. [2] described a thermal route to water distillation and examined the effect of salinity on water production rates. In the present study, the use of membrane is considered jointly with a thermal process while the liquid considered is tap water or one with dissolved salt. These approaches can be used with turbid water as well, if a suitable filtration process is adopted first to remove particulates.

In a solar still, water can be heated directly by letting solar energy pass through transparent glass or indirectly by means of solar collectors and water heaters. Water productivity of a conventional solar still is stated to fall in the range of 2.5–3.5 kg/m^2-day. With an active solar still where arrangements for separate water heating such as a thermosyphon are utilized, water productivity may increase to 5 − 7 kg/m^2-day. An extensive review of various combinations of solar collectors with a solar still is provided by Sathyamurthy et al. [3]. A solar still will employ varying air gap between the evaporation and condensing sides, resulting in an inclined condensing surface that is equivalent to the latitude of the location, Fig. 1.

The productivity of fresh water from a solar still is quite low to be a practical alternative in applications. The possibility of enhancing condensation rates has been discussed in the literature. The productivity of the solar still can be improved by increasing evaporation rates on one hand and facilitating higher condensation rates on the other. An extensive review of various cover cooling techniques is presented by Omara et al. [4]. The survey shows that the overall output of a solar still can be increased by cooling the condensing cover by around 5–30% as

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Applied Surface Science 484 (2019) 999–1009

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Full length article

Condensation of water vapor underneath an inclined hydrophobic textured surface machined by laser and electric discharge

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ARTICLE INFO

Keywords:
Dropwise condensation
Hydrophobicity
Laser micromachining
Electric discharge machining
Drop sliding
Surface inclination

ABSTRACT

Condensation of water vapor on a surface plays an important role in thermal based water purification methods. Appropriate texturing of such surfaces facilitates dropwise condensation with better heat transfer coefficient and water collection. In this context, we explore texturing patterns via laser ablation to achieve lower aspect ratio (10 μm depth to 100 μm width) and via wire electric discharge machining process for higher aspect ratio (300 μm depth to 100 μm width). The transition from Cassie-Baxter to Wenzel is seen experimentally as well as through the simulations for lower aspect ratio, whereas the transition does not occur for higher aspect ratio. Simulations are also carried out for the sessile as well as pendant drop, which is more relevant to thermal based water purification. However, in the experiments the drop is always in the pendant mode. The condensing surface inclination plays a very significant role in the water collection. In order to have more water production underneath the copper plate, the optimum angle of inclination found is 35°.

1. Introduction

Manju and Sagar [1] describe a serious concern for the world in the next decade about the scarcity of clean drinking water. According to the United States Geological Survey, approximately 97% of water is present in the oceans in the form of saline water, while only 3% of the total water available on earth is potable. Surface water and groundwater take the form of icecaps and glaciers in the Arctic and Antarctic regions. A total of 87% of surface water is in lakes and rivers. According to the authors, this figure represents only 1% of the world's drinkable water. Tiwari and Tiwari [2] elaborate an approach towards cleaning impure or saline water via solar still, wherein water evaporated via solar energy is condensed and drained from an inclined surface. The authors have presented a detailed mathematical model for desalination using a solar still. Typically, the surface over which water is condensing plays an important role not only in removing heat of condensation, but also in determining the condensation pattern. In several solar stills, a metallic sheet is used as a condensing surface in a separate chamber instead of glass. Dimri et al. [3] conducted an experimental study to investigate the effect of the condensing cover material on water production. Copper and polyvinyl chloride were used as a condensing material while copper was found to give the maximum yield. Various efforts are presently being explored to improve the efficiency of water collection from metallic surface. Khandekar and Muralidhar [4] describe the dropwise condensation process via experiments and simulation for inclined chemically textured surfaces. Sikarwar et al. [5] have stated that an untextured condensing surface is typically hydrophilic and water vapor undergoes filmwise condensation. It is possible to create textured surfaces that are hydrophobic (contact angle $> 90°$) to facilitate dropwise condensation and such surfaces yield greater wall heat fluxes and effective heat transfer coefficient. Author studied dropwise condensation on an inclined chemically textured surface via experiments and simulation. The condensation cycle was shown to involve four stages: formation of initial droplet nuclei, growth due to direct condensation of vapor, growth due to coalescence of adjacent drops, and gravitational instability and motion over the substrate.

An approach towards creating such hydrophobic surfaces is by texturing the surface via micro-pillars. Boreyko and Chen [6] studied self-propelled dropwise condensation on a super hydrophobic micropillared surface. As shown by the authors, surface energy released upon drop coalescence results in an out of plane "jumping" motion of the drop and spontaneous drop removal. However, the work lacks the detailed discussion on the different inclination angle and this gap has been addressed here in current study. Miwa et al. [7] investigated the effect of surface inclination angle on the apparent contact angle for various surface textures. The critical angle at which sliding is initiated is seen to be smaller for a hydrophobic surface when compared to a plain surface. The authors correlated the critical angle with contact angle as well as

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Effect of salinity and water depth on the performance of doubly inclined solar still

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ABSTRACT

Performance of a doubly inclined solar still carrying pure water, salt water and seawater is explored experimentally and via mathematical models. Quantities of interest are the amount of water produced and temperature distribution within the solar still. The match between the model and experiments is qualitatively good, except that the model temperatures turn out to be higher, leading to an increase in the theoretical water production. The presence of solutes is seen to diminish water productivity, and the reduction in vapor pressure with solute concentration is the factor most responsible for this trend. The effect of cycle time and condensing film thickness on water production in context with the hydrophobic and hydrophilic glass surface has also been examined within the framework of the mathematical model. The extreme sensitivity of water production to water depth for small depths is explained in terms of the large latent heat of evaporation. Since lowering the water depth increases water production, the possibility of compensating for reduction in vapor pressure with salt concentration is explored. Large water production rate in a basic solar still is possible with a proper choice of operating parameters.

Keywords: Solar still; Water production; Modeling; Fresh, salt and seawater; Vapor pressure

1. Introduction

Solar still is a device wherein contaminated water in a basin is evaporated using solar energy and the water vapor is condensed on a suitably located cooler glass surface and collected from this surface. The motivation behind the process is to distil impure water at an affordable cost. The performance of the solar still depends on various design parameters [1], mainly water depth and air gap, glass absorptivity and thickness and the extent of water contamination, apart from solar flux and ambient temperature [2,3]. Despite low cost, the solar still is constrained by a limited water production rate that has hampered wide-spread adoption of the process as a viable source of clean water.

Experiments reported in the literature show controlling factors in a solar still to be the initial water quality [4], depth of water inside the solar still [5–7], thickness of glass cover [8,9], glass cover inclination [7,10], insulation thickness [11], air velocity [12], cavity geometry [13] and the air gap between water and the glass cover [14]. Rubio et al. [13] developed a model for estimating the mass flux based on the difference in the water and cover temperatures. Water production was found to be independent of cavity geometry for small-sized equipment for given water and cover temperatures. Madhlopa [15] developed two models involving radiative heat transfer with and without view factor. Radiative heat transfer was seen to be smaller with the inclusion

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Blends of karanja and jatropha biodiesels for diesel engine applications

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Over a number of years, the work of exploring different biodiesels as an alternative to diesel fuel has been carried out worldwide. Not much focus on the use of combination of different biodiesels and their behaviour in diesel engines has been reported. This work is an attempt in this direction, which reports on the use of combination of biodiesels derived from jatropha and karanja oils. Jatropha oil methyl ester (JOME) and honge oil methyl ester (HOME) represent the respective biodiesels derived from these non-edible oils. Experiments were conducted on a four-stroke, single-cylinder diesel engine using these biodiesel combinations in order to check their feasibility as alternative fuels to diesel. Initially, experiments were conducted on each biodiesel and their blends with diesel and engine parameters were optimised in terms of injection pressure and injection timing. Advancing the injection timing improved the overall performance of the engine fuelled with JOME while retarding the injection timing favoured the HOME. Both biodiesels performed better with an injector opening pressure of 230 bar. Finally, experiments were conducted with the combination of both biodiesels with different blend ratios. It was observed that increasing the JOME content in the biodiesels blend improved the performance with reduced emissions of smoke, hydrocarbons and carbon monoxide emissions. However NO_x emission increased.

Keywords: biodiesel; jatropha; karanja; ethanol; combination of biodiesels; injection timing

1 Introduction

The environment is greatly polluted by emissions such as carbon monoxide (CO), CO_2, NO_x, SO_x, unburnt or partially burnt hydrocarbons (HC) and particulate from transport vehicles. The chief contributors to urban air pollution and major source of greenhouse gases are fossil fuels, and they are considered to be the major cause of global warming. India imports petroleum products at an annual cost of approximately $50 billion in foreign exchange. In view of this high demand/cost of fossil fuels associated with higher emissions, it is necessary to find a suitable alternative to diesel oil. Replacing just 5% of petroleum fuel by biofuel could enable India to save $2.5 billion per year in foreign exchange. Exhaustive literature work on the use of vegetable oils and their blends in diesel engine applications has been published by various researchers. Various non-edible oils, such as jatropha, honge, honne, rubber seed, mahua, hazelnut kernel, waste cooking and cotton seed oils, are investigated for their suitability to diesel engine fuels (Altin *et al.* 2001, Pramanik 2003, Ramadhas *et al.* 2005, Agarwal and Rajamanoharan 2009, Yage *et al.* 2009, Banapurmath *et al.* 2010, Belagur and Chitimini 2010, Buyukkaya 2010, Chao *et al.* 2010, Chitimini 2010, Gumus 2010, Gumus and Kasifoglu 2010, Jiafeng *et al.* 2010, Ryu 2010). The literature survey mainly suggests that work on the use of the combination of different biodiesels and their behaviour in diesel engines has not been explored in detail. The combination of the two biodiesels was used in this study as not much work has been reported in the literature.

Effect of injection pressures, injection timings and exhaust gas recirculation (EGR) on the performance of different vegetable oils in compression ignition (CI) engines has been reported by many investigators (Hountalas *et al.* 2001, Bari *et al.* 2004, Tao *et al.* 2005, Gajendra Babu 2007, Roy 2009). Changes in injection timings change the position of the piston and cylinder pressure and temperature at the injection. Retarded injection timings showed significant reduction in diesel NO_x and biodiesel NO_x (Hountalas *et al.* 2001; Tao *et al.* 2005). Cylinder pressures and temperatures gradually decrease when injection timings are retarded (Roy 2009). Advanced injection timing by 4° before top dead centre (BTDC) with waste cooking oil in direct injection diesel engine resulted in better efficiency with reduced CO and higher NO emissions (Bari *et al.* 2004). Retarding the injection timing by 4° BTDC with honge biodiesel has resulted in better efficiency with reduced HC, CO and smoke emissions (Banapurmath *et al.* 2009). Many researchers have also performed tests on CI engine with different vegetable oils at different injection pressures (Bakar *et al.* 2008, Puhan *et al.* 2009). Better performance, higher peak cylinder pressure and temperature were

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A Survey on Detection of Plant Leaves Disease Using Deep Learning Framework

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ABSTRACT: Techniques predicting the type of diseases affecting plants in their lifetime will be of immense help to agriculturists. A visual assessment by professionals is used to diagnose the plants, with a biological examination is the second choice if necessary. They are typically costly and time-consuming. This sparked the development of numerous computer algorithms for detecting plant blights based on leaf imagery. We use a computer methodology based on artificial neural networks to detect plant diseases early. We use convolutional neural networks (CNNs) familiar with some of the famous architectures, notably the "ResNet" architecture, with an augmented dataset containing images of healthy and diseased leaves (each leaf is manually cut and placed on a uniform background) with acceptable accuracy rates in the resealing process. For a variety of object detection issues, this Deep Learning approach has demonstrated to be quite effective. The model performs its function by categorizing images into two groups disease-free and diseased. According to the findings, the created system outperforms those proposed in the state of the art in terms of detection.

KEYWORDS: Image Processing, Machine Learning, Feature Extraction, Image Global Features, Classification.

I. INTRODUCTION

Farmer's economic growth relies on the quality of the product that they grow, which is directly dependent on the plants growth and yield they get. Plants are attacked by the different disease which target different parts of plant body such as leaf, stem, seed, and fruit and so on. To solve this problem machine learning seems to be a better option various machine learning technique are recently proposed for identification and classification of plant disease from plant images. Many crops most important cash crops of India and plays a dominant role in the industrial and Agriculture Economy of the country. India provides direct livelihood to 6 million farmers and about 40-50 million people.

Various image processing concepts such as image filtering, segmentation, image feature extraction have emerged to detect the leaf diseases. There are various image segmentation methods available such as k-means clustering, Canny and Sobel segmentation, and Otsu thresholding. Techniques such as Support Vector Machine (SVM), Neural Network (NN), and Homogeneous Pixel Counting technique for Cotton Diseases Detection (HPCCDD) can be used for classification. Features play an important role in the classification process. Previous proposed works for detecting disease has some limitations such as low resulting accuracy and less number of images used to detect disease. The main source for the disease is the leaves of the plant. About 80 to 90 % of disease on the plant is on its leaf. So four study of interest is the leaf of the tree rather than whole plant the leaves is mainly suffered from diseases like insecticide(tudtude, mawa) fungus, Foliar leaf on leaf , Alternaria leaf spot. The machine vision system now a day is normally consists of computer, digital camera and application software.

Various types of algorithms are integrated in the application. Image processing is one important method that helps segment image into objects and background image. One of the key steps in image analysis is feature detection. Image recognition has attracted many researchers in the area of pattern recognition, similar flow of concept are applied to the field of pattern recognition of plant leaf, that is used in diagnosing the leaves diseases. There are numerous methods have been proposed in the last two decades which are not fully solved. However this is challenging problems. The critical issue is how to extract the discriminative and stable feature for classification.

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INVESTIGATION ON BEAM COLUMN JOINT BEHAVIOR UNDER SEISMIC LOADING WITH DUCTILE DETAILING

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Abstract— **This paper is based on ductility demand and understanding of ductile detailing with Beam, column and Beam-Column joint under seismic force. The concept of importance of ductility in column, strong column and weak beam. Also work on Beam-Column joints in building, why they are special? Its classification, behavior and design considerations for Beam-column joint under seismic loading. It included the analysis and design of G+5 building with ETAB with earthquake loading and different load combinations. After this output next process to cost comparison for R.C.C. building with and without ductile detailing of G+5 building of seismic zone III**

Keywords— Ductile detailing, Earthquake resistance,E Tab

I.INTRODUCTION

Earthquake resistant design involves determination of expected seismic forces and designing the structural members to resist these forces. The seismic codes do not intend to ensure that no structure shall suffer damage during a large earthquake. IS 13920:1993 covers that, "The requirements for designing and detailing of monolithic reinforced concrete buildings so as to give them adequate toughness and ductility to resist severe earthquake shocks without collapse". This is because a structure which can withstand strongest ground shaking without damage will be too expensive to build. Hence, it is obvious that the non-linear behavior of structure, i.e., beyond its yield, will greatly affect its seismic design. It is, therefore, important that structures should be more ductile for better performance during earthquakes [1]. Ductility of a structure means capacity to deform to a large extent without loss of strength before collapse, as compared to its deformation at yield point.[2] Seismic codes around the world ensure adequate ductility of a structure in two ways. Firstly, design seismic forces for a ductile structure are less than for a brittle structure. Secondly, it isrequired that the structures to be built in a highly seismic zone must have a minimum level of ductility [3].

II. OBJECTIVES & INVESTIGATIONS

- Explaining the term of ductility and beam column joint
- The behavior of beam-column joint during severe earthquake using ETAB
- Analysis and design of G+5 building with ETAB of interior and exterior beam column joints by IS code
- From this design got the reinforcement details then we will estimate the cost and compare in with ductile detailing and without ductile detailing
- To study the effect of ductile detailing in the cost of building for Zone III.

III. LITERATURE REVIEW

Guo-Lin Wang, et.al (2012) this paper presents a new shear strength model for reinforced concrete (RC) beam–column joints subjected to cyclic lateral loading. In the proposed model, the reinforced concrete in the joint panel is idealized as a homogenous material in a plane stress state. The contribution of the joint shear reinforcement (including both the transverse steel reinforcement and the intermediate longitudinal steel reinforcement of the column) is taken into account through the nominal tensile strength of the idealized material.

Chidambaram.K.R et al.(2012)The ductility capacity, energy dissipation capacity and load – deformation behavior of the exterior beam column joints constructed with an external anchorage system by providing a small projection beyond the Column face is evaluated. The evaluation is based on the experimental results of two one fifth scale exterior bam column joint specimens tested as part of an extensive experimental program. The control specimen (CS) constructed and detailed as per IS 13920:1993Codal provisions and externally anchorage specimen (EAS) cast with small projection beyond the column face. A small axial load was applied to the column portion of the subassembly and held constant during the test. The free end of the beam was subjected to cyclic load representing a wide range from elastic to inelastic loading. By providing an external anchorage system, the reinforcement detailing and concrete placement in the joint region become eased and the behavior was better than conventional method of construction.

S. S. Patil, et.al. (2013) The different types of joints are classified as corner joint, exterior joint, interior joint etc. on beam column joint applying quasi-static loading on cantilever end of the beam. and study of various parameters as to be find out on corner and exterior beam column joint i.e. maximum stress, minimum stress, displacement and variation in stiffness of beam column joint can be analyzed in Ansys software (Non-Linear FEM Software

Rupali R. Bhoir, et.al(2015)Beam-column joint failure is the major cause for such destructions. Therefore major concern is given in refurnishing their behavior. While considering the core behavior, there is need to calculate joint shear demand also. Beam-column joint has no problem in itself until the dead and live loads are concern. As soon as lateral loads, i.e. seismic force, comes into picture it will become a critical problem. This problem has not beer
date. Here through this analytical app
to understand the behavior of join
demand. For this purpose 2d mid to

Experimental Analysis, Design And Comparison of RCC, Composite And Steel Beam

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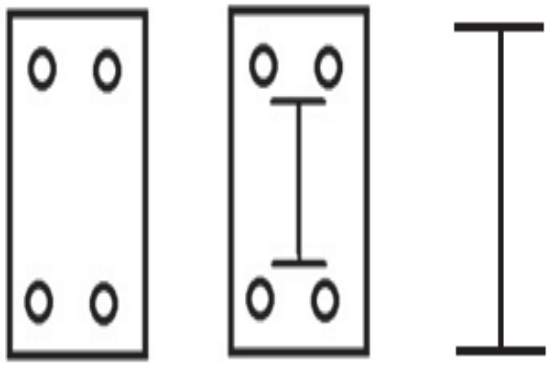
Abstract- *This experimental investigation deals with RCC, composite and steel beams. Now a day architect requires as thin structure as possible. For this they demand more thin sections for aesthetical view but as a structural engineer it also strengthen and it should be well within economical limits. Thus this dissertation topic is also supposed to work in same direction that is toward different sectional combination for the said loading condition to achieve thin and still economical and practical solution for a kind element to fulfill the architectural criteria. As we know beam is a flexural member mainly and it requires more depth to resist more moment. Hence in this study focus is mainly toward to minimize depth of beam section by exercising on material combination. One of the major alternate is to go with composite section or to use steel girders as beam. Here the concept is such that composite beam means a regular RCC beam with inbuilt or in between a steel girder to be consider as composite section and use steel girder as beam.*

Keywords- beam, composite, steel beam, RCC.

I. INTRODUCTION

Architectural beauty is prime important of customer orientation but the structural point of view it also strengthen to support its architectural beauty. Now a day architect requires as thin structure as possible. For this they demand more thin sections at one hand and at other hand owner needs it should be well within economical limits. In most of the cases we have to compromise the section to full fill architectural aspects without hammering strength of the structure. Thus this practice leads to a structural consultant to develop and practice different structure and sectional combination etc. Thus this topic is also supposed to work in same direction that is toward different sectional combination for the said loading condition to achieve thin and still economical and practical solution for a kind element. As number of times in a building almost every construction fractioned demands mainly for lesser depth of beam but actually as we know beam is a flexural member mainly and it requires more depth to resist more moment. And all other members like slabs, column, footing are doesn't have any psychological size effect or any kind of depth issue. This study focuses mainly toward the minimization of depth of beam section by exercising on material combination. One of the major alternate is to go with composite section or steel girder. Thereby the concept is such that composite beam i.e. a regular RCC beam with inbuilt or in between a steel girder as (it may be readily available or built up steel girder as call may be) to be consider as composite section. Fig 1 thus this kind of composite section and steel section one can get depth reduction for the same moment.



a) Regular RC b) Composite RCC beam c) Steel

Fig. No 1.1 Conceptual beam section used for experiment.

II. METHEDOLOGY

Experimental work: - Here the RCC beam, Composite beam and steel beam is taken from a structural frame for analysis, design and experiment. It has uniformly central point load of magnitude say 90 kN and span of 4 m. concrete grade M20, reinforcing steel Fe 500 and structural steel girder grade Fe 250 (ISMB 250) which is available in market thus for the given loading, span, end conditions, beam is analyzed and ISMB 300 is steel beam section is design for the same bending moment. As this study is mainly focusing on flexural behavior of RCC beam, composite beam and Steel beam. The experiment is done mainly for flexure for same loading moment and support condition and resul

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Bio-Impedance Analysis for Classification of Various Skin Diseases in Indian Context.

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ABSTRACT

This paper describes a non-invasive embedded healthcare system using bio-impedance analysis and Modular Fuzzy Hypersphere Neural Network (MFHSNN) with its learning algorithm, proposed by P. Patil et al [1] for identification and classification of various skin diseases. Bio-impedance analysis has potential to discriminate between the diseased and normal skin. Various electrical impedance indices like magnitude index (MIX), phase index (PIX), real-part index (RIX) and imaginary-part index (IMIX) have been computed for diseased and normal skin. Statistical parameters of these indices, along with their individual values, have been used as the features of diseased skin and applied to MFHSNN for further classification. Each module in MFHSNN is exposed to patterns of only one class and trained without overlap test and removal, as MFHSNN offers higher degree of parallelism, leading to reduction in training time and captures peculiarity of only one particular class.Hence,it is used to classify facial melanoses, acne vulgaris, folliculitis and tineacorporis skin diseases, where new patterns can be added on fly. The MFHSNN is found superior in terms of generalization and training time with equivalent testing time.

Keywords: Bio-impedance, Modular Fuzzy Hypersphere Neural Network, non-invasive, embedded healthcare system, skin diseases.

**Corresponding author*

Defect Detection and Classification in Patterned Fabric using Variational Mode Image Decomposition and Neural Network

Maheshwari S. Biradar, Dr. B. G. Sheeparamatti, Dr. P. M. Patil

Abstract : ***Image processing and computer vision plays vital role in fabric defect detection. However, it is challenging to detect defect in patterned fabric material. This paper uses variational mode decomposition (VMD) method for detecting defects in patterned fabrics. Variation mode decomposition method is used for image decomposition. Otsu thresholding is applied on decomposed image for defect detection. Texture features of defected area are extracted using GLCM. And these features are used to classify types of defects through feed-forward neural network.***

IndexTerms - Image decomposition, VMD, thresholding, GLCM, feed forward neural network.

I. Introduction

Cost reduction and increase in quality are the two main important aspects in all product industries. In textile industry quality of the fabric plays a key role. However current work in textile industry is based on human inspection. Human inspection is not 100 percent accurate as it yields errors due to human fatigue, slow inspection time and high labor cost. Therefore it is required to implement automated visual inspection in industries to enhance the quality of a product and also to reduce the cost.

Computer vision based fabric defect detection has been used in textile industry for monitoring and controlling of product quality. Previously the research has been carried out on non-patterned fabrics. The major methods used for non-patterned fabric inspection include Fourier Analysis [1], wavelet Transform [2,14], Artificial Neural Network [3],Gabor Filter [4], Morphological Transform[13], Co-occurrence Matrix method [5,11,13], Local Contrast variation method [13], Fourier transform and wavelet transform are unable to figure out the correlation between patterned unit and defective object. Morphoogical filtering approach is inefficient in detection of color based defects. The above all methods could not be used to figure out the correlation between defective objects and complicated repetitive patterns in box, star and dot patterned fabrics.

These all methods were implemented for simple plain and twill fabric and many of these methods could not be used for patterned fabric defect detection. There is a scope for researchers to develop new algorithms for patterned fabric inspection. The word patterned in patterned fabric is nothing but repetitive units in a fabric at regular distance. There are several types of patterns in fabric. The basic types are plain, dot pattern, star pattern, box pattern and are shown in Fig. 1. Several complicated patterns like flowers, different repetitive designs may exist. There is a challenging job for detecting defects in patterned fabric because of their texture complexity and availability of numerous pattern textures.

In this paper we have used a VMD algorithm for detecting defects in patterned fabric.

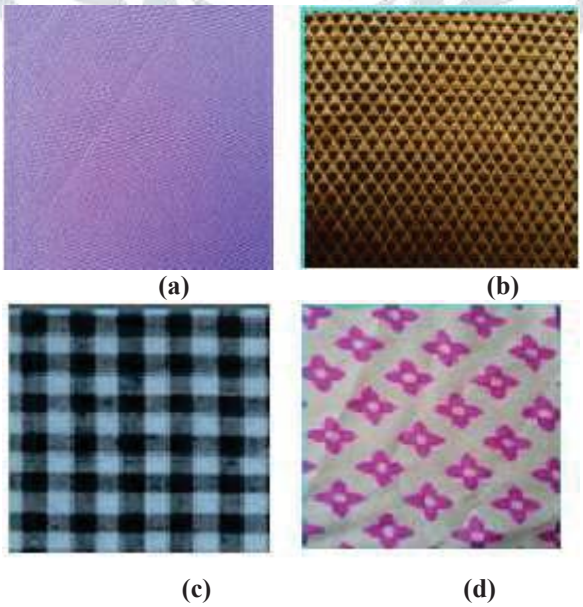

Fig. 1. Sample images of patterned fabric a) Plain fabric b) Dot patterned fabric c) Box patterned fabric d) Star

Variational mode image decomposition is used for decomposing the image in different components ha oscillatory characteristics. 2D VMD is non recurisive fully adaptive variational method which spars mathematically well focused manner with minimal parameter. Further paper is organized as follows. Section

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Fabric Defect Detection Using Deep Convolutional Neural Network

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Abstract—The enormous growth in the fashion industry increased the demand for quality of service of the fabric material. Fabric defect detection plays a crucial role in maintaining the quality of service as a single defect in the fabric can halve its price. Traditional machine learning approaches are less generalized and cannot be employed for fabric defect detection of patterned as well as non-patterned fabrics. This paper presents Deep Convolutional Neural Network (DCNN) for fabric defect detection. The proposed method consists of a three-layered DCNN for the representation of the normal and defected fabric patch. The performance of the proposed DCNN is evaluated on the standard TILDA and in-house database using percentage accuracy. It is noticed that the proposed method gives an accuracy of 98.33 and 90.39% for patterned and non-patterned fabric defect detection for in-house database and 99.06% accuracy for non-patterned TILDA database.

Keywords: fabric defect detection, Deep Convolutional Neural Network, patterned fabric, non-patterned fabric

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1. INTRODUCTION

A fabric or textile is the material formed by yarning, weaving, knitting, tatting, felting, crocheting, or braiding natural or synthetic yarns. Natural yarns can be obtained from cotton, silk-worm, wool, flax, jute, rayon, etc. Whereas synthetic fibers can be obtained from polyester, acrylic, nylon, lurex, aramid, carbon fiber, etc. [1, 2]. Fabric defect disturbs the homogeneity of the fabric textures and makes it unsuitable for garments or fashion product. Fabric defects can be caused by a fault in the machine, production, yarning, knitting, dyeing, stitching, painting, rolling, etc. Some of the common fabric defects are hole, knot, thick bar, thin bar, missing picks, broken end, stain weft yarn, oil spot, double pick, double end, loose weft, broken end, missing picks, etc. [3, 4]. Figure 1 shows some common fabric defects.

The fabric material is classified into non-patterned and patterned fabric. The non-patterned fabric material has a high degree of homogeneity in its texture whereas patterned fabric consists of the repetitive unit over the texture [5]. Various machine learning-based methods have been adopted in the past for the non-patterned fabric defect detection such as Fourier transform [6], morphological filters [7], wavelet transform [8, 9], contourlet transform [10], local homogeneity analysis [11], etc. These methods are sensitive to rotation, scale, noise, illumination changes and contrast. For the patterned fabric defect detection Bollinger Band [12], Regular Band [13, 14], Wavelet Golden Image Subtraction method [15, 16], Image decomposition [17], etc. has been successfully presented. These methods are less generalized and resulted in poor performance for the defect detection of non-patterned fabric.

In this paper, we present three-layered Deep Convolutional Neural Network (DCNN) for the patterned as well as non-patterned fabric defect detection. Proposed DCNN consists of convolution layer, rectified linear unit (ReLU), maximum polling layer, fully connected layer and classification layer. For the experimentation, the database is divided into the normal and defective fabric patches having a resolution of 200 × 200. The performance of the proposed DCNN is evaluated for the detection of the hole, stain, thin bar, thick bar, knots and broken picks defects.

This paper is organized as follows: Section 2 gives the details about DCNN implementat[illegible] Section 3 provides experimental results and discussion. Finally, Section 4 concludes the pap[illegible] ents the future scope of the work.

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Geopolymer Concrete: Unique Solution Over Conventional Concrete

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***Abstract*— Words most consumed construction material is cement used for concrete after the water. concrete is mixture of Water, cement, aggregates and admixtures which provides required properties to concrete.According to IBEF (India Brand Equity Foundation) India is the second largest cement producer in the world according to 2018 survey.[1] In 19 July 2018, the production of cement stood at 28.08 million tonnes.[5] It emits up to 8% Carbon-di-oxide of total worlds Carbon emission. By considering this environmental problems Geopolymer becomes unique solution over conventional Portland cement.**

According to The Davidovits patent (2003) Geopolymer emits very lower carbon-di-oxide as compare with ordinary cement. Result of this Environmental pollution and global warming problem reduces.[3]

But on other hand Geopolymer concrete provides high compressive strength, Durability & Workability over Conventional Concrete.[4] Geopolymer concrete is produced from chemical action of Inorganic material. Fly ash, a by-product obtained from thermal power plant is used as inorganic material. fly ash is rich in alumina and silica activated with alkaline activators from alum-inosilicate gel that act as binding material for concrete. due to of Fly as problem of fly ash dumping is also reduces.

This paper reviews the properties of Geopolymer concrete over conventional concrete as best and unique construction material in crowing infrastructural development.

Keywords*— Geopolymer & conventional Concrete; Fly Ash; Co2 emission; pollution; compressive strength; cost of concrete.

I. INTRODUCTION

As India is Developing country, Infrastructure in India developing day by day. New networks of Roadways, Railways, Bridges, Residential & Industrial area grows on increasing. Result of this requirement of primary Binder used in concrete that is Ordinary Portland Cement is also increased. The Worldwide production of cement is High as 2.6 billion tonnes per year and generates nearly 7% carbon-di-oxide. Emission of this huge amount of Carbon-di-oxide being a part of environmental pollution and global warming.[4] Limestone is main constituent in production of cement which results depletion of Limestone.by considering all this drawbacks Geopolymer concrete is unique option for replacement of Ordinary Concrete as construction material.

Geopolymer concrete is a sort of solid that is made by responding aluminate and silicate bearing materials with a burning activator. Regularly, squander materials, for example, fly debris or slag from iron and metal generation are utilized, which causes lead to a cleaner domain.Geopolymer concrete is referred as "Green concrete".[3] This was first invented by Dr.WG in Denmark in 1998.

II. LITERATURE REVIEW

Supriya Kulkarni focused on topic "Study of Geopolymer Concrete". The study included various topics like Introduction of Geopolymer. Properties of Geopolymer concrete Compressive strength, Durability & Workability. This paper concluded that Geopolymer is shows resistive properties against corrosion and fire. Geopolymer gains 10% more strength in steam curing as compare to water submerged curing.[4]

Swapnil Mandhurkar Tanpure,Mohan N. Shirsath,Sandeep Hake studied the topic "State of Art-Lime Added Geopolymer Concrete". This review paper discusses addition of Lime to Geopolymer concrete in order to increase solution to binder ration significantly. Compressive strength of GPC increases with addition of slaked lime as it provides extra heat to solution. Finally, they concluded that other methods of curing are difficult on sight.so addition of lime and natural sunlight is best solution for curing on sight.

Sidheshwar Murkute, Madan S.H. and DR.V.A.Patil studied the topic "Comparitive study of Green Concrete and Conventional Concrete on Strength and Durability Properties ".This experimental study concluded that Green concrete shows better performance and durability which ensures long lifetime concrete and can be used for conventional work.[1]

Robbie M. Andrew, CICERO (Centre for International Climate Research, Oslo 0349, Norway) focused on topic "Global CO2 emissions from cement production" he stated that According to IBEF (India Brand Equity Foundation) India is the second largest cement producer in the world according to 2018 survey.[5]

J. Davidovits reviewed the topic "False Values on CO2 Emission for Geopolymer Cement/Concrete published in Scientific Papers" he Concluded in his review that in 19 July 2018, the production of cement stood at 28.08 million tonnes. It emits up to 8% Carbon-di-oxide of total worlds Carbon emission. He high lightens the carbon-di-oxide production due to cement factories in various countries. [6]

J.Thaarrini & S.Dhivya Reviewed t
Study on the Production Cost

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Retrofitting of RC Circular Column using Carbon Strip

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Abstract: *The retrofit process is a general term that may consist of a variety of treatments, including: preservation, rehabilitation, restoration and reconstruction. Selecting the appropriate treatment strategy is a great challenge involved in the retrofit process and must be determined individually for e ach project. Depending on project objectives, preservation and renovation of buildings may involve an array of diverse technical considerations, like fire life safety, geotechnical hazards and remedies, weathering and water infiltration, structural performance under earthquake and wind loads. The paper presents some aspects regarding a search program that studies the behavior of ferroconcrete slabs retrofitted by using Fiber Reinforced Polymer composites. Theoretical and experimental investigations are being performed in order to determine the effectiveness of these strengthening solutions. Eight specimens, including two strengthened after being loaded to yield level to imitate strengthening with some damage and one strengthened under a sustained axial load to imitate strengthening under service condition, were tested under constant axial load and lateral cyclic load to research seismic performance of RC columns strengthened with carbon fiber reinforced polymer sheets (CFRP sheets). The ductility enhancement with the confinement of CFRP sheets was studied by the strain development and distribution within the CFRP sheets. Based on the experimental results, a confinement factor of CFRP and the same transversal reinforcement index were suggested. Thus, the seismi c design method of the present Chinese seismic design code for RC columns are often directly utilized in determining the quantity of CFRP required for seismic strengthening.*

Keywords: Retrofitting, Strengthening, Carbon Fiber Reinforced Polymer (CFRP), FRP.

I. INTRODUCTION

In current age and due to modern transformation in constructions sector the working technology with working material has been boosted to and Now a days, civil engineering considers more and more the composite materials, especially the Fiber Reinforced Polymers (FRPs). The composite materials' properties have made their use to prove a true success during a series of applications from local strengthening to highly complex works. Preferring composites in some applications rather than traditional steel or ferroconcrete (RC) based strengthening solutions is grounded on many reasons. The composites` very high corrosion resistance alongside the short amount of needed construction time and low weight are probably the foremost important of all.

One of the experimental programs that are in progress at the "Polytechnic" University of Timisoara concerns the study of retrofitting solutions that involve the use of FRP for two-way RC slabs with cut-outs. In many situations, openings are needed in slabs, in places that were not considered during the design of a building. This need emerges mostly due to a series of changes in functionality. There is also the case in which some openings were considered in the design process but due to changes in functionality or in destination , the loads to which the slabs are subjected become much higher. In either one of these situations, the slab's overall behavior becomes deficient, both as stiffness and load bearing capacity.

II. METHODOLOGY

Preservation is defined because the process of applying measures to sustain the prevailing form, integrity, and materials of a historic property. Rehabilitation refers to the method of making new application for a pr

Number of FDPs Year wise (Teaching)							
Sr.No.		2021-22	2020-21	2019-20	2018-19	2018-17	Total
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2	Dr. Adokar D.U	1	1				2
3	Prof. Jadhav K.P.		1				1
4	Prof. Suhas Pakhare			1			1
5	Prof. Puranik S.C	1	1				2
6	Prof. Athawale N.V.				1		1
	Total	3	4	2	1	0	10
Number of FDPs Year wise (Non Teaching)							
1	Athare S.L				1		1
2	Chede S.S			1	1	1	3
3	Dhone D.A			1	1		2
4	Dinkar S.S			1			1
5	Gangarde S.A			1	1		2
6	Hambarde P.R					1	1
7	Jadhav G.B				1	1	2
8	Kasar G.U					1	1
9	Pawar K.s				1		1
10	Sali P.B				1		1
11	Sayyad J.K					1	1
12	Shelar D.R				1	1	2
13	shinde K.B					1	1
14	Shinde S.B				1		1
15	Shinde S.S					1	1
	Total	0	0	4	9	8	21

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Date :-
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