3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

Sl. No.	Particulars	No. of Books/Chapters/ Conference Proceedings	Page No.
1	**Academic Year 2021-22**	**28**	2-35
2	**Academic Year 2020-21**	**09**	36-47
3	**Academic Year 2019-20**	**21**	48-71
4	**Academic Year 2018-19**	**08**	72-80
5	**Academic Year 2017-18**	**21**	81-109

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Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceeding per teacher during last five year

Sl. No.	Name of the Teacher	Title of the Paper/Book /Chapters Published	Name of the Conference/Journal	National/International	ISBN/ISSN NO.	Page No.
Academic Year 2021- 22					
1	Dr. S. Bhargavi	Fundamentals of Digital Circuit and Design	NA	National	978-93-5625-147-2	5-6
2	Vikas Reddy S	IOT Security Enhancement Using Block chain	ICDCECE	International	978-1-6654-8316-2	7-8
3	Ajay N, Shrihari M R and Manjunath P V	Access Control Framework in the Cloud based on Multi-Block chain with Light Privacy Protection	ICDCECE	International	978-1-6654-8316-2	9-10
4	Savitha M M	Random Forest based Intrusion Detection System for AMI	2022 IEEE Fourth International Conference on Advances in Electronics, Computers and Communications (ICAECC)	International	978-1-6654-0239-2	11
5	Deepika Lokesh	Optimizing the power consumption in WSN through target tracking	2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)	International	2768-0673	12
6	Pradeep Kumar M, Sriramu D S	VLSI Implementation Of Digital Watermarking Technique For Security And Authentication Of Digital Data	2021 International Conference On Smart Generation Computing, Communication And Networking	International	978-1-6654-2504-9	13
7	Dr. Murthy.S.V.N	Advanced smart Home Surveillance system	2021 International Conference on Science and Technology	International	978-1-68576-030-4	14
8	Girish B G	Track It – A GPS based Cross-Platform mobile application to track the buses	2021 International Conference on Science and Technology	International	978-1-68576-030-4	15
9	Ravi Kiran R	Automatic Engine Locking System Using Alcohol Sensing	2021 International Conference on Science and Technology	International	978-1-68576-030-4	16

Sl. No.	Name of the Teacher	Title of the Paper/Book /Chapters Published	Name of the Conference/Journal	National/International	ISBN/ISSN NO.	Page No.
10	Ravi Kiran R	Design And Implementation Of IOT Green House Monitoring And Control System	2021 International Conference on Science and Technology	International	978-1-68576-030-4	17
11	Shwetha V	Ultra Sonic Sensor Bring Precision To Social Distancing	2021 International Conference on Science and Technology	International	978-1-68576-030-4	18
12	Manjula K	AI Pandemic Vision	2021 International Conference on Science and Technology	International	978-1-68576-030-4	19
13	Manjula K	Mileage Telematics	2021 International Conference on Science and Technology	International	978-1-68576-030-4	20
14	Dr. Bhaskar .S	Footpath Accident Detection And Alerting System	2021 International Conference on Science and technology	International	978-1-68576-030-4	21
15	Manjula K	Yarn Imaging	2021 International Conference on Science and technology	International	978-1-68576-030-4	22
16	Manjunatha Y R	Detecting COVID-19 From Lung X-Ray Images Using Deep Transfer Learning	2021 International Conference on Science and technology	International	978-1-68576-030-4	23
17	Madhukara S	Design Of Robotic Vehicle For Detection Of Human Based On Internet Of Things	2021 International Conference on Science and technology	International	978-1-68576-030-4	24
18	Dr. S Bhargavi	Implementation Of Noise Detector With Automatic Recording System Using Arduino	2021 International Conference on Science and technology	International	978-1-68576-030-4	25
19	Parinitha J	Implementation Of Instinctive Overheat Detection And Cooling System For Water pumping Motor	2021 International Conference on Science and Technology	International	978-1-68576-030-4	26
20	Manjula K, Nirmala Devi A C	Photonic Integrated Circuits For Modern Telecommunication	2021 International Conference on Science and Technology	International	978-1-68576-030-4	27

Sl. No.	Name of the Teacher	Title of the Paper/Book /Chapters Published	Name of the Conference/Journal	National/International	ISBN/ISSN NO.	Page No.
21	Anil Kumar R	Smart Helmet Controlled Vehicle	2021 International Conference on Science and Technology	International	978-1-68576-030-4	28
22	Banuprathap P V	Smart Mirror Using Raspberry PI	2021 International Conference on Science and Technology	International	978-1-68576-030-4	29
23	Manjula K, Srivani E N	UVC Home Protecting Agent	2021 International Conference on Science and Technology	International	978-1-68576-030-4	30
24	Savitha M M, Srivani E N Parinitha J	Quad Legged Camouflage Robot For National Security	2021 International Conference on Science and Technology	International	978-1-68576-030-4	31
25	Savitha M M	Electronic Weather Station	2021 International Conference on Science and Technology	International	978-1-68576-030-4	32
26	Manjunatha Siddappa	Brain Computer Interface Based Home Automation Using Mind wave Device	2021 International Conference on Science and Technology	International	978-1-68576-030-4	33
27	Murthy.S.V.N	Predicting the Cattle Production Parameters Through Deep Learning Approach: A Review	2021 International Conference on Intelligent Technologies (CONECCT)	International	978-1-6654-2849-1	34
28	Dr. Bhaskar S	A Priority Based Dynamic DSR Protocol For Avoiding Congestion Based Issues For Attaining Qos In MANETS	2021 International Conference on Intelligent Technologies (CONECCT)	International	978-1-7281-8583-5	35
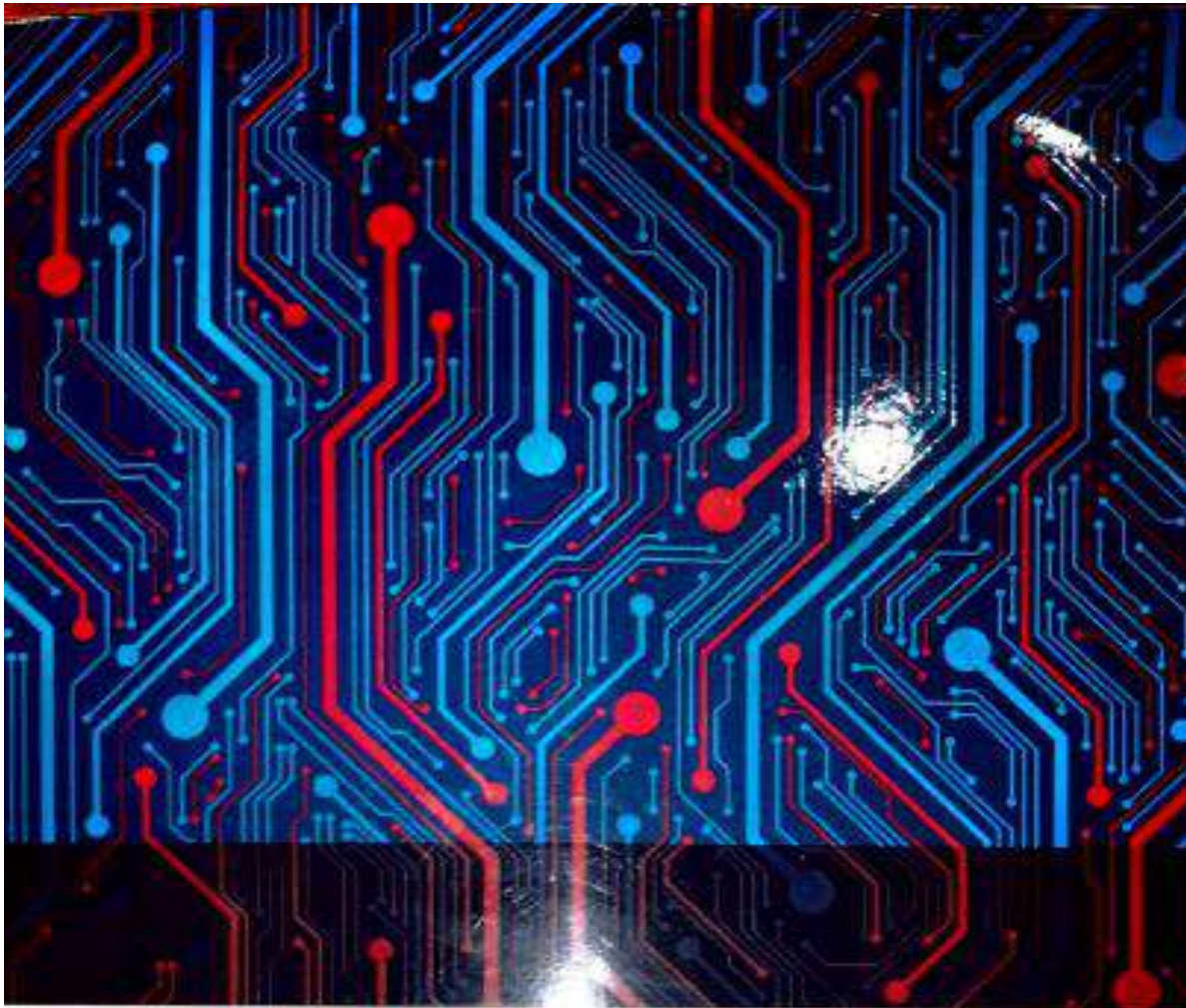
FUNDAMENTALS
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AND DESIGN

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Title of the Book: **FUNDAMENTALS OF DIGITAL CIRCUIT AND DESIGN**

Edition: First - 2022

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IoT Security Enhancement Using Blockchain

Cite This   ⬇ PDF

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Abstract

Document Sections

I. Introduction

II. Literature Review

Abstract:

Internet of Things (IoT) is one of the most common technology used in home automation as well as in smart industry. There is exponential growth in IoT applications in recent past. Industry and researchers are actively working on new and creative applications of IoT. Though IoT become one of the most popular technology, it still suffers from strong privacy and security vulnerabilities. Exploitation of IoT vulnerabilities can be devastating as it brings serious threats

be infeasible for IoT devices. Blockchain is one of the promising technologies which can be used for enhancing the overall security features of IoT. However, blockchain is resource intensive process and cannot be integrated directly with IoT devices. Hence, there is a need to design the architecture to achieve the objectives as well as balance the resource constraints. This paper implements the blockchain to enhance the IoT security and validates the proof of concept with experimental results.

Access Control Framework in the Cloud based on Multi-Blockchain with Light Privacy Protection

Publisher: IEEE | Cite This | 📄 PDF

N Ajay ; H S Mohan ; B V Shwetha ; M R Shrihari ; P V Manjunath ; T N Anitha   **All Authors**

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Full
Text Views

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Abstract

Document Sections

I. Introduction

Abstract:

The applications of the blockchain technology are still being discovered. When a new potential disruptive technology emerges, there is a tendency to try to solve every problem with that technology. With the expansion and intensity of cloud computing, cloud security has become a

Abstract:

The applications of the blockchain technology are still being discovered. When a new potential disruptive technology emerges, there is a tendency to try to solve every problem with that technology. With the expansion and intensity of cloud computing, cloud security has become a critical concern in the area. One of the most important security measures for securing sensitive data hosted in the cloud is access control. To overcome this problem, we offer a multi-blockchain access control architecture with lightweight privacy protection in cloud called Autherization-Privacy. We begin with account address of the node in blockchain as the unique id and at the same time, define the admission permission of data for cloud, which is cypher and kept in blockchain.

Random Forest based Intrusion Detection System for AMI

Publisher: IEEE [Cite This] [PDF]

Savitha M M ; P I Basarkod   **All Authors**

Abstract

Document Sections

Abstract:

The next generation in the electricity grid develops an Advanced Metering Infrastructure (AMI) with bi-directional communication. The Internet of Things (IoT) supports AMI to collect data

meters in AMI. The efficiency of RF-IDS over AMI in terms of security, reliability, and energy is evaluated using the Cooja simulator.

Optimizing the power consumption in WSN through target tracking

Publisher: IEEE   Cite This   PDF

Deepka Lokesh ; N ; Uma Reddy   All Authors

Abstract

Abstract:

recently, wireless sensor networks (WSNs) have been employed for tracking maneuvering objects. However, considering diverse deployment nature of sensor device higher measurement error is induced during tracking operation. Enhancing lifetime of WSNs and improving tracking accuracy is utmost important. Here in optimizing the energy consumption a clustered basic routing scheme is considered. Further, for reducing tracking error Kalman filter is applied in different models. However, Kalman Filter-based tracking model fails eliminate tracking error outlier in ...

Document
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I. Introduction

II. Literature Survey

III. Energy Efficient

VLSI implementation of Digital Watermarking Technique for security and authentication of Digital Data

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Abstract— Nowadays it's very easy to tamper with any image and make it available to whole world. As digital image manipulation software are at readily accessible on each and every desktop, Ensuring digital image integrity and image owner safety has become a major issue. This is probably better solution (digital watermarking technique) which is available for this issue to prevent and protect from tampering of image and objects.

As an advance to the existing various methods of digital watermarking techniques. In this approach are watermark the image in the digital camera we can integrate the watermarking chip within framework, to demonstrate that this chip can embedded the watermark directly at the stage of capturing process itself which acts as a real time insertion and reduces the time consuming process of externally adding the watermark to the original image or video after capturing it. Illegal recovering and transmission of multimedia data can be protected via watermark or digital signature or copyright label that authenticates the data. This approach extended the opportunity of protecting the content after the release of content to the open environment.

Keywords—Digital Watermarking, Integrity, Real-time, Multimedia Embedded.

I. INTRODUCTION

The first usage of watermarks was found in Italy more than 700 year ago, it was used by mill that produced paper bonds. But the name watermark was given in 18th century. It was used for anti-counterfeiting measures on currency and other documents. It was named as watermark because the mark mimics the effects of wet paper. Emil Hembrooke got patent in 1954 in the music field which is an example for watermarking technology [4]. Digital watermarking was primarily used by Komatsu and Tominaga in 1998 The process water marketing that embeds data called a watermark, it labels in the form of images, video, text to obtain copyright protection [10]. There will be no such degradation of object by embedding. A digital image is inserted by a unique pattern [2]. This pattern is present in each unchanged copy of the primary image as being an

engineer there is no other better way to thank our country; it's only by giving helping hands to the society.

II. RELATED WORK

In 1994 Van Schyndel changed the LSB of an image to embed an m_sequence watermark. Since then, more and more researchers have studied digital watermarking problem [11].

In general, watermark can be embedded in: -

1) Spatial domain or

2) Transform domain or

3) Compressed domain of an image.

1). Pixels are directly modulated via spatial domain techniques. Or, to put it another way, the image's pixel value is changed to embed watermark information.

2). The DCT, DWT, DFT, or any other transformed coefficients are modified using transform domain techniques. Because the perceptual features of pictures may be better leveraged and the spread spectrum concepts used in secure communications can be easily implemented, transform domain approaches usually produce superior performance.

3). By explicitly labelling the compressed (quantized) symbol streams, compressed domain approaches connect the compression framework with watermarking. Because compression is nearly ubiquitous for multimedia, assuming a compresses domain structure has little impact on generality.

R.G.Van Schyndel discusses two methods. The first is based on LSB bit-plane manipulation, which allows for simple and quick decoding. The second approach adds the watermark to the image data in a linear fashion, making it more difficult to decode and providing intrinsic security. The watermark is robust to averaging, and potentially compatible with JPEG compression [12].

Syscop, a product developed by J.Zhao and K.Koch, is compatible with JPEG compression quality factor 50 percent. An image is divided into 8x8 blocks, with each block containing eight coefficients for marking. To reduce

Advanced Smart Home Surveillance System

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Abstract

A home surveillance system plays a major role in home security system. IoT helps users to connect between different devices and networks. Remotely controlled surveillance system is will be the future. The goal of this project is to develop a system using the Internet of things that alerts the owner when motion is detected, then sends Live stream to the owner, the owner can take necessary action using the blynk application. Raspberry- pi 3b+, different sensors, and modules are used to build this system.

Keywords: - IoT, Raspberry-pi, Surveillance, Blynk

I. Introduction

Home security is a vital part. Primary purpose of this project is to build a better surveillance system. From small houses to large industries surveillance is very important. As robbery and theft have been a threat, surveillance is very essential to satisfy our safety needs. "As per the report published in Indian Today on November 2019, every 3 minutes, a burglary, robbery or break-in is taking place in India", and it's time to think about the safety measures of our house. Surveillance means observing a person or place using electronic tools like CCTV cameras. Just observing is not sufficient, necessary action should be taken over the behavior of the visitor who comes in front of the house. This project is developed so that corrective action can be taken. Home security includes security hardware which is placed at owner's house. Security hardware includes doors, biometric module, temperature sensor, lighting,

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TrackIt - a GPS based Cross-Platform Mobile Application to Track the Buses

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Abstract

With so many advancements in the field of technology, we can now obtain the details about the location of any vehicle onto our mobile devices. Today when we instantly want information about everything, the need for location based services have increased even more which saves time, money and effort. The GPS system has already been implemented and anyone who wants to use it can get access to it. For this system to be implemented we need the GPS facility and a GPS device which calculates the location based on the data obtained from the GPS. The devices that we chose for this purpose are Android phones. Modern handheld devices such as smart phones have become very popular in recent years mostly because it is cost effective and offers multidimensional purposes due to a lot of special in-built features. Dramatic breakthroughs and extra features in these devices have opened doors to a wide range of commercial possibilities. As mobile devices become more and more advanced, we are able to introduce features that were once impossible to imagine, and one of those features is getting locations of nearby places and also sharing our locations with others. Using this ability, our project aims to detect the locations of the moving buses and provide information to the users through a user-friendly mobile application. Another aspect of this project is digitization of the data in the Transport section. As we all know that in this new era where we have data everywhere, digitization is important because it makes our life easier by bringing all the information on our fingertips. Digitization has various advantages like: it improves accessibility and facilitates better information exchange, helps to keep the data safe and secure, there is a reduced risk of damage and most importantly it requires low cost maintenance. The

Automatic Engine Locking System Using Alcohol Sensing

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Abstract

Now a days, drink and drive cases are serious societal problem that needs to be addressed. To minimize these kinds of accidents an attempt is made by using suitable technology that acts as a secondary tool to identify the drunken driver and initiate action on its own. The aim is to ensure human driving safe and to prevent from accidents. This system constantly monitors driver's breath, so if a driver is drunk and tries to drive the alcohol sensor will detect alcohol presence and locks the engine.

I. Introduction

According to Indian ministry of statistics reported 75% of the population uses private vehicles for transportation. Thousands of accidents happen every year, because of the driver's unstable condition due to alcohol consumption while driving. The rules in India are prohibiting the drivers to drink and drive so that it can be controlled. However, effective observation could be a challenge to the cops, road safety officers. Therefore, there is a need for alcohol detection system that can process without the restriction of time and place. For Blood Alcohol Concentration level from 0.4 to 0.6, the person feels confused and it's not safe to drive. From the level 0.7 to 0.8, the person's mental, physical and sensory functions are highly impaired. For BAC level of 0.2 to 0.3 continues not be safe to drive. India sets a legal limit of 30 mg/100 ml of blood alcohol concentration.

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Design and Implementation of IOT Green House Monitoring and Control System

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Abstract

Now a day's technology is improving day by day in every field of life. Most of the people life is dependent on the development of agriculture. Most of farmers they fail to calculate the climate conditions. So, here we brought up the structure of "IOT on Greenhouse monitoring and control system" project design to maintain the specific condition in greenhouse. And it helps to protect the crops from many diseases. A lot of research has done to develop these greenhouse projects. The technique is used with the help of board ESP8266 Node MCU module. The soil moisture is used to measure content of soil. Temperature and humidity are controlled by their sensors.

Keywords: Node MCU, Relay, LED's, DHT11, Dc Pump, Soil moisture sensor, Arduino.

I. Introduction

Agriculture plays a very important in every human life. Most of the farmers is dependent on agriculture and they are trying to implement the trending technology. Sometimes they fail to undergo with a modern technology because of insufficient knowledge and less awareness. By using these IOT Greenhouse monitoring and control systems we can help them to develop the agriculture and increasing the productivity of crops, grains. And they can able to identify the climatic conditions easily. When we combine both technology and agriculture it gives a good results and better . Then we can see the better improvement in the agriculture field. By these we

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Ultra Sonic Sensor Bring Precision to Social Distancing

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Abstract

The current outbreak of the novel corona virus, also known as COVID-19, was declared as a public health emergency by the WHO, where over a million people have been affected by this disease. The two safety measure to avoid the COVID-19 disease is to wear mask and maintain social distancing. Maintaining social distance in workplace, factories is very difficult. In order to prevent this, we engineers have created a device. This is in the form of ID card. The ultrasonic sensor is used to maintain social distance among the workers. An ultrasonic measurement and alarm system with high precision was designed. Adopting the buzzer to alert the user, the device can measure distance truly and well. In addition, the system uses GSM Module which improves the ranging accuracy by sending SMS as a warning to user and notification to authorities in order to maintain social distancing.

Keywords: LED, Buzzer, IR sensors, Arduino UNO R3

I. Introduction

According to the data obtained by WHO of the global pandemic, COVID-19 has severely impacted. In the world and has now infected more than 10 million people worldwide. World Health Organization has recommended the physical, social distancing is used to prevent the spread of COVID-19. Wearing face mask and the following safe social distancing are two of the enhanced safety protocols needed to be followed in public places in order to prevent the spread of the virus to create safe environment that contributes to public safety. Social distancing is an effective measure against the novel Corona virus disease. As factories and companies are contributing high towards the development of a country, many workers have to work even in this pandemic situation. In this COVID-19 environments, where everyone is cautious about their safety, came up with the idea to prevent social distancing by using a device in ID card where every person can wear in their workspace.

People are conscious about their work and they neglect social distancing while working. The existence of a device that can automatically detect the distance from

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AI Pandemic Vision

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Abstract

Now a day's all the peoples in the world are facing problems regarding COVID-19. COVID-19 virus spreads primarily droplets generated when an infected person coughs sneezes or speaks. To overcome this issue, most countries have laws which mandate the use of mask so, it is very important for peoples understand the risk of common symptoms like fever, dry cough, tiredness. Peoples who do not wear masks are at greatest risk of suffering from disease. In India, there is a rule that mask is compulsory for peoples otherwise fine will be charged so, to mandate this we have developed a system which is based on Tensor Flow & Open CV in the field of Computer Vision. System is able to detect whether a person is wearing mask or not, next it will detect the temperature, and finally medical conditions. If anyone of them is present with no mask then system will precisely observe the situation and declare as no mask. The system can be implemented in malls, offices, marts, school and college that only allows people to enter the premises only after detecting mask. It can help the peoples to reduce the disease and save the human life.

I. Introduction

The global spread of the COVID-19 pandemic has caused significant losses. The most critical issues, medical and healthcare departments are facing is the fact that the COVID-19 was discovered promptly. Therefore, it is of great importance to check the mask and temperature to reduce the number of infected people. Peoples wearing mask increase their possibility of survival appreciably over non-mask wearers. According to the law, every person must wear a mask while they are in public place, but many ignored to wear mask. The policeman tried to control this problem manually but it is inadequate for the real state of affairs. The amount of deaths has been expanding every day, especially in developing countries mask is the main safety equipment.

Mileage Telematics

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Abstract

In today's digital world, surveillance systems are needed to track environmental changes in order to better understand current conditions and predict them. It's the same with gasoline tanks in cars. The actual record of completed fuel and fuel consumption on bicycles is not maintained. It causes financial losses. When people are traveling on highways or on hills, they do not know how long their car will be moving. We include counting miles per bike acquisition rate using IoT for this project. The proposed system is built on a Raspberry Pi computer that captures the details of the ultrasonic fuel tank sensor and analyzes this sensor data using telematics technology. This paper outlines the implementation of such a monitoring system based on IoT (IoT) technology to protect fuel from theft and to develop better savings strategies.

Keywords: *Internet of Things, Raspberry Pi, Ultrasonic sensor, Firebase, Flutter, OLED Display, Telematics, Mileage.*

I. Introduction

In everyday Life, we may have experienced tampering of the value count of the fuel level in the vehicle tank. Currently, most of the vehicles use traditional indicators that indicate the amount of fuel in the fuel tank with a symbolic indicator indicating E (empty), H (half), and F (full) indicators. As the

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Footpath Accident Detection and Alerting System

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Abstract

This project is mainly based on accident detection system on roadside when no people are present on that particular area or place. Mainly accident happen due to improper driving by the driver, when over speed, alcohol consumption and many more similar aspects were detected.

This idea basically works when a vehicle hits to the footpath, the vibration sensor detects the signal and sends to the registered receivers near to the accident zone, the system sends a message prompt that vehicle is met with an accident in that particular region or area with the help of google maps. In this approach, Arduino Mega, GSM transmitter and GPS System to send the signal to the receiver end which gets this information to the mobile via message, that message includes accident location. By clicking on to the link it will redirect in to the google map and receiver will get exact co-ordinates or location and comes to the spot to help the person who met with an accident.

Keywords: GSM, GPS, Footpath, Vibration Sensor (SW-420), Arduino Mega (ATmega2560), Piezoelectric, Transmitter (Tx), Receiver (Rx), Arduino IDE.

I. Introduction

In present days the rate of accidents can be increased rapidly. Due to increase in the population the usage of vehicles like cars, bikes are increased, because of this reason the accidents can be happened due to over speed. People are going under risk because of their over speed, due to unavailability of advanced techniques, the rate of accidents can't be decreased. To reduce the accident rate in the country this project introduces, an optimum solution. Automatic alert system for vehicle accidents is introduced, the main objective is to control the accidents by sending an alert message

Yarn Imaging

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Abstract

The decentralized power loom sector plays pivotal role in meeting clothing need of the country and also in economic trade. Due to the technological advantages plus rise in demand the usage of power looms is getting upsurge. As the phrase "Every Advantage has its Disadvantage", power loom has also got some of its own defects. One comes "warp streaks" the lengthwise yarn which runs from back to front of the loom are called warp. As warp is the base of fabric, it must be strong and break resistant. While weaving it may break and create a lag in the process, and produce poor quality fabric. Hence in this research as a ray of hope by adopting system based on image sensor technique using raspberry pi, which is customizable and programmable as a new idea of rescue from saving the process. So, by using image processing technique we are detecting defects in the warp yarn in simulation meathead as an idea.

I. Introduction

Textile industries has become second largest sector in the world. It mainly deals with the production of yarn and cloth. Loom means one of the machines used for textile production and device used to weave cloth and tapestry. A power loom is mechanized loom, and was one of the key developments in the industrialization of waving during the early industrial revolution. The first power loom was designed and build in 1786 by Edmund Cartwright. The first loom didn't start to evolve dramatically until the Middle Ages, after it gradually got upgraded step by step like using shuttle, cards with punched holes for design on fabrics. Later arrival of electricity takes place in the beginning of the 20th century by large electric motor.

Detecting COVID-19 from Lung X-Ray Images Using Deep Transfer Learning

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Abstract

The COVID-19 pandemic is causing a major outburst in most of the countries in the world, causing a major impact on life and health of people across the world. One of the most important steps in fighting against COVID-19 is to detect the corona virus infected patients in early stages, and put them under proper care. Detecting this infection from X-ray and CT scan images is one of the best ways to diagnose the patient. Few of the studies showed some abnormalities in the radiograms of the COVID-19 infected patient. Based on early works, the applications of deep learning models are used to detect COVID-19 from chest X-ray images. It is required first prepare the chest X-rays images dataset from publicly available datasets. By using the chest X-ray images presence of COVID-19 infection is identified radiologist. Transfer learning on subset of radiograms are used to train the convolutional neural networks, like ResNet18, ResNet50, Squeeze Net and dense net-121, to identify COVID-19 infection in chest X-ray images. Further analysis is required on a large set of COVID-19 images, to have better accuracy rates.

Keywords: COVID-19, CNN

I. Introduction

Since last year, a novel corona virus has spread from China, and to many other countries of the world. By April 2020, more than 2 million cases were confirmed, and reported more than 150,000 deaths in the world. Due to unavailability of vaccine and

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Design of Robotic Vehicle for Detection of Human Based On Internet of Things

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Abstract

Technological revolution, earnest endeavours in the latest high-speed technology, and the advancements in the capabilities of modern computers leads to a realistic chance for a brand-new robot controls and controls and enlightens upon the latest strategies of the control theory. This technical advancement and the necessity for top performance and efficient robots created quicker, accurate and many intelligent robots exploiting the new robot control devices. Natural disasters are not stopped from happening, however, we the human race is getting more and more aware and cautious within the competition of intelligent rescue operations in such disastrous areas, precious life and materials rescued even though such disastrous situations are not avoided. Thus, the data have collected are efficiently by the rescue operators and saves valuable human lives. In security applications for surveillance, these robots are used.

Keywords: Arduino Uno, PIR sensor, Ultrasonic sensor, H Bridge, DC motor.

I. Introduction

A disaster is the result of a hazard uncontrollable in a highly vulnerable community, often resulting in mortality and morbidity. Indeed, the disasters may

Implementation of Noise Detector with Automatic Recording System Using Arduino

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Abstract

Noise pollution is a growing problem in modern cities, thanks to rapid population growth, urbanization and new technologies. Moreover, at times, a noisy neighbor or co-worker can drive crazy and affect the well-being of a society. Talking loudly is an annoying habit in an office or school environment. Having a loud co-worker or student can cause distractions and reduce the efficiency of the work and harm the productivity. To solve this problem, a noise detector with automatic recording system is implemented in this project. This device notifies users whenever it detects loud noise , when the sound crosses certain limits, as well as it automatically records the sound and saves this recorded sound in a file. This Noise Detector System can be used in library, office and classroom environments to identify noisy people so that necessary action can be taken against them.

I. Introduction

It is absolute that speaking loudly is an annoying thing. Having such a co-worker in the office environment will influence the work and productivity. When it comes to schools and colleges pedagogue or a preposter can't monitor every last one all the time. It is very difficult to identify a noisy person. So, it becomes obligatory to control students and monitor the situation. This project is set to overcome these problems. So whenever sound crosses the certain sound limit it will notify us and makes a small beep sound and also it records the sound which is above the set limits. So that one can identify the noisy people and can take the necessary actions. It is not just noise generated by humans that are of concern but electronic devices and other equipment can also make a loud noise which may disturb the students and faculty. Though this such noises can also be detected and also can take necessary actions.

Implementation of Instinctive Overheat Detection and Cooling System for Waterpumping Motor

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Abstract

Modern technology is largely depends on automation and control system. Automation and control system refers the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft, automobile and other applications with minimal or reduced human intervention. However, it is also used to save energy and materials and to improve quality, accuracy and precision. Because of these advantages, nowadays automation and control system is using in every sector. The aim of this project is to design and to develop such type of automatic cooling system for a motor which will aid in protecting the motor from overheating by means of signals through a temperature sensor. This signal and cooling system mainly consists of temperature sensor circuit, Arduino and LCD. The temperature sensor is fixed to the Arduino, and operating temperature is measured by this. This produces the signal when the motor temperature exceeds the set temperature limit. LCD continuously shows the operating temperature of motor

Keywords: Motor, Temperature, Arduino

I. Introduction

In recent years water pumping motor overheating and damaging has become one of the important concern in household appliances such failures may cause undesired shutdowns and service disruption, though some components may not fail

Photonic Integrated Circuits for Modern Telecommunication

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Abstract

Photonic Integrated Circuits allow you to meet the growing demand for online communication systems40% per annum. This growth is driven mainly by the increase of video in online networks. This growth is now accelerating as well mobile access, with video clients being sent to all smartphones and tablets, making the video easy to use via the network to communicate anywhere and anytime. This paper reviews multiple platforms for integrated photonic circuits and compares them performance. This paper also describes new approaches to the design and construction of photonic integrated optical transceiver regions of the next terabit period era.

Keywords: Integrated photonics, photonics integrated circuit, optoelectronics, optical transport network.

I. Introduction

The development of virtual transport network technology is fueled by emerging services such as data center cloud services, ultra-bandwidth video services, and 5G mobile network services that will drive future optical communications network development and structural change. Some industry studies show that the total value of the internet is growing by about 40% per year. This growth is driven mainly by the increase in video on networks - Netflix now takes up to 30% of the internet bandwidth at peak times and new competitors such as Amazon, Hulu, Youku, and BBC I Player are growing rapidly. This growth is now accelerated by mobile access, with video clients being sent across smart phones and tablets, making video easy to access via any network connection, anytime.

The flow of monthly mobile data via smartphone continues to increase in all regions. North America is widely used, and traffic is expected to reach 7.1 Gigabytes (GB) per month per smartphone by the end of 2017 and increase to 48 GB by the end of 2023. is set to reach 4.1 GB by the end of 2017 and 28 GB by the end of 2023.

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Smart Helmet Controlled Vehicle

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Abstract

The invention of the automobile is one of the greatest successes of mankind, greatly contributing to the development of the country. However, it is impossible not to mention the number of deaths caused by these cars, of which tens of thousands of people lose their lives or have life-changing accidents. Traffic accidents are mainly caused by vehicle collisions and human losses are due to lack of safety equipment. The first step to know if the helmet is worn or not. If a helmet is worn, the ignition starts, otherwise it stays off. For this, a temperature sensor is used to detect the human temperature. The second step is alcohol detection. The MQ3 alcohol sensor is used as a breath analyzer to detect the presence of alcohol in the breath of a cyclist. The third step is whether the headset is locked or not in this condition, the lock switch will be used. When these three conditions are met, only ignition starts. All conditions are displayed on LCD. Each condition is assigned with a unique character that is transmitted through the zigbee. If runners are involved in an accident, they may not get immediate medical help, which is one of the leading causes of death. The invention of the automobile is one of the greatest successes of mankind, greatly contributing to the development of the country. However, it is impossible not to mention the number of deaths caused by these cars, of which tens of thousands of people lose their lives or have life-changing accidents. The causes of traffic accidents are mainly due to vehicle collisions, loss of life due to lack of safety equipment. The first step in knowing if the helmet is worn or not. If a helmet is worn, the ignition will start otherwise it will remain off. For this, the temperature sensor is used to detect human temperature. The second step is alcohol detection. The MQ3 alcohol sensor is used as a breath analyzer which detects the presence of alcohol in the driver's breath. In the third step of seeing if the headset is locked in this condition, the lock switch is

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Smart Mirror Using Raspberry PI

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Abstract

Smart mirrors are the mirrors of the future. This mini project depicts the design and improvement of a product called Smart Mirror with Raspberry Pi that meets the requests of common person also receive the general information like date, day, news, time, weather, face recognition with emotions of human beings and also other needed information. For This mirror is designed through the ability to collect for this information during the research of a morning daily life in direction to more efficiently as well as easily. To make this additional interesting mirror, we could develop our produces to include a change of control methods, and music and other entertaining. In future we hope that the mini project based on smart glass will enhance innovative and modern way of life. The face recognition feature will improve the application level of the mirror.

Keywords: Raspberry Pi, date, day, time, weather, news, face recognition.

I. Introduction

Everything in the world is trending towards a greater development and everything is connected. Day by Day, everything in the world is being connected to one another. Everything is getting into Smart. Usually Mirrors are used for grooming purposes in a man's daily life. Internet plays a vital role for getting connected and it plays a key role for being Smart. Smart Mirror is a device which displays various information like date, day, weather report, news updates and reminders. A man in his hectic life finds it difficult to find time to read news-paper or to get some important

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UVC Home Protecting Agent

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Abstract

In this covid-19 pandemic situation, the people are struggling with a lot of problems, this situation we all are giving more importance to our health to be good, to do that our big task is to maintain our working area and home to be viruses free. buying things from outside we dont know how it is safe from viruses. More countries are facing a lot of problems in this situation, some of them are the production of a huge amount of sanitizer, masks, and also some of the home cleaning and vegetable cleaning liquid products. hence in order to reduce the usage of more sanitizer, we are developing a device called UVC home protecting agent. this device contains UVC lamp which produces radiation of wavelength 207nm-222nm in UV region of the electromagnetic spectrum. this range of radiation scientifically proves that it is very less dangerous to human tissue and still lethal to viruses and bacteria and this radiation is capable of killing 90% of coronaviruses, >95% of aerosolized H1N1 influenza viruses, SARS-Cov Corona subgroups such as alpha (Hcov-229E) and beta (Hcov-0Ch3), and other airborne mediated microbial viruses. this device having 0-180 degrees of rotational mechanism towards both horizontally as well as vertically to kill viruses efficiently and also this device can be controlled using a smartphone with an android app to support more user-friendly.

Keywords: UVC-ultraviolet c, H1N1-influenza, SARS-Cov, Hcov-229E,Hcov-0Ch3.

I. Introduction

The newest coronavirus disease COVID-19 is a highly transmittable and pathogenic viral infection caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2),The responsible pathogen, SARS-CoV-2, is an enveloped single-stranded RNA virus and a member of the coronavidae family of order nidovirales. All viruses in this family show very similar characteristics. They have a spheroid shape of about 100-150 nm, are covered with spike proteins on the

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Quad Legged Camouflage Robot for National Security

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Abstract

Fundamentally, A Robot that is equipped for performing errands, for example – Motion, detecting the harmful gases, for detecting the metals and bomb in an underneath surface. The size of these robots is not contactable enough to reach the most compact places without getting identified by others. The Method that we are going to propose will be addressing these solutions and It is named as "Camouflage robot". These Robots play a vital role in saving many human lives in the border. The System consists camouflaging feature, a wireless high speed surveillance camera, Moisture and Humidity checking features and a bomb detecting features. This proposed solution will have a Transmitter (Robot) and Receiver –(Joystick), Both of this module will work simultaneously i.e.,

Transmit and Receive together in wireless mode. The Receiver module will have an addition feature to view surveillance camera and the mentioned parameters in internet through a Node MCU module which also proves it to be an IOT Model.

Keywords:-Camouflage Robot, IOT, Node MCU

1. Introduction

Human lifestyles comes to danger at locations wherein human being cannot continue to exist, conflict fields, excessive altitude areas, etc. As human's life is always previous than anything else, the proposed robot is substitution to human existence in which in it acts as a safety. The recommend device analyzes the encompassing vicinity and additionally provides live pictures to the observer, and additionally Robot presents the entire statistics approximately the climatic conditions and additionally the gap and the altitude [1] the robot implemented is used for the national security in which it can spy and give the information. If any trade in the condition the robotic will use camouflage function to protect itself from the enemies. In this proposed gadget the variety of the conversation accelerated by means of the usage of NRF24L01 (RF module). [2] The basic nice of all present secret agent robot is to do the surveillance element and other assigned duties. In our proposed gadget the main intention of our robot is just too unique from the opposite undercover agent

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Electronic Weather Station

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Abstract

The IoT based weather monitoring system monitors and reports the weather conditions at a region, regardless of time. Observing climatic conditions manually is tough. This work is to develop an automated system that monitors weather. The proposed system is an advanced solution for weather monitoring using Internet of things (IoT). This is an advanced solution for connecting things through internet. Here the sensors used are for monitoring temperature, relative humidity, pressure and light intensity. The data that is collected stored into the cloud and plotted accordingly. The data uploaded can be accessed through SMS or through the website.

I. Introduction

The weather conditions are required to be monitored to maintain healthy growth of crops. The motivation behind taking up this project is the wide range of utility in industries and agricultural institutions. The weather conditions of the region where the module is placed can be monitored remotely. The growth of technology makes way to read the environmental parameters easy compared to past. The sensors are the miniatured electronic devices used to measure the physical and environmental parameters. The system proposed in this paper describes the implemented flow of the electronic weather station. Sensors are the essential components in many applications which are used not only in industries but also in daily life applications such as buildings safety and security monitoring. Internet of Things, which consists of multiple on/off devices connected to the Internet. That includes just about everything you can think of, mobile phone to building maintenance and jet engines. Medical devices such as pulse monitors and farm animals can send data through the network and are members of the Internet of Things. They also assist in environmental matters and in the department of agriculture. Wireless communication is the transmission of information at a distance without the use of wires. Distances may be short (a few

Brain Computer Interface Based Home Automation Using Mindwave Device

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Abstract

Mind controlled based home automation system is mainly built on Brain Computer Interface (BCI). Today people have become physically disable for stroke and traumatic brain injury. BCIs are systems that can bypass conventional channels of communication to provide direct communication and control between the human brain and physical devices. The proposed system worked by translating different patterns of brain activity into commands in real time.

The brain wave sensor will sense brain signals and it will convert the data into packets and transmit through Bluetooth. Then the control command will transmitted to the relay circuit. With these entire steps, system can control any home appliances through brain signals, which connected to the relay circuit.

As a result of various forms of illnesses or accidents such as spinal cord injury (SCI) or a form of motor neurons disease or ALS, many people suffer from a severe motor function loss and are forced to accept a reduction in the value of life, depending on the care of others. BCI can provide logistic support to those suffering from said disease.

Brain Computer Interface BCI helps to develop Brain actuated applications like home automation using EEG brain waves using EEG device

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Abstract:

The requirement of image processing is very much required in the present world. Almost in every field it has a huge application. Detecting and recognizing the face is one of the most trending image processing systems as it is mostly used for the authentication process to identify specific person etc. Along with face detection now a-days understanding emotions also plays a vital role. These all processing's are not only required in humans but also in animals in order to understand the emotions of them. In this paper, we have endured through various technical papers which have different methods or algorithms used for detecting and recognizing the face and also for detecting the emotions. These reviews helped us in finding the best algorithm in deep learning perception for cattle face detection and recognition and also understanding the emotions so that we can improve the production parameters of cattle which include production of milk, good yield in agricultural land etc.

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A Priority Based Dynamic DSR Protocol for Avoiding Congestion Based Issues for Attaining Qos in MANETS

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Abstract:

The enhancement of Quality of Service (QoS) is the emerging domain in mobile and ad-hoc networks with various routing protocols. However, most routing protocols fail to support the network requirements as the resources are limited and lead to congestion in the network because of multiple nodes. Hence, the infrastructure-less architectures of mobile communications require a new set of strategies for improving the QoS factors. This paper proposes a priority-based mechanism in the DSR routing protocol for enhancing the QoS for the MANETs. In the experimentation, ten different communications are considered, and several performance parameters of the network, such as throughput, end-to-end delay, and packet delivery, are measured. They are compared against the traditional DSR protocol. From the simulation of experiments and comparison, we observed that the proposed model has significantly reduced the network's delay and increased throughput in the network.

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I. Introduction

II. Related Works

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7	Dr. Nataraju.S. N	Wear Characteristics of Double Ceramic Particulate Hybrid Aluminum Matrix Composite"	"Futuristic Trends in Mechanical Engineering" (ICOFTIME-2020)	International	DOI:10.1088/1757-899X/1013/1/012016	44
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Chapter

Efficient COVID-19 Diagnosis Approach Using Multi-scale Retinex and Convolution Neural Network

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Abstract

Post coronavirus disease (COVID-19), pandemic has triggered and provided an opportunity to researchers to contribute towards diagnosis and prognosis of coronavirus disease. As it was found from the literature review that computer vision could assist tremendously in solving complex problems related to healthcare and contributing towards fighting against controlling COVID-19. Recent works have motivated the authors to propose a convolution neural networks (CNN)-based solution towards classifying of chest X-ray images as of COVID and non-COVID cases. Prior to the classification, the images undergo pre-processing using popular image enhancement technique, namely retinex algorithm, and the results obtained from the enhancement algorithm are utilized in the classification. Experimental results conducted on 25 images from Kaggle's chest X-ray image (non-COVID case) dataset and 25 images from Dr. Joseph Cohen dataset (COVID case) have shown that proposed method has good accuracy and proves as an efficient algorithm towards diagnosis of COVID-19 pandemic.

Efficient COVID-19 diagnosis approach using Multiscale Retinex and Convolution Neural Network

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Abstract. Post corona virus disease (COVID-19), pandemic has triggered and provided an opportunity to researchers to contribute towards diagnosis and prognosis of corona virus disease. As it was found from the literature review that computer vision could assist tremendously in solving complex problems related to health care and contributing towards fighting against controlling COVID-19. Recent works have motivated the authors to propose a convolution neural networks (CNN) based solution towards classifying of chest x-ray images as of COVID and Non-COVID cases. Prior to the classification, the images undergo pre-processing using popular image enhancement technique, namely retinex algorithm and the results obtained from the enhancement algorithm are utilised in the classification. Experimental results conducted on 25 images from Kaggle's chest X-ray image (Non-Covid Case) dataset and 25 images from Dr.Joseph Cohen dataset (Covid Case) have shown that proposed method has good accuracy and proves as an efficient algorithm towards diagnosis of COVID-19 pandemic.

Keywords: COVID, Convolution Neural Networks, Machine Learning, Image Enhancement, VGG16.

1 Introduction

Various sectors in the present age such as transportation, e-commerce, education, health care, electronic communication etc. are undergoing rapid changes due to advent of artificial intelligence and machine learning. Health sector in particular has seen and possibly will see a rapid development in future specifically in the area of prevention [1], diagnosis [2] and curing of diseases. Genomic analysis[3], medical decision support[4],[5], 3D printing of medical equipments, human/animal body parts[6], designer babies[7], ageing research[8], brain computer interface[9], drug design[10] etc., are just few where tremendous usage of artificial intelligence (AI) and machine learning (ML) have been witnessed.

Advancements in machine learning and data science are well adopted in health care applications to extreme levels due to huge amount of health data generated by patients such as vaccinations, diagnostic report, X-ray results, CT scan reports, DNA sequences, past medical history and so on. One vital usage of ML approach is in the

Real Time Farmer Assistive Flower Harvesting Agricultural Robot

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Abstract— Flower Harvesting AGROBOT is a new innovative idea which is developed in concern with Farm Labours, in order to reduce the work and time consumption of labours. As we are aware of the saying that "Farmers are the backbone of our country" hence we come up with new innovative model which helps the farmers. Generally flower plants will be having the harmful thorns which harms the flower plucking labours while plucking the flowers. Using the AGROBOT we can reduce this risk and harmness. This AGROBOT has been trained with more than 400 flower images, so it can easily detect the flowers in the plants and also able to recognize the healthy flowers using camera. These identified flowers will be compared with sampled flower images in Raspberry Pi memory. In this process if any damaged or dry flowers occurs then it will avoids the plucking of such flowers and hence reduces the time. If the detected flower is matched with the sampled flower then the AGROBOT is static and operates its arm to pluck and store the flowers in the basket using LBP, machine learning and neural network algorithms. This AGROBOT also detects the harmful pests and insects in the plants using camera interfaced with Artificial intelligence algorithm. Once the harmful pests and insects are identified, the AGROBOT will sprays the pesticides and insecticides to the ROI in the real time.

This AGROBOT will also performs the multi-functional operations such as measure of volumetric water content in soil by soil moisture hygro meter and to measure the acidity or alkalinity of a measure by PH sensor. Further it also detects the damages of crops because of trespassing by intruder and animals by PIR sensor through which alerts the owner through smart phone. Further it also measures fertility of the soil using electro chemical sensor.

Keywords— AGROBOT, ROI, LBP, Raspberry pi 3, NodeMCU (ESP8266), Arduino Uno (ATmega328p), PH sensor, Raspberry pi display, Moisture hygrometer, PIR sensor, IR sensor, Electro chemical sensor, Image processing, RTX sensor, Artificial Intelligence, Machine Learning, Tensor Flow and IoT.

I. INTRODUCTION

We are aware of the saying that "Farmers are the backbone of our country". As most of the farmers use the traditional way of approach in farming, this technology will help them to work on farmland easily without staying in farmlands by involving in other works. This system approach is towards the flowers using Image Processing. This is the important and specific application involved in the project.

Flower Harvesting AGROBOT consists of Raspberry PI, USB Camera, Arduino, and Nodemcu. At first the AGROBOT detects the flower using the Image Processing technique along with the sensors which are installed in it. A control system is used for To and Fro movement of arms. The AGROBOT will make use of the above techniques to cut the flowers carefully and place them into the baskets.

Plants require the use of wide range of pesticides and insecticides to control diseases and pests, without this plants may get damaged. AGROBOT can detect the pests and insects using camera and image processing, if the AGROBOT come across any pests then it will sprays the pesticides and insecticides to plants in the real time[6]. By use of pesticides and insecticides production and marketability will increases. Soil moisture is one key factor to restrict the growth of crops in rainless regions and it is crucial to farmland production and can significantly affect the irrigation decision-making for agricultural management. Here the soil moisture will be detected by the AGROBOT using the moisture hygrometer, if water is less than 50% in soil then it turn on the water pump to water the fields[1,2].

Having the right soil PH is key to growing a healthy garden, but it is a factor, often overlooked in favor of nutrient levels and soil consistency, the PH of the soil plays a major role in how well the plants can absorb the nutrients which had provide them. The wrong PH often will not kill plants outright, but it can affect their growth and result in subpar blooms or crops, depending on how sensitive the plant is. In actuality, many plants are able to adapt to a range of PH levels. For example produce different colour flowers depending on whether they are grown in acidic or alkaline soil. With the help of PH detector we can detect the PH value and the value is send to the owner, so that required precautions can be taken by farmers to reduce effect of growth in plant[3].

In the case of farmlands or agricultural lands surveillance is very important to prevent unauthorized people from gaining access to the area as well as to protect the area from animals. Various methods are only us surveillance which is mainly for human intruders, but we tend to forget that the main enemies of such farmers are the animals which destroy the crops. For this reason using passive infrared (PIR sensor) which detect the infrared radiation emitted and send the information to owner, so that he get to know some of the unauthorized persons or animals entered into the farm land. Hence we can prevent from loss or damage of the crops.

Classification of Fetal Heart Ultrasound Images for the Detection of CHD

T. V. Sushma, N. Sriraam, P. Megha Arakeri, and S. Suresh

Abstract Congenital Heart Disease (CHD) is the major cause of infant mortality accounting to about 28% of all congenital defects, thereby emphasizing the need for its early detection. Ultrasound (US) imaging modality is widely used in prenatal screening for monitoring the growth of the fetus. Clinically determining the abnormality is tedious and time consuming and depends on the expertise of the radiologist. Automated recognition of CHD from ultrasonic 2D imaging is proposed in this study which makes use of statistical features and pattern classifier such as support vector machine. Cineloop sequences with different abnormalities have been used for training. Features are classified using fine Gaussian and medium Gaussian kernels of SVM classifier with tenfold cross-validation resulting in an accuracy of 90% and 91.25%, respectively. The sensitivity obtained during the simulation is 90% and 92.5% for fine Gaussian and medium Gaussian, respectively, while the specificity is 90% for both the classifiers.

Keywords Congenital heart disease · 2D echocardiograph images · GLCM · SVM classifier

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Spectrum Detect in Unexploited Radio Environment Resource Opportunities

H.Srinivasa Murthy, S.Phanikumar,Sudarson Jena

Abstract

Radio innovation powerfully utilizes the sit out of gear range assets of each essential organize in multi-heterogeneous arrange thick arrangement and meeting environment, which can viably progress the information transmission rate and framework capacity, how to proficiently and sensibly select the organize and distribute sit still range with numerous heterogeneous essential systems covering scope and broadened client necessities. Accomplish maximizing the whole transfer speed and minimizing the overall fetched, a multi-objective optimization scientific show for organize choice and sit out of gear range allotment is set up within the setting of comprehensive in organize space numerous essential networks asset qualities of range distinction is considered. To examine all the issue inspect with open void area information base void area contraptions WSDs that work inside the underutilized TV void area must not intruded with the tenant mechanized TV gathering perceive the conditions for concordant conjunction among WSD and three unmistakable DTV administrations: Advanced Tv

Frameworks Committee, Coordinates Administrations Computerized Broadcasting Earthly, and Advanced Video Broadcasting Earthly, analyze WSD work transmitted control less than 13dbm least remove 50 m from receiver and adjacent channels but the close tone.

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WEAR CHARACTERISTICS OF DOUBLE CERAMIC PARTICULATE HYBRID ALUMINIUM MATRIX COMPOSITE

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Abstract: - Metal matrix composites got popularity due to their light weight and high strength and replacing metal parts from various applications like aerospace, automobile and biomedical. Aluminum matrix composites (AMC) are suitable for the aerospace industries and still the research is going on to use it for other applications. In this research work, a double ceramic particulate AMC was synthesized. The ceramic powders used were alumina (Al$_2$O$_3$) in wt. % of 0.5, 1.0 and 2 and silicon dioxide (SiO$_2$) in wt. % of 0.5 and 1.0. The synthesis of composites was done by stir casting method. SEM analysis showed that porosity was reduced and the distribution of reinforcement particles were uniform throughout the matrix. Wear test was carried out using pin on disc wear testing machine, results showed reduction in wear. SEM analysis of worn out specimen showed transition from adhesive wear to abrasive wear for hybrid composites.

Keywords: AMC, Al$_2$O$_3$, SiO$_2$, Stir casting

1. Introduction

In the present scenario, a composite is a multiphase material can be prepared artificial or natural way by adding the constituent phases, which is chemically dissimilar and have separate distinct interface. Basically, the composite materials have been identified by two phases namely, matrix and reinforcement. Matrix phase is characterized by continuous phase whereas other phase is reinforcement which is dispersed phase [1]. The development of metal matrix composites made significant change in the aerospace and automotive industries. MMCs have been made by using most of the metals and their alloys as the matrix material, but only few metals and alloys are available for high and low temperature applications. In air craft industries, the material selected should be light weight and high strength. The popular matrix materials such as titanium, magnesium and aluminum and its alloys are popular materials suitable for aircraft components. The reinforcement material selected for making MMC should have high modulus and the resulting composite material possess better properties than the most of the alloys. The suitability of composites at different service temperatures depends on its melting point, physical and mechanical properties. Some metals have low melting point and the reinforcement materials should improve the melting point. Aluminum and its alloys can be a one good choice as matrix material which is light in weight and high strength to weight ratio. Discontinuous reinforced aluminium matrix composites (DRAMCs) are the composites in which discontinuous fibers are used like whiskers, particulates etc., which strengthen the aluminum matrix. Most of the researchers concentrated on the overall performance of the composites by selecting the proper reinforcing material. The performance of DRAMCs can be improved in three different ways. First way is to find the cheaper reinforcement material to reduce the overall production cost and to tackle the limited availability of the ceramic reinforcement material. This can be achieved by using the materials from industrial wastes and agro waste derivatives. Some of the investigations showed the usage of alternative reinforcements in the preparation of composites exhibits improved properties than

Design, Development and Analysis of Hybrid Composite Automobile Body Panels Made up of Conventional and Non Conventional Fibers

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Hydraulic Press used for Applying
Uniform Load (Equipment procured
from IEI Grant)

Prototype Automobile body panel
developed using hybrid composite
(Example: Car mirror shell)

OBJECTIVES

- Chemical treatment to improve wettability of Jute fabric.
- To fabricate synthetic-bio (E-glass/ Jute) hybrid fiber reinforced epoxy composite.
- To characterize the mechanical properties such as tensile, bending and impact behaviour of developed composite.
- Designing, Developing and Analyzing real version of composites structure for specific automobile body panel application to study the field behaviour.

ACHIEVEMENTS

In the current research experiments, the mechanical strength, flexural strength, impact resistance, and physical properties of composites showed a major enhancement. The developed composites showed that it is isotropic

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Chapter 13
Multi-response Optimization of FSW Process Parameters of ZE42 Alloy Using RSM-Based Grey Relational Analysis

Ramanan Gopalakrishnan, Darwins Ananthn Kanakaraj, Bino Prince Raja Dennis, and Ajith Raj Rajendran

Abstract This study presents the multi-objective optimization using grey relational analysis (GRA) of friction stir welding (FSW) parameters of ZE42 alloy utilizing of 1.2 mm diameter H13 wire. Input parameters for welding process perform a predominant part in calculating expected quality in weld. The research has been carried out in accordance with the response surface methodology (RSM). The input parameters preferred were the welding speed, axial force, tool pin profile, and tool speed. The responses for quality targets preferred are the ultimate tensile strength (UTS) and hardness strength. Grey relational analysis has been preferred in optimizing the input parameters instantaneously allowing for output variables in much variable. Determination of optimal parameters combination is stated -o $A_3B_3C_3D_1$ when welding speed at 1150 rpm, tool speed at 60 m/min, cylindrical tool pin profile at zero, and axial force at 5 N. ANOVA method finds its total weldment quality over different level of input parameters.

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Sl. No.	Name of the Teacher	Title of the Paper/Book /Chapters Published	Name of the Conference/Journal	National/International	ISBN/ISSN NO.	Page No.
		Academic Year 2019- 20				
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2	Pradeep Kumar G M	Pedestrian Crossing Collision Avoidance Using Convolution of Neural Network	Second International Conference on Innovations in Technology, Business, Management	International	978-93-86891-19-8	52
3	Dr. B N Shobha	Design and Development for Image Transmission Through Low Powered Wireless Networks Using Color Space Conversion Module	NA	NA	2367-4512	53
4	Savitha M M	An IOT Based Intelligent Medicine Box Using Vending Machine-Medical ATM	International Conference on Emerging Trends In Science & Technologies	International	978-3-030-24314-4	54
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20	Swetha T N	Smart areca nut plucking robot	International Conference on Emerging Trends In Science & Technologies	International	978-3-030-24314-5	70

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Conversion from Lossless to Gray Scale Image Using Color Space Conversion Module

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Abstract

Compression plays a vital role in better utilization of available memory space and bandwidth. Hence it is widely used for image archiving, image transmissions, multimedia applications, cloud-computing, E-commerce, etc. For effective presentation and utilization of digital image specific techniques are required to reduce the number of bits. There are two types of image namely Lossy and Lossless. Conversion from lossless to lossy images requires specialized and licensed software.

A software prototype module has been developed using color space conversion module using OpenCV which converts lossless image to lossy image after resizing, further convert's lossy image to gray scale image and vice-versa. The lossless images such as TIFF, BITMAP, and PNG are initially resized, converted to lossy image and further converted to Gray scale. On conversion to gray-scale it has been found that the number of bits has been considerably reduced. Performance analysis of software proto type is obtained by comparing the Decompressed image quality with respect to compression ratio, compression factor, PSNR (Power to Signal Noise Ratio) and MSE (Maximum Signal Error). The results of the developed color space module are compared and presented in the form of tables and snapshots.

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Chapter 22

PEDESTRIAN CROSSING COLLISION AVOIDANCE USING CONVOLUTION NEURAL NETWORKS

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ABSTRACT:

Pedestrian Detection is a challenging challenge for self sufficient vehicles in the urban environment. A pedestrian in videos has variety of appearances which include frame and occluded position. The shift problem in detecting pedestrian reasons the loss of parts inclusive of legs and head. To address such a trouble, we propose partition oriented convolution neural networks (CNN) based method for pedestrian recognition using saliency map and boundary field framework in this paper. The proposed approach includes two frameworks: person-detection and alignment. We use saliency map together with weights within the detection framework to get rid of fake detections inclusive of lamp posts and trees. The alignment employs self-assurance map for better prediction of pedestrian alignment. The approach is implemented and analysed on various statistics set, CALTECH, INRIA and ETH. It is determined that the proposed technique has better accuracy and low fake positives than the prevailing methods.

Keywords: Occlusion Handling, False Positive Removal, Convolutional Neural Network, Pedestrian Detection, Boundary Box Alignment, and Saliency

INTRODUCTION:

Self-Driving Vehicles also are referred to as autonomous vehicles. The vehicles are capable of occupation urban environment with any human interaction to vehicles. Self-driving vehicles are enclosed with hardware(external) also as software(internal) things hardware combinations are like sensors like radar, lidar, sonar, GPS, odometry etc. Software requirements are like image processing, computer vision and machine learning. Intelligent transportation (ITS) applies advanced technologies of electronics, communications, computers, control and sensing and detecting altogether sorts of transportation so as to enhance safety, efficiency and repair, and traffic situation through transmitting real-time information.

Detecting humans may be a task that features a great importance and value within the field of computer vision. For multiple purposes, from video surveillance systems to cars with automatic pilot, there are continuous improvements within the techniques for detecting humans.

Design and Development for Image Transmission Through Low Powered Wireless Networks Using Color Space Conversion Module

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Abstract. Transmission of images over wireless network requires the utilization of huge Bandwidth, energy, memory space and data rate. Image compression plays a vital role in delivering an efficient processing with the lower end configurations, efficient data transfer, and better utilization of available memory space by significantly reducing the number of bits required for presentation without any appreciable change in its quality and information content. Hence it is widely used for image transmission process.

This paper mainly focuses on the development of hardware module for transmission of color image through low powered wireless network by compressing the color image using Color Space Conversion module. Zigbee being appears as a low powered wireless device, which can offer low Bandwidth and less data rate. It becomes very critical and challenging for transmission of color images without any appreciable delay. Images should be compressed within the given data rate before transmitted. These drawbacks are overcome by using the Color Space Conversion module.

Keywords: Color Space module · Zigbee · MCU · Zigbee TX · Zigbee RX · YUV

1 Introduction

Digital image processing deals with operations on a digital image such as compression, segmentation, resizing etc.

An 2-D image is defined by the function $f(x, y)$. Compression [6] of digital image is possible because color channels are statistically dependent, pixel values are spatially correlated and human vision system does not perceive all details.

An IOT Based Intelligent Medicine Box Using Vending Machine- Medical ATM

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ABSTRACT

Medicines play vitally important role for well-being of a person, it helps to prevent illness and heals diseases. This paper helps to get acquainted with Any Time Medicine is a machine which delivers required medicine in emergency cases and ensures availability of 24x7. It can provide medicines for basic common health issues like fever, cold and cough, etc. First aid can be done easily using this system. Medicines provided by this machine are only for timely calmness and in emergency case and the person has to consult doctor later on. ATM will be functional in saving life in remote areas, rural areas and where the medical stores aren't aired over in case of emergency. This paper shows the use of advanced RISC machine which controls the other sub systems like RFID reader. When card is inserted, features of particular user are read by RFID reader and will be displayed.

Once after the recognition of valid person, list of medicines will be displayed on LCD, there after user can select the required medicine, Give inputs for quantity using keypad. After confirmation amount will be calculated accordingly and will be deducted from RFID card. Transaction details will be sent to the user through GSM. Medicine dispenser which is the storage part of the machine will be deliver the selected medicines automatically after deduction of payment.

Keywords- Medicines, RFID Reader, LCD, GSM, ARM Controller (LPC2148)

I INTRODUCTION

In our country many people lose life owing to lack of diagnosis and absence of medicine on time. Foremost issues springs up in a case, need of some medicine is intense and required medicine isn't available in stock or the stores is closed during night times. Also it's been a major issue in remote areas, Highways, Rural areas and of course where the public is less. To get control of difficulties like these, ATM can be used and help people to get required medicine all day and all night. The device designed considering poverty and illiteracy in our country[2]. This machine will help the administration healing centers, for example, AIIMS in presenting the aid for public folks living in various regions including provincial India by introducing ATM.

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An Efficient Machine Learning Framework for Speaker Authentication using Voice Input

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ABSTRACT

With the advancements in the hardware industry, an increase in the computation power and development in Artificial Methods, we can think of working on cognitive tasks. We have worked on various speech recognition methods using Natural language processing and Hidden Markov Models. We have done the classification of the users on the basis of their utterances. In this paper, we propose a discrete probability approach. The results which we have got gives us high accuracy results in recognizing the speakers. This helps in concluding that Learning and Uncertain reasoning are important components of Artificial Intelligence that could help in the development of solutions to problems which are interesting and complex.
Keywords— Machine learning, VUI, Cognitive technology, NLP.

I. INTRODUCTION

The man has various criteria to recognize various sounds and songs. But now the challenge is how we will teach a computer to acquire enough knowledge to classify and categorize sounds and voices. Once this is accomplished, we can leverage a lot from this. We can use computers to identify the speaker and tell who he or she is. This is done on the various utterances and many other parameters. In order to develop this, two things are very essential:

1.   Mathematical model should be created which define the system.
2.   And, a large set of sample training sounds which will help the computer to learn and train itself.

A very important aspect of AI is that it does better with learning. A system can recognize sounds better when it gets to hear new sound by some other speaker. In fact, this helps us to understand that learning is very much essential for any AI system. The input can be in Microsoft Wave Format and given as input to train the whole system before using it.

We also use Discrete Hidden Markov Models as they are quite useful in data modeling. We use CMU Sphinx as it works even in platforms with low resources. Some important basic terms which will help us are as follows:

1. Lattice: It is defined as a directed graph which is used to represents recognition variants.
2. N-best list: This is a list of variants which are just like lattices, but they are not as dense as lattice when it comes to representations.
3. Word confusion networks: These are the lattices where lattice edges become the source of the strict order of the nodes.
4. Speech database: This is a typical set of recordings which are from the task database. All the dialogs are recorded if we develop dialog system.

A SMART WASTE MONITORING SYSTEM USING IOT

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ABSTRACT

With an increase in the population, the assumption of neatness and cleanness with respect to waste management is corrupting enormously. The excess wastes in public places create unhygienic circumstances in the surrounding regions. It may lead to several disorders among the people staying in that particular region. It also defines the grade of that area how well the waste is managed. We, the people should take some initiative to make our environment green and clean along with technological support. The level of waste in bins can be detected by using some sensors, location can be fetched easily through some GPS modules. Currently, involved departmentworkersarecheckingthelevelofgarbagecontainerswithlargevehiclesthatconsumesalototfworkandfuel. Toavoidand to overcome these issues, a smart solution is needed that can be provided using the Internet of Things (IoT). This paper goes through various smart ways to solve existing issues usingIoT.

Keywords—garbage, dustbins, GSM, GPRS, IoT, IR

I. INTRODUCTION

Now a days, waste management is a major challenge in developed cities for most of the countries around the world. An efficient and operative waste monitoring is essential to maintain a clean and safe environment. Whenever waste disposals increase, there is a chance of an increase in health disorders. Cleaning and maintaining waste is one of the toughest tasks in urban areas where the population count is more. An efficient and well-organized waste collection system is required to keep the environment clean and green. Waste recycling is one of the useful technology which is maintained well. In urban areas, environmental protection plays an important role where its demand is high and it has become the competitive framework for waste management. Many available embedded systems having different design and patterns according to the requirements, utilities, and functions. In this paper, the systems we are discussing is mainly composed of IoT devices like GPS, GPRS and some sensors like an ultrasonic sensor, etc.

II. RELATEDWORKS

[1] IoT based Waste Collection System using Infrared Sensors, in this paper author proposes a system which contains infrared obstacle line sensors for garbage identification which will be connected to raspberry pi 2 board. Board is equipped with Wi-Fi card/Global System for Mobile (GSM) module that connects to internet. When the dust bin fills up, the board that informs python based web application system which is responsible for handling notification from dustbins and it provides optimized routes and collection plans. The proposed system is cost effective as R as p berry pi board is cheap, as infrared sensors are used it has faster response time than ultra sonic sensors.

[2] IoT Based Smart Garbage alert system using Arduino UNO, in this paper author proposes a

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Survey To Understand Data And Information Security Issues And Other Challenges For Iot

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ABSTRACT

At present day use of modern techniques and technology is an essential and required consideration for being smart for every person to make immediate and smart decisions. For which data and information is essential required parameter?. So one of the method that the users are adopting for daily requirement is IoT. By which needy data is made available at any time, user work is made simple and easier as objects/things are made intelligent such that they are capable to collect data, generate information, transmit information to any place, any time with use of access technologies. Authorized user can access data, information for concerned application, make immediate and smart decisions with that information. Hence such sensitive private data & information generated by such things/objects should be secured irrespective of time and place of access from any unauthorized user. In this paper effort is made to identify and understand issues related to IoT security and other challenges to consider for IoT adaptation in daily use. How these issues can be tackled by using security methods, algorithmic techniques considering for constrained devices. As objects in IoT which are constrained basically in design and its use.

Keywords—IoT, Privacy, Access technology, Machine Learning, Artificial Intelligence.

I. INTRODUCTION

With emergence of internet, accessing of any needy information by user is made at fingertips with globally connected. Today, objects/things and devices is less useful without information communication this barrier is overcoming with industrial revolution 4.0. Use of Internet of Things made its way make data and information available to user with electronic applications which is combined with hardware and software. Hence there exist a security issues for protecting user private data so no security breach should not occur either at hardware and software levels.

IoT introduces many opportunities in the areas of healthcare, business, transportation, and logistics. Developers face many challenges to ensure that IoT applications are secure because applications deal with sensitive information. Many security breaches have been encountered, so that the developers must secure the applications or devices at the time of implementation only. IoT devices are deployed in uncontrolled and complex manner. Securing these IoT systems presents a number of challenges of which Security is the main concern for IoT application development. [1]

II. TOP SECURITY CHALLENGES FOR IoT DATA & INFORMATION

a. Constrained devices Security
b. Device identity via Authorize and Authentication
c. Secure Access Technology for Communication
d. Availability should be ensured all time
e. Manage device updates by proper Management
f. Secure Applications (web, mobile, and cloud)
g. Ensure high availability
h. Detect vulnerabilities and incidents
i. Manage vulnerabilities
j. Predict and pre-empt security issues

Impact of machine learning on targeted advertisement

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ABSTRACT

Ad targeting is a technique of advertisement where specific ads are placed in some specific areas of the screen to increase the chances of the ads to be clicked by the users. These ads are based on the user's past engagement with the website. Targeted ads target specific customer groups based on the demographics, psychographics, behavior and user experience that is learned usually through data produced by users themselves. In targeted advertisement, machine learning helps to essentially replicate the way the brain of the user or buyer works as software to make the same optimizations as a user or buyer would do in real life situation. Moreover, the system learns over time from different variables and then generates more accurate results as it works with new advertisements, making correlations that are tough for the human brain to detect.

Keywords—machine learning, ad targeting, advertisements.

I. INTRODUCTION

Today, advertisement plays a crucial role in almost every business in the industry. Instead of investing a lot of money on the advertisements for all the users, advertisers have now adopted the technique of targeted advertisement. The technique of targeted advertisement focuses on displaying some specific advertisements to a specific group of customers. Though the effectiveness of targeting a small portion of customers for advertising has long been recognized by many businesses then also many websites today, are flooded with irrelevant and useless advertisements and offers, which most of the time results in vexation of the customer. If advertisements recommendation process to users, which they find suitable, could somehow be improved, it would open a pool of new opportunities for businesses, and increase customer retention.

Machine learning is used to perform advertisement optimization, mainly because of the synchronous availability of massive set of data on consumer behavior, data on the brand-specific actions of consumers and the ability to make advertising decisions and deliver advertisements in real time. The rapid growth of social networks has led to abundant availability in customers preferences. Almost all users share everything online, be it their preferences in food, places, products, gadgets or in clothes over various social networks on a regular basis. These data sets can be used to serve the customers in a better way and display only those advertisements which they might be happy to see. This could also motivate a certain group of people to buy the product and could save a huge ton of money that advertising companies spend on their users.

The approach here is to combine the techniques of ad analysis and user requirement analysis in order to create a system that would direct specific and meaningful advertisements to a particular group of people. Moreover, facial features that can extract user's age, sex and complexion etc. can be used to improvise the way ads are shown to the costumer.

II. PRESENT TECHNIQUES AND RELATED WORK

A. Analysing the advertisement

The approach here is to analyze the advertisement instead of the user data and present it to the user group. The process of recognizing the context of the advertisement begins with extracting the audio and video from the

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Evolution of face recognition technologies

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ABSTRACT

We, humans, identify each other by recognizing faces and we are doing this since ages. Now, we want our computers to do the same. Geometric models were used primarily in old algorithms used for face detection. but now the methodologies have changed. We have various efficient scientific approaches and mathematical representation for the process of matching. All the researches in the previous decade have brought the face recognition technology into the limelight. It is an emerging technology which can be successfully used for identification, verification and various other new domains like sentiment analysis.

Keywords—machine learning, Support vector machines, Kernel, convolutional neural network, quantization.

I. INTRODUCTION

first attempts in developing facial recognition systems were made in the early 1970's. A major boom happened around 1988 with the development of PCA or eigenfaces methods which are still used for benchmark purposes to compare the more recent algorithms. With time the increase in computational capacity lead to major potential development in this field with the emergence of sophisticated algorithms and machine learning capabilities. Any face recognition system can be broadly divided into two categories

1. Face verification:It is also known as face authentication. It proceeds by following a one-to-one matching approach and thus matches the face given as query against the facewhose identity is already revealed. It is used to verify whether the query face is of the same person as that of the template face whose identity is already known.
2. Face identification:It is also known as face recognition. it follows a one-to-many matching approach where it matches the query face against all the faces stored in a given database and reveals the identity of the query face from the face in the given database which matches with it.

If proper illumination conditions are provided then nowadays it is possible to perform feature extractions and recognition of faces in real time basis like from live video streams of surveillance cameras. Most of the recent papers show high accuracy in identifying faces if the variations in facial expressions are minimalistic. However if the variations are related to factors like poses, aging and excessively high or low lighting conditions then the machines still lag remarkably to mimic the human abilities to recognize faces.

II. PROCESSINGS FOR FACE RECOGNITION

The face recognition is a pattern recognition task where different three-dimensional features of the face such as illumination, expressions, and profiles are needed to be matched with its two-dimensional representations.It comprises of four modules: localization, normalization, feature extraction and matching.In this the localization and normalization forms the processing steps for the recognition phase mainly comprising of the feature extraction and matching part. The localization part segregates the face areas of the image from the background while the normalization phase is aimed at mapping facial components such as nose, eyes, eyebrows, lips and facial outlines using geometrical properties like morphing to identify the size and pose. Photometrical properties like illumination and gray scale further

An Approach for Supervising the Security Threats using Software Defined Networks

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Abstract:

Providing Protection For The Network Is Major Significant Subject By Continued Existence Of Systems Which Are Allied By Means Of Network In This World, Which Broadcast Information Regarding Every Part Of Circumstances In Our Life And Occupation. The Systems Which Have Fine Security To A Network Would Support Business In Addition To, It Decreases The Hazard Of Diminishing Fatality In Favor Of Data Theft And Sabotage. The Framework Of Software Defined Networking (SDN) Disjoins The Data And Control Planes. The Fundamental Set Of Connections (Network) Structural Design Is Inattentive From Applications. The State Of A Network Along With Brilliance Are Logically Integrated. It Increases Security For A Network With The Help Of Overall Visualness Of The Network Condition Wherever A Collision Could Be Straightforwardly Decided Commencing The Understandably United Control Plane. The SDN Has Some Types Of Mechanics Together With Network Virtualization, Functional Separation Along With Computerization By Practicability By Programs. Basically, SDN Equipment Mainly Paid Attention On Partition Of The Control Plane Out Of The Network Data Plane. Based On The Packets Flow Through The Network The Control Plane Generates Outcomes, While The Plane Of Data Shifts Packets From One Position To Another Position. Even So, Open Protection Difficulties, Like Man-In-The Middle Attacks, Denial Of Service (Dos) Attacks, Along With Saturation Attacks. The Design Of SDN Authorizes Networks Toward Actively Observes The Transfer Passage And Analysis The Risk To Simplifies Network Disputation, Safety Procedure Modification, And Safety Examine Inclusion. In This Paper, We Examine Safety Threats To Appliance, The Planes Of SDN That Is Data And Control Plane. The Safekeeping Designs That Protect All The Planes Are Defined And Succeeded By Different Safety Ways For Network-Wide Security In SDN. The Safety Of SDN Is Examined Conceding To Protection Proportions Of The ITU-T Recommendation, In Addition With The Costs Of Security Keys. Highlighting The Present And Upcoming Safety Difficulties In SDN And Expecting Guidelines For Safe SDN In This Paper

Index Terms: SDN, Openflow, Network Security, SDN Security, Application Plane, Control Plane, Data Plane.

I. INTRODUCTION

The network administration is reduced by software defined and SDN is enabling invention in communicating networks. And it developed as one of the main important network infrastructures. This skill uses cloud computing , that promotes network administration and allows programmatically well-organized network arrangement. Sequentially that it advances the network supervising and presentation. The fixed structural design of conventional networks is circulated and composite but the existing networks need more suppleness and simple damage assessment. The SDN disassociates the progressing method of network packets (data plane) out of the routing method (control plane) and experiments to integrate network cleverness in a single network constituent with disconnecting a progressing method of network packets (data plane) out of the routing process (control plane). One or more monitors of the control plane are measured at the same time as the intellect of network of SDN and also the complete cleverness is incorporated. Nevertheless, when it comes to safety, scalability and suppleness defects are owned by the cleverness unification and it is considered as the major subject of the SDN. It going to disjoint the control plane of network commencing from the data plane

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Probable Region Identification and segmentation in Breast Cancer using the DL-CNN

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Abstract- Breast Cancer in women is one of the most diagnosed diseases and it is one of the leading disease which cause death. In past several research works have proposed various methodology to detect the cancer, however due to the Complex nature of micro calcification as well as masses it has the complex nature. Hence in this paper we have proposed a CNN based methodology named Dual layer CNN(DL-CNN), where we have used two layer Convolution Neural Network, first layer is used for the Probable Region Identification and second layer is used for the Segmentation and false positive reduction. DL-CNN technique is robust in nature and identify the region in efficient manner. Moreover, for the evaluation we have used In Breast image dataset, other parameter considered are True Positive Rate at False positive per image. DL-CNN scores 0.9726 at 6.39706 respectively; it outperforms when compared to the other existing technique.

Keywords: Breast Cancer, Probable region identification, DL-CNN, Segmentation, Mammography.

I   INTRODUCTION

Breast cancer is one of the common invasive cancer that is found in women and it is the second primary cause of death in women due to cancer. Moreover, the survival chance is nearly 2.7% [1]. There are several symptoms of breast cancer, the first and primary symptoms includes thickened tissue or a lump in breast, other symptoms includes such as change in size of nipple, rash around the nipple[2]. However most of the time lumps does not indicate of being cancer. Hence, women needs to be examined on a regular basis by health care professional. Moreover, in 80% of cases, cancer is found when women feels lump in the breast and untreated cancer causes the death [3]. A tumor is nothing but group of abnormal tissue, there are two types of BCT (Breast Cancer

Tumor) i.e. benign which is also known as non-cancerous and malignant which is known as cancerous. Benign tumor is amount of cell that do not have the ability to invade the neighboring tissue whereas the malign tumor invade and destroy the surrounding tissue and when malign is suspected, biopsy is performed to determine tumor severity[4].

Moreover, early detection of cancer are easier to cure, it possesses less risks and the morality is reduced to the 25%. Early detection is achieved through the mammography [5]. Mammogram is by far one of the best tool to detect the early detection in cancer, mammography is parted into two parts based on their performance i.e. diagnostic mammography and screening. Mammography has to be done every two year [6]. Moreover breast tumor takes almost half a decade to reach 1 mm, however early detection can be helpful in curing the breast cancer.

CNN have garnered significance results in the field of Computer vision such as object detection, segmentation and classification [7]. In past several CNN has been applied and some of them were successful in achieving the outputs, however they lack from accuracy which caused the blockage to apply in real time scenario. In past several methodology has been proposed, however there has been limited research based on the CNN, In paper [8] various CNN were tested and compared with the dual hand crafted descriptors DOR for solving the problem of mass diagnosis, moreover they evaluated the experiment on the dataset named BCDR-FM, it is observed that there is slight improvisation in detection. However, they used the general CNN and did not consider pre-trained network. Hence, [9] deployed the Pre-trained CNN, it was fine-tuned by using the unregistered mammograms and segmented

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An approach to Improve Routing performance using Delay minimized and weighted routing in cognitive WMN

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The scarcity spectrum solution to excess demand for high-speed broadband wireless technologies where cognitive radio provide access to inefficient utilization and underutilization of spectrum recently emerged as a promising high-speed wireless technology, which provides the last mile broadband Internet access via Cognitive radio Wireless Mesh Networks (CRWMNs) technology there routing is a challenge due to the dynamic nature of the CRWMN networks. The interference minimum delay minimized features based existing routing algorithms and the WCETT and DMR routing protocols propose and interference aware formulate the problem. In wireless mesh network In order to check the security of the PU in the CRN there is a need for a system which will work against all the security attacks along with managing the system performance the objective of delay minimization prediction model based on a conflict probability finally protocol was evaluated through network simulations using the NS 2. Its performance was Evaluated with respect to the end-to-end average latency, the throughput, jitter, packet delivery ratio, and the normalized routing load

Introduction

In the past decade, Wireless Mesh Networks (WMNs) have been recognized as a viable and cost effective technology that can extend wireless communication and broadband services to rural and remote areas. WMN technology has gained increased popularity because of its flexible architecture and its capability to provide integrated communication services without the need for wired infrastructure. A WMN is a wireless network formed by self-organizing, self-healing, and self-configuring nodes that are interconnected by wireless links to form a multi-hop mesh topology WMNs have benefits such as low deployment costs, simple network maintenance, network robustness, and extended service coverage. WMN technology integrates seamlessly with different Cognitive Radio Networks (CRN) is the new technology used to overcome the spectrum scarcity problem in current wireless networks by Federal Communication Commission (FCC) Minimum Delay-based Routing, Maximum Throughput-based Routing, Geographic Routing and Class-based Routing wireless technologies such as the Institute of Electrical and Electronics Engineers (IEEE) 802.11, IEEE 802.15, IEEE802.16, and cellular network technology, as well as wireless sensor networks. However, WMNs operate in the Industrial Scientific and Medical (ISM) spectrum band which is the portion of radio frequency (RF) spectrum which is available for use without the requirements of a license. The RF spectrum is a finite and very costly natural resource. Cognitive Radio (CR) technology has the potential to providing a novel wireless communication solution for the next-generation of wireless applications. CR technology refers a fully programmable system of wireless devices that are capable of sensing their operating environment and intelligently adapting their transmission

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Detection of Diabetes in Children using Internet of Things (IOT)

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ABSTRACT

Around 400 million people around the world is affected by diabetes. In this paper, we have discussed several techniques for management of glucose level in the patient's body such as using wireless temperature sensor where a PDC sensor is used. For security purposes methodologies like MQTT(Message queuing Telemetry Transport), AMQP(Advanced Message Queuing Protocol), CoAP(Constrained Application Protocol) and IETF (Internet Engineering Task Force), HGI (Home Gateway Initiative). A protocol called nRF protocol is used for wireless communication. Instead of using blood to detect diabetes we can use non-invasive methods, the methodologies used is Iontophoresis, Thermal Emission, Photo acoustic Detection and Sonophoresis.

INTRODUCTION

Increase in population leads to increase in the number of chronic and heart diseases. Diabetes is the seventh leading cause of death. Few conditions need immediate treatment for which the current healthcare system is inefficient. In this paper, we will be reviewing different techniques which can be used for glucose monitoring and overcoming the security challenges. Instead of using a connected sensors a wireless sensors can be used which is more efficient and portable to use. While using blood for the detection of glucose is widely popular a non-invasive method can be implemented which will be easier to use as it is more convenient to use. Security is one of the issues, this we can overcome by using several protocols like MQTT, AMQP and CoAP. Incorporating these methodologies we can develop a project using IoT which can detect the abnormality in a patient's health and provide immediate medication from the doctor via SMS by using a cloud based platform to store the history of a the patient's health.

RELATED WORK

[1] Development of a Wireless Temperature Sensor using polymer derived ceramics, in this paper author proposes a research on a temperature sensor. Temperature measurements that are accurate are required for many applications. Out of variety of materials studied for these applications a Polymer-derived SiAICN ceramics (PDCs) is used in this paper as this material demonstrates accurate high temperature reading, upto 830 degrees. PDC sensors are resistive sensors whose resistance are converted to voltage. While measuring the temperature using PDC sensor voltage must be supplied through the circuit DAC7724 then sample the circuit output and finally converting the output to temperature measurements and show the output data to the reader. This sensor is low cost and compact in size which makes it more efficient. This research is also trying low power consumption methods like MSP430 and develop battery-less sensors.

[2] A Survey of Protocols and Standards for Internet of Things, in this paper the author proposes a survey on the management and security protocols. IoT has various applications healthcare, agriculture, transport and also help in improving the quality of life. The ecosystem of IoT has seven layers, this paper focuses on

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Performance Improvement Of MIMO System Using OSTBC Scheme and ML Detection Technique Under Rayleigh Channel

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Abstract:

In this paper OSTBC coding technique and ML detection technique is used to improve the performance of 2×2 MIMO system. Without increasing the transmission power and bandwidth it has to be increase the data rate for user requirements. Due to impairments like inter symbol interference (ISI) and co-channel interference (CCI) it is very difficult to achieve the above requirement. This problem can be overcome by using the technology called Multiple input multiple output (MIMO). Diversity technique is used in the MIMO system achieves the desired reliability for available band limit of frequency spectrum with high data rate by mitigating the interference, multipath effects and signal scattering. Space-time block coding (STBC) technique including Alamouti and orthogonal STBC are implemented to mitigate the CCI and maximum likelihood (ML) equalizer to mitigate ISI. Firstly, this is simulated in MATLAB and bit error ratio (BER) is reduced and system performance is improved for BPSK under Rayleigh fading channel. The result shows that for OSTBC at BER 10^{-2}, the signal to noise ratio (SNR) is 0.8 dB.

A Key Management of Security to Design Enhanced Apache and Rhino Utilities in Big Data Using Hadoop

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ABSTRACT

Hadoop is a dispersed information dispensation platform intended for investigate big data. Information is emergent at a massive value in the current charity. Entity of the best part popular knowledge existing intended for managing and dispensation to facilitate vast quantity of information is the Hadoop environment. Present be disparate conduct to accumulate and development huge quantity of information. Hadoop is broadly utilized, lonely of the majority popular strategy to accumulate enormous quantity of information and progression them in equivalent. at the same time as store insightful information, security performing an significant responsibility to stay it secure. Security is not that greatly measured while Hadoop be primarily projected. The early utilize of Hadoop was association huge quantity of shared network information so privacy of the accumulate information and, essentially user services in Hadoop be not authenticated; Hadoop is projected code on a disseminated compilation of technology so exclusive of correct authentication and any person might present and it would be implement. The outstanding Utilities encompass in progress to extend the protection of Hadoop. These utilities are using Enhanced Rhino Utility and Enhanced Sentry Utility. Enhanced Rhino develop splintable crypto codec to deliver encryption intended for the information to facilitate is accumulate in Hadoop dispersed conspirator organization. Moreover develop the essential authentication by execute Hadoop single sign on which prevents repeated authentication of the users accessing the same services with various times. While the authorization point of examination Enhanced Rhino utility deliver severance based authorization designed for Hbase. Enhanced Sentry utility give fine-grained entrance organizes by behind responsibility based authorization which different services can be bound to it to grant authorization for their users. It is probable to merge security enhancements which cover the Enhanced Rhino utility and Enhanced Sentry Utility to supporting get enhanced the presentation and offer enhanced mechanism to secure Hadoop. In this paper, the security of the organization in Hadoop is assess and different security enhancements to be proposed, enchanting into inspection security enhancement comprehensive by the two utilities, Enhanced Rhino utility and Enhanced Sentry utility, in provisions of encryption, authentication, and authorization. This paper proposes a number of sophisticated security improvements on the federal authentication and organization implementation made by enhanced Rhino Utility based on the HDFS data encryption scheme using the ARIA encryption algorithm on Hadoop.

Keywords — Big Data, Hadoop, Security, Enhanced Rhino Utility, Enhanced Sentry Utility.

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ESTIMATING SECURITY IN THE INTERNET OF THINGS

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ABSTRACT

Growing number of IoT devices has led to issues regarding security and privacy. IoT security is happening to be at its crucial stage. So, we have come up with this survey wherein we have tallied a pile of papers that give various technological implementations and proposals as to how security challenge can be tackled upon. In this paper, we discuss briefly about the merits and demerits of the papers surveyed. By picking up the best implementation or idea proposed, we draw a conclusion to this survey.

Keywords – IoT, IoT security, privacy.

I. INTRODUCTION

IoT– the Internet of Things! "Things" here refer to devices and hardware that are 'connected'. Internet is network of the networks; and network in turn is connecting. With the increasing advancements in technology out there, IoT has been topping the hit list. Is that because it's new? No! It has been the best advancement that gets together all the devices that are allowed to share the same network access, hardware devices, and the Internet above all. Lots and lots of IoT devices are coming into existence. As a matter of fact, IoT is finding its way in through all the fields of improvement needed throughout the globe. A rough estimation of 50 billion IoT devices are expected by 2020.

When we figure out that a pretty huge number of IoT devices are showing up, there's a transpiration of security and privacy matters. The large number of devices interconnected deal with an entirely heterogeneous technologies and topologies. One cannot be given an assurance of a hack – proof connection with such diverse parameters. Once we realize that the network is poorly connected, we begin to worry about data protection. We wouldn't even choose to be in a network that doesn't respect privacy of one's information. In this paper, we have made a detailed survey on a bunch of papers that talk about security of IoT system.

II. LITERATURE SURVEY

IoT is connecting the unconnected. While connecting devices worldwide, two major factors that pops up are security and privacy. Consumers wouldn't know how secure their device is. If manufacturers produced devices with Consumer Security Index (CSI) [1], consumers readily purchase such devices. A study on the value of security label depicts how many customers prioritize security. Consumer's reliability on the security label completely depends on how he/she has presumed it to be.

Lot of surveys say that by 2020, 20 – 50 billion devices would be connected. With a large number of devices interconnected, security issues are more prone to arise in the near future. In such scenarios, security functions can be framed and manipulated considering the requirements accordingly. On – demand security configuration [2] simply deals with checking out how security works on the device, determine required functions, and reboot the device to enable security functions.

The IOT is predominantly being deployed in every part of the world; leaving behind security, which is definitely a biggest threat if misdealt with. Manifestation of security here is concerned to all aspects. The Information Security Sharing System [3] allows one to collect, store/retrieve and link information based on relevance to any fraudulence. The reference model has these processes: Collecting would refer to piling up that

Review of State-of-Art Image Restoration Techniques

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ABSTRACT

In recent years, image processing is an essential technique for most of the applications such as business, government sectors, medial industry, cinema field, and etc. In image processing, most of the subdomains are there which helps to do their respective process. Among that, Image Restoration (IR) is one of the important domain which helps to retrieve the original image information from the noisy image. Normally, input image is affected by noise during the transmission. So, noise need to be removed to get the original input image information. In this paper, different kind of IR techniques are explained which is implemented in Field Programmable Gate Array (FPGA). In VLSI domain, FPGA is the important process which is used to identify the hardware utilization of the entire algorithm. The process and different methods of IR is studied in this paper.

Keywords—Field Programmable Gate Array, Image processing, Image Restoration, Noisy Image, VLSI domain.

I. INTRODUCTION

The recorded images are usually degraded due to environmental effects and imperfections in the imaging system [1]. Image Restoration (IR) is one of the classical issue in the digital image processing, and it aims to reconstructing high frequency details or eliminating the noises from the image [2]. In modern trends, this IR takes place in deblurring, denoising and medical applications [3-6]. There are numerous methods are used for image denoising that is divided into four different categories such as spatial filtering methods, transform domain filtering methods, partial differential equation (PDE) based methods and variational methods [7]. Because of high reflectivity of metal objects the passive millimeter wave images (PMMW) are gets affected and this PMMW is used in aviation, security and environmental monitoring [8].

The IR over the hyper spectral image (HSI) is needed because of its rich spectral information and this HSI is a three dimension data cube [9-10]. The super resolution reconstruction is takes place for IR and the Gaussian prior is used for in this image processing technique. A convolutional regularization algorithms are used for performing the IR as well as the regularization terms defines the image quality [11-12]. Here, some of the filtering techniques (wiener filtering and wave atom transform) are enabled to de-noise the images which is affected by noises, blur and etc. [13-14]. Some of the papers have been implemented IR technique in FPGA. These methods also has some issue like more power, less operating speed, more memory, and etc. some of the existing techniques are explained in below sections.

This paper is organized as follows. Section II. presents a discussion on image degradation. Section III. explains the blurring types. Section IV. explains the deblurring techniques in existing papers. Section IV. explains some conventional literature papers. The conclusion is made at section V.

A Comprehensive Survey on RPL : Evolution and Challenges

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ABSTRACT

LLNs (Low Power and Lossy Networks) are becoming hot research topics due to challenges posed by their limited battery life, computing power, memory and transmission power. LLNs require a routing protocol which can perform efficiently with their limitations. IETF has come up with RPL as standard routing protocol for LLNs. It builds energy efficient network. But it also has major limitations and several research have happened to overcome the same. This paper is survey of RPL challenges and recent research on RPL extensions. Major RPL limitations include packet loss under noisy scenario, increased DODAG depth causing high energy consumption. TTA (Trickle Timer Algorithm) is important part of RPL. It is used to manage control messages flow. Limitation of trickle algorithm results in problem of short time for listening and it can make few nodes crave for delay and higher latency. E-Trickle is proposed to overcome the listen only period, improve convergence time and energy consumption. QOI (Quality of Information) aware RPL reduces the energy consumption with less data transmission. RPL operates under one sink. Entire data flows towards the single sink. RPL doesn't specify when, where and how more number of sinks need to be used. Dynamic rescue sink is RPL enhancement built with real time tracking of nodes' performance in RPL networks to propose new sinks when required. AMI (Advanced metering infrastructure) is one of the application in smart grid for connecting smart metering devices at homes. It is ___ to have efficient routing protocol for AMI as the smart meter nodes are resource constrained. AMI with high density networks suffer from high packet loss, network congestion retransmissions, increased latency, control traffic overhead and power consumption. LQE (Link Quality Estimation) influences quality of selected route and energy consumption. RL-probe measures link quality precisely with small overhead and energy consumption. RL-probe reduces packet loss by reacting to link quality variations and link failures due to mobility. Communication overhead needs to be as minimal as possible in LLNs with limited resources. Adaptive timing model uses dynamic method to decide frequency of executing objective function to construct DODAG based on degree of surrounding changes and reduces the control messages overhead. Objective is to bring down the PLR (packet loss ratio), overhead of control messages and battery usage. LPL doesn't give good results for high throughput and changes in network conditions. This prevents use of LPL in high speed sensors and mobile sensing applications. BRPL is extension to RPL which combines LPL objective function (OF) with backpressure routing to handle dynamic traffic load and mobility.

Keywords— Low Power and lossy networks (LLNs), Routing Protocol for LLNs (RPL), DODAG, Advanced Metering Infrastructure (AMI), Internet of Things (IOT)

I. INTRODUCTION

Wireless sensor networks (WSN) is one of the interesting subject in research. Recently many efforts have been taken for standardization of LLNs. LLNs consists of devices with fixed memory, serving capacity and energy. LLNs have less data rates, more packet loss rate and imbalance [4]. LLNs include a real range of link layer technologies that is IEEE 802.15.4, power line communication (PLC), less power

Digital water marking for ROI and RONI with break through visibility parameter

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ABSTRACT

Due to fast growth of computer network, multimedia technology, digital media things can easily duplicate and distribute. Internet is used for the applications like telemedicine, online banking etc..Telemedicine is the communication transferring medical images from one place to other. This is helpful for the patience those who are staying in remote areas and easy to communicate with specialist from faraway places. But while transmitting if any changes in medical images whether intentionally or accidently then it is effects to health or life of patient. The Main intention of secure medical images by applying digital watermarking on ROI and RONI by zero watermarking and reversible water marking and finding invisibility by applying parameters.

Keywords — *Digital* water marking, ROI (Region of interested), RONI (Region of not interested).

I. INTRODUCTION

The technique of adding information to digital data is known as digital water marking and it is used in today's digital world to secure data (It is difficult to find and remove this information from watermarked files). As medical image data processing is almost fully digitalized in healthcare institutions these days, to ensure the security of digital data is of very high importance. Watermarking brings the undeniable advantage of security embedded directly into the data itself (i.e. Image Centric Security), which ensures the inseparability of data and the security measures. Medical image processing can be very sensitive, even on very slight changes in the visual images (1). In the medical image a single pixel modification may affect the overall information in few cases contained in the image, and so might influence the diagnosis and consequently might threaten the health or even the life of the patient. Therefore, it is necessary to approach watermarking in the area of medical imaging when compared to other areas. Medical image data can be secured by using different methods of watermarking is described in this paper. Here a proposed method of adding advantages and removing zero and reversible watermarking disadvantages is discussed. In adding and removing of watermarks in Region of Interest (ROI) uses Zero watermarking method is described here (2). Section 5contains Regions of Non-Interest (RONI) used by Reversible water-marking method is described in detail. Section 6 explains about the sub-methods of data exchange and connection principle. In last section, experimental results of proposed method and comparison of other methods are discussed.

II. REVIEW ON RELATED RESEARCH

The present study has gained sufficient information from other published research articles and a lot of work done in huge amount in medical image processing area. Many schemes of medical image watermarking are described in this literature survey, to solve authentication problem and medical information security issues.

i) Wakatani reported a medical image watermarking, with the diagnosis value not to compromise and also it avoids embedding watermark in the ROI. In this algorithm watermark to be added firstly compressed by progressive coding algorithm such as Embedded Zero Tree Wavelet. Embedding process is done by applying Discrete Wavelet Transform (DWT) [8] Haar basis is used for original image transformation. Embedding process reverse is done for watermark extraction. Non-watermarked area medical images attacked by copy a: : the major disadvantage of this algorithm.

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Smart Areca Nut Plucking Robot

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Abstract—with shortage of workers, areca cultivators are thinking that it's hard to collect their harvest. Be that as it may, culling areca nuts need never again be a repetitive assignment. Areca nut tree climbing is a dangerous activity that requires talented workers. On the off chance that the person slips, it will be unsalvageable harm to him and as to his family. Shortage of workers is rising as one of the difficulties in cultivating. As of late, getting works who climb areca nut tree is a noteworthy test. Areca nut trees develop to a stature of around 60 to 70 feet. It is required to climb the areca nut tree around four to multiple times in a year for gathering. Just talented workers can complete these activities. In the undertaking a robot is planned through which a portion of the above challenges are tended to. This robot climbs the areca nut trees of differing breadth. In the venture, The robot moves as human ascensions the tree and a sensor is mounted on the robot. The robot moves the tree and sensor choose which areca nuts are matured and prepared to cut. So by this the client can control the cutting task.
Keywords: Areca Tree Climbing, Robot, Sensor.

I.INTRODUCTION

As of now, storage of workers has become one of the preeminent difficulties in areca nut cultivation. Areca trees grows to maximum height of around 60-70 feet. It is compulsory to climb the trees around four to five times each year for an effective reap. Only trained workers can do these activities. They need to climb the trees using muscle power. In a hectare of land around 500 areca nut trees can be grown and a workers needs to climb at least 100 to 150 trees to harvest the yield. As this involves real hard physical exertion, Youths are losing interest in such risky job which resulted in demands for skilled labours. The people from rural part of India mainly depends on agriculture for their livelihood. Areca nut and coconut are the main crops cultivated in Karnataka and Kerala. Regardless of mass distribution and widespread of areca nut tree around these regions, areca nut reaping is still done without safety measures which can prompt major issues. Farmers are discovering hard to climb areca nut trees and there is a scarce of trained areca nut tree climbers. Skilled workers need to climb the tree manually for collecting the areca nuts. This is a procedure looks simple. However, it is a risky and dangerous. To help the farmers in areca nut harvesting there are numerous machines in the market. They are not successful since they require a lot of muscular power of the labor for its operation at present there is no 100 percent safe device in the market for harvesting the areca nuts. To address both productivity and security there is a need to invent a machine for areca nut harvesting. In this project. A robot is design to climb the areca nut tree and cut the areca nuts.

The main objective of the project is to design a robot which as to the following activities:

1. Climbs up and descends the areca tree.
2. Cut the areca nuts.
3. Colour detecting while check the areca nut is prepared to harvest or not.

Chapter 18
Comprehensive Characterization of Carbon Fiber-Reinforced Epoxy Composite for Aerospace Application

D. Bino Prince Raja, B. Niharika, R. S. Manoj Kumar and C. G. Tejaswini

Abstract Carbon fiber-reinforced polymer (CFRP) is used in the aeronautical industry in the manufacture of different aircraft components. This paper is about studying the mechanical (tensile, flexural, interlaminar shear strength), thermal and moisture characterizations of the laminate. A carbon-reinforced polymer laminate of G939 material and 913 resin systems are selected to study the effect of moisture and thermal on the properties of the laminate. The composite lamina is made of different layer orientations like 0°/90°, 0°/45°, 0°/45°/90°, 0°/0° and 90°/90°. The laminate is fabricated by vacuum bagging and cured using autoclave. Interlaminar shear strength (ILSS) was carried out for the specimens. Thermal degradation of CFRP is molecular deterioration as a result of overheating, and as the temperature increases the bonding between the molecules gets weaker and starts reacting with each other which results in the change of properties of composites. Laminates of 0–90 orientation are fabricated, and interlaminar shear strength (ILSS) at 50, 100 and 150 °C was carried out according to Dutch Institute for Norms (DIN) for the specimens. Micro cracks in the matrix are observed due to moisture diffusion. Five different test liquids are chosen: water, diesel, petrol, lubricating oil and acid in which specimens are immersed for 2 days, 5 days and 7 days. This work will help composite materials' designers and manufacturers in designing high strength composite parts for aerospace.

Keywords Carbon fiber · Epoxy matrix · Mechanical · Thermal characterization · Aerospace applications

18.1 Introduction

Composite materials are made up of two or more constituent materials to obtain a new material with the desired properties. Composite materials are being developed and made with two kinds of objectives: One is to enhance the material properties and performance efficiency and another to design materials with combinations of

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1	Deepa M S	Preliminary Design and numerical Simulation of a Reverse Flow Annular Combustor at Basic Design Point Operating Conditions	International Conference On Trends in Industrial & Value Engg, Business and Social Innovation	International	ISSN 2277-3878	73
2	Deepa M. S	Numerical Simulation of Rocket Launch Vehicle	2nd International Conference on Emerging Trends in Science & Technologies for Engineering Systems	International	ISSN 2277-3878	74
3	Paramesh.T	Internal flow analysis on Sweeping jet actuator	International Conference on Emerging Trends in Science & Technologies for Engineering Systems	International	ISSN 2277-3878	75
4	Praveen N	PID Controller Design for Dynamic Motion of an Aircraft	2nd International Conference on Emerging Trends in Science & Technologies for Engineering Systems	International	ISSN 2277-3878	76
5	Dr. Bino Prince Raja D	Mechanical Characterization of Carbon fiber Reinforced Epoxy Polymer	2nd International Conference on Emerging Trends in Science & Technologies for Engineering Systems	International	ISSN 2277-3878	77
6	Dr. Bino Prince Raja D	Influence of Nano particles on Mechanical and Thermal characterization of Hybrid Fiber Reinforced Polyester Composites	International Conference on Advances in Materials and Manufacturing Applications	International	ISSN 09751645	78
7	Dr. K M Ravikumar	Analysis of Speckle Diminution in Ultrasound Images—A Review	NA	NA	978-981-13-5801-2	79
8	Srinivasa Murthy H	Radio resource access occupancy measurements and analysis	2018 4th International Conference on Applied and Theoretical Computing and Communication Technology (ICATccT)	International	**DOI:** 10.1109/iCAT ccT44854.2018.9001 990	80

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Preliminary Design and Numerical Simulation of a Reverse Flow Annular Combustor at Basic Design Point Operating Conditions

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Abstract — This paper presents the preliminary design methodology for a Reverse flow annular combustor based on calculation of the geometric parameters, gas temperature profile, liner wall temperatures and position of air admission holes for a small gas turbine engine with Jet A as fuel. It also includes the modelling and numerical simulation of temperature distribution at centerline, inlet and outlet of the combustor using Ansys-CFX, carried out at basic design point operating conditions.

Indexed Terms: Reverse flow annular combustor, numerical simulation, Ansys-CFX, operating conditions

I. INTRODUCTION

Reverse flow combustor is one in which, the flow leaves the combustion chamber in the opposite direction to the conventional combustion chamber. It reduces the length of the engine and is used mainly in engines whose last compressor stage is centrifugal flow type. Reduced length will allow single shaft sitting on two bearings instead of three, which reduces the vibrations and maintenance problems. The reverse flow process also allows warmer air to serve as the dilution air to control the NOx formation instead using other energy to preheat the dilution air or use cold air which could quench the flame and produce CO.

The operating parameters for a combustor is based on the basic geometric parameters of combustor, gas temperature profile, liner wall temperatures and position of air admission holes in the three zones of combustor.

The aim of this work is to design a Reverse flow annular combustor based on calculation of the geometric parameters, gas temperature profile, liner wall temperatures and position of air admission holes for a small gas turbine engine. It also includes the modelling and numerical simulation of temperature distribution at centerline, inlet and outlet of the combustor using Ansys-CFX, which is carried out at basic design point operating conditions.

II. DESIGN PROCEDURE

The preliminary combustor design procedure proposed in this work is based on the Melconian and Modak (1985)[1] model to calculate the gas temperature inside the combustor. The methodology assumes that the inlet combustor conditions are known from the engine cycle analyses.

The basic geometric parameters of combustors as: the total length of the combustor, length of each zone of the combustor, diameter or height of the flame tube and the casing, size of primary and secondary air admission holes, temperature profile is calculated using this procedure. The design methodology for a gas turbine combustor operating with different types of fuels is presented Fig. 1.

NUMERICAL SIMULATION OF ROCKET LAUNCH VEHICLE

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ABSTRACT

Launching of Rocket is a complex phenomenon. There is high chance of failure in such missions. Hence it is necessary to predict the launch path or Trajectory, External disturbances and various other parameters. Numerical Simulation is one such way of predicting launch parameters which helps in taking precautions preventing failure. This Paper presents a platform for simulation of Rocket launch vehicle and control Law validation. The analysis is performed during the Lift-off phase in atmosphere using a mathematical nonlinear dynamic model. Set of six degrees of freedom equations of motion with necessary reference frames and transformations in between them is developed. The Mathematical Model is applied in MATLAB and Simulink simulation which can be easily adjusted for any type of launch vehicle or rocket.

Keywords – Simulation of Rocket Launch Vehicle, Mathematical model, Numerical Simulation, Six degree of freedom equation of motion

I INTRODUCTION

Safe Transport of any kind of payload to an orbit around the Earth using a launch vehicle is the ultimate goal. The Payload of these Rockets mostly comprises of highly valuable Satellites, deep space probes and some even serve for manned missions to the Moon and International Space Station. Therefore development and reliability of carrier rocket is necessary.

Advancements in Aerospace Industries were mainly due to its application in Military, Research and many different fields in modern history. The fastest advancements took place during the cold war between USA and USSR resulting in landing of man on the Moon. We have never stopped exploring our surroundings, by launching Hubble space telescope to study deep space and neighbouring Galaxy, Elon musk's SpaceX company has successfully tested its Falcon Heavy by launching Tesla Roadster safely into an orbit in space, Indian Space Research organisation (ISRO) successfully placed an satellite in Mars orbit and plans to land a Rover in the near future and Jeff Bezos with his company Blue Origin is planning to open space exploration to the public. Hence aerospace industry is developing at a faster phase than ever.

Design and manufacture of rockets has its own complications and certain steps must be taken before we start the physical processes occurring during an atmosphere and space flight. This paper is aiming to develop a mathematical model of rocket launch vehicle during lift-off phase in Earth's atmosphere. This is done by

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Internal Flow Analysis on Sweeping Jet Actuator

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Abstract:

Sweeping Jet Actuator (SWJ), when pressurized with high pressure fluid, emit continuously but spatially oscillating jets, which are self-induced and self-sustaining. The initiation and interaction of the internal flow and jet oscillation process of a actuator is well defined in this study. Transient as well as steady numerical analysis over a range of inlet velocities was performed. The velocity magnitude and total pressure contours are shown to justify the complex flow field within the sweeping jet actuator by varying the height and width of the feedback channel geometry

Index Terms: CFD, Internal Flow Analysis, Sweeping jet Actuators.

I. INTRODUCTION

In this era, Airline companies anchor their business in minimizing the operational cost per passenger, keeping in mind about the exponential growth of passenger traffic. The next generation aircraft performance would be improved with an upgraded aerodynamic design and technologies which strongly contribute to product cost and operability since operational effectiveness, sustainability and fuel cost are concerns for today's civil aviation. The promising technology to prevent boundary layer separation is offered by Active Flow Control (AFC)

Technology Which Could Be Solution For Airframe Weight And Drag Reduction. The Community Has Shown A Great Interest Towards Active Flow Control Technology Especially For Fluidic Oscillators. Actuators Are Intrusive Devices With Electric Signal Input And Flow Disturbance Output. Sweeping Jet Actuator Is An Adherent Of Fluidic Oscillator Where The Momentum In Local Flow Field Gets Increased By Fluid Injection Or Suction Phenomenon. The Coanda Effect Plays An Important Role Where A Jet Attaches Itself To Either Sides Of An Actuator As The Fluid Passes Through It.

This Increases The Pressure Inside The Feedback Loops And Pushes The Jet To Other Side. With Liquids As Working Fluid, The Earlier Designs Have Been Used For Applications Like Windshield Washers, Sprinklers Etc.The Fluidic Oscillator Is Favorable Being Amenable To Range Of Size And Frequency For Large disturbances.
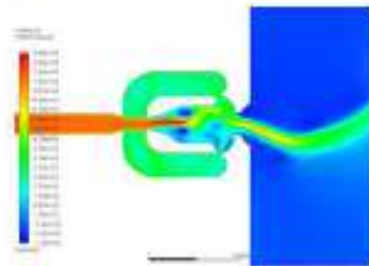
Fig 1. Sweeping jet actuator Simlation Contour

Lack Of Feedback Control In Basic And Simple Versions Requires External Flow Source Which Ended Up As A Disadvantage. Harry Diamond Laboratories (USA) Developed The First Fluidic Oscillator More Than Fifty Years Ago, Which Later Became Outmoded Due To Electronic Alternatives. Soon After,

PID CONTROLLER DESIGN FOR DYNAMIC MOTION OF AN AIRCRAFT

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ABSTRACT

The development and implementation of automatic control systems have helped the aviation industry to grow in more efficient manner in terms of stability and performance of the Aircraft. But as improvement is the key for progress of technology the development and advancement in automatic control systems have also increased. In this paper, the performance of the Proportional- Integral- Derivative(PID) controller is studied for General Navion Aircraft by considering its longitudinal motion. The design is implemented using Model based Programming of MATLAB. The reference input is the elevator deflection angle and the output is the Pitch angle. The gain values of the Controller is tuned using the PID toolkit. Simulation results shows that the design specifications in time domain and convergence to the design considerations.

Keywords – MATLAB, PID controller, Autopilot, Stability and control.

I. INTRODUCTION

The introduction of the automatic control systems (autopilots) has played an important role in the growth of civil and military aviation. Modern aircrafts include different types of automatic control systems that help the flight crew in navigation, management and stability augmentation of the aircraft and also reduction the workload on them. The development of the autopilots have also reduced the various flight hazards which was causing the survivability and safety issues. The main motivation to the present work is to the survivability and safety of the passengers in commercial aircraft and safe maneuverability in military aircrafts. A designed controller mustallow acceptable performance in terms of control of the aircraft under a number of shortcoming or fault conditions [3].

There are three basic control moments of aircraft i.e., Pitch, Roll and Yaw which represent both Longitudinal and Lateral motion of the aircraft. These control movements are controlled with the deflection of respective control surfaces present on the aircraft. The Pitch, Roll and Yaw angles are controlled by deflecting Elevators, Ailerons and Rudders respectively. The pitch movement of aircraft is categorized under longitudinal stability whereas roll and yaw are categorized under lateral stability.An aircraft in flight moves along three principles axes namely, the Vertical axiswhich represents Yawing ,Lateral axis, which represents Pitching, Longitudinal Axis, which represents Rolling. Fig 1 shows the different Axes of the Aircraft

The study on stability of the General Navion aircraft using PID toolkit of MATLAB 2014 software is implemented to obtain a optimized results to achieve system stability in [1]. The tuning method of PID Controller like Zeigler-Nichols method is better compared to other methods in improving the stability and performance of flight in all conditions [2], and PID controller has capability of controlling roll motion effectively making it suitable for autopilot roll control [3]. In the early days of aircraft system, aircraft required the continuous attention of pilot to fly safely. Mechanically or manually operated flight control systems are the basic method of controlling aircraft. They are widely used in early aircraft and present small aircraft. A conventional flight control system uses a collection of mechanical arrangements to transmit the forces applied Increasing in the control surface area became necessary in order to fit all the required mechanical parts. This led

Mechanical Characterization of Carbon Fibre Reinforced Epoxy Polymer

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Abstract—Carbon fiber reinforced polymer (CFRP) is used in aeronautical industry in the manufacture of different aircraft components. This paper is about studying the mechanical (tensile, flexural, interlaminarshear strength), characterizations of the laminate. A carbon reinforced polymer laminate of G939 material and 913 resin system are selected to study its mechanical characteristics with five different orientations like 0°/90°, 0°/45°, 0°/45°/90°, 0°/0°, 90°/90°. The Laminate is fabricated by vacuum bagging and cured using autoclave at 135°C. Tensile, flexural and ILSS (Inter laminar shear strength) were carried out for the specimens according to the standards.

IndexTerms— CFRP, prepreg, vacuum bagging, autoclave curing.

I. INTRODUCTION

Composite materials have the potential to replace conventional materials used in various applications. Because of their anisotropic nature their properties can be enhanced in particular direction by ensuring their orientation in plane. This advantage is the main challenge in developing such material for particular application. Because of anisotropy they have a number of elastic constants and their analysis from strength point of view does not remain as simple as that of conventional material analysis. Composite materials are made up of two or more constituent materials to obtain a new material with the desired properties. Composite materials are being developed and made with two kinds of objectives one is to enhance the material properties and performance efficiency and another to design materials with combinations of desired properties[5]. Carbon fiber is used in industries where high strength and rigidity are required in relation to weight. We know that material density has a direct impact on its weight and carbon fibercomposite has a density 2 times

less than aluminum and more than 5 times less than steel [9]. We have used carbon prepreg in which resin system already includes the proper curing agent. Advantage of prepreg is it is less mess and less waste. In this paper we have studied material, thermal and moisture characterization of CFRP laminate. Material characterization includes tensile, flexural and interlaminar shear strength. Interlaminar shear strength is the stress existing between layers of a laminated material [3]. Flexural test is done to know the bending strength of the laminate; it is the maximum stress acting on the outermost fiber of the laminate. Tensile test is done to determine the maximum load that a material can withstand. Different structural components are manufactured by composite materials due to their attractive specific mechanical properties [6]. When compared with metallic materials polymeric composites have high strength to weight ratio, hence CFRP are processed using thermoset polymers, especially epoxy resins. The bonding material that allows fabric to form a composite material is the resin. Resin is a type of matrix which acts as a medium to transfer load. We have used carbon prepreg in which resin is pre-impregnated and it is ready to use in the component. The resin system used is typically epoxy. Interlaminar hear strength is the stress acting between layers of a laminated material, usually it is performed to characterize both fiber and matrix interfacial bonding [2]. Flexural testis done to know the bonding strength of the laminate, it is the maximum stress acting on the outermost fiber of the laminate. And it is an important tool for optimization of process and evaluation of matrices and fiber resin interface [2]. In order to verify specifications, quality assurance of project and also analysis of failure mode, tensile test are carried out.

II. EXPERIMENTAL WORK

Preparation of Material

The prepreg used in this work is HEXPLY G939, material bidirectional (BD) material with 913 epoxy matrix system which is widely used in the fabrication of high strength compositematerials. The cure cycle of 913 epoxy is less.

Fabrication of laminate

To fabricate composite laminate consider material of size 200×200mm which is prepared with different layers of orientation.A flat plate was considered as a base and followed by vacuum bagging procedure the laminate was cured at 135°C using autoclave. After completing the curing cycle,

Influence of Nanoparticles on Mechanical and Thermal Characterization of Hybrid Fiber Reinforced Polyester Composites

D. Bino Prince Raja [a] & ✉, M. Shakthi Prasad [b], G. Ramanan [c]

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Abstract

In this research work Nano particles added hybrid bamboo/glass fibers as the alternative replacement for polymer composites have been fabricated with ±30° orientation. Mechanical, thermal and SEM analysis were investigated to consolidate them as reinforcement fiber. The presence of hybrid fiber with added nanoparticles deliver high specific strength, good fatigue life and better bonding properties compared to other combinations. SEM analysis exhibits high modulus in hybrid fiber with nanoparticles and thermo gravimetric analysis safeguards the thermal stability up to 360 ·C, which is below the polymerization process temperature.

⟨ Previous   Next ⟩

Keywords

Hybrid bamboo/glass fibers; Coconut shell powder nanoparticles; Mechanical properties; Thermal properties; Microstructure

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Analysis of Speckle Diminution in Ultrasound Images—A Review

N. Tilakraj and K. M. Ravikumar

Abstract Ultrasound is used imaging modality for the diagnosis and diseases. In past decades, the advances in technology have become crucial imaging modality, due to its suppleness and non-invasive. Ultrasound image uses high-frequency sound waves to contrasting reflection signals created when a light emission is anticipated into the body the convenience of ultrasound image is corrupted by the noise identified as dot (speckle). The speckle model depends on the image tissue and different image parameters. The noise shows in ultrasound picture influences edges and subtle elements contain the differentiation and determination. The reasons for speckle noise reduction in ultrasound image (i) The ultrasound images are improved for human interpretation (ii) The speckle noise reduction is the preprocessing step for segmentation and registration in ultrasound image processing tasks. The objective of paper is to give different techniques have been used to decrease speckle noise in ultrasound image.

Keywords Speckle noise · Ultrasound imaging · Region of interest · Filter

1 Introduction

Ultrasound image plays important role in therapeutic image because of its non-obtrusive nature, ease and framing ongoing imaging. Ultrasound waves which are created by transducer from body tissues, achieves a surface with various surface or acoustic in nature. The transducer is used to receive the echoes and converted

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CONCEPTUAL DESIGN OF 180-SEATER PASSENGER AIRCRAFT

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ABSTRACT

This paper presents a study on conceptual design of a 180-seater medium-range passenger aircraft. The main purpose is to understand the importance of aircraft design, the steps involved, and the parameters considered in designing an aircraft with specified mission. The design point is considered by historical data of similar range aircraft- by comparing their weights, power plants used, cruising altitude and speed, service ceiling, and geometrical dimensions of aircraft body. The aircraft will possess a low wing, tricycle landing gear, and a conventional tail arrangement. After the design calculations are complete, the geometry of the aircraft is generated using CATIA V5R20.

Keywords— *Aircraft design, conceptual design process, performance characteristics.*

NOMENCLATURE

A.R. - Aspect ratio
b - Wing span (m)
c, c_{root}, c_{tip} – chord of the airfoil, chord at root, and chord at the tip, respectively, (m)
C_L, C_D, C_M - Lift, drag, and moment coefficients, respectively.
M – Mach number of aircraft
c_t - Thrust specific fuel consumption
(L/D) – Lift to drag ratio
(T/W) – Thrust to weight ratio
m.a.c – Mean aerodynamic chord
c.g – Center of gravity
Re – Reynold's number
α – Angle of attack, degree
S – Wing area, m^2
E – Endurance, hours
R – Range, kilometers
T- Thrust, kN
I.A.E – International Aero Engines
V, V_f – Velocity of aircraft, and flare velocity, respectively, m/s
$r_{takeoff}$ – Radius of turn during takeoff, m
r_{flare} – Radius of turn during flare, m
W_{crew}, W_{empty}, W_{gross}, W_{fuel}, W_{PL} – Weight of crew, empty weight of aircraft, gross weight of aircraft, and weight of fuel, payload weight, respectively, kg
W_n, W_A – Weight of main landing gear wheel, and nose landing gear wheel, respectively, kg
S_a, S_b, S_g – Approach distance, flare distance, and ground roll distance, respectively, m
h_{ob} – Height of obstacle, m

DESIGN AND ANALYSIS OF MAIN ROTOR BLADES OF A UTILITY HELICOPTER DURING HOVERING

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ABSTRACT

This paper presents an effective way of reducing the aerodynamic drag of a utility helicopter during hovering. The purpose is to improve the aerodynamic efficiency during hovering by considering the aerodynamic parameters like geometric blade twist, taper ratio, and the airfoil sections at blade root and tip. This paper emphasizes to reduce the rotor tip vortex at the rotor tip by introducing holes at the tip of the blade. The geometry of main rotor blade is generated by using CATIA V5, and the results are analyzed by using Computational Fluid Dynamics (CFD) modeling in STAR CCM+. Performance of the rotor blades with holes and conventional rotor blades are compared and demonstrated to highlight the effectiveness of the proposed work.

Keywords— *Hovering performance; rotor blade design; rotor tip vortex.*

NOMENCLATURE

C_L – Coefficient of lift
C_D – Coefficient of drag
M – Mach number
M_{DD} - Drag divergence Mach number
L/D – Lift to drag ratio
C_m – Moment coefficient

I. INTRODUCTION

Hovering is one of the most challenging part of flying a helicopter. To hover a helicopter, the pilot must keep the helicopter motionless over a reference point at a constant altitude. To achieve so, the pilot is required to give constant inputs and corrections to counteract the deviation of the helicopter because of the action of its own gusty air striking against the fuselage and flight control surfaces. The ability of the helicopter to hover comes from both the lift component, which is the aerodynamic force developed by the main rotors to overcome the force of gravity and the weight of the aircraft; and the thrust component which acts horizontally to accelerate or decelerate the helicopter in the desired direction. Therefore, during hovering, the lift force, drag force, thrust force, and the weight, are in balance, keeping the helicopter stationary.

A conventional helicopter has three flight control inputs- the cyclic stick, the collective lever, and the anti-torque pedals. The cyclic is used to eliminate the drift in the horizontal plane by controlling the forward, backward, and lateral movement of the helicopter. The collective is used to change the pitch angle of all the main rotor blades, thereby increasing or decreasing the lift derived from the main rotor, giving control of ascent or descent. The pedals are used to control the direction heading by altering the pitch of the tail rotor, thereby increasing or decreasing the tail rotor thrust.

One of the important objective in rotor blade design is to achieve maximum possible aerodynamic performance. The design parameters include the selection of airfoil, blade twist and taper ratio, point of taper initiation, blade root cut out, sweep, point of sweep initiation, and blade tip speed.

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Vikas Reddy.S is working as Assistant Professor in Department of Computer Science and Engineering at S J C Institute of Technology, Chickballapura which is affiliated to VTU, Belgaum, Karnataka. He has MS Degree in Computer Science from University of Texas at Dallas, USA and currently pursuing PhD on Internet of Things domain in VTU. He has good experience in teaching computer science courses like computer networks, data communication, software engineering and database management.

TARGET AUDIENCE

This book is written for beginners who want to start with computer networks. It is also very useful for Engineering, BSc, Diploma students where an introductory course on computer networks is a part of curriculum. After reading this book, readers find themselves at a decent level of expertise in the knowledge of computer networks from where they can go to the next level.

EMISSION OF DIESEL ENGINE USING A MIXTURE OF WASTE COCONUT OIL AND SESAME OIL BIODIESEL BLENDS AND DIESEL FUEL

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I. ABSTRACT

Biodiesel fuel has been gaining increased attention from engine researchers in view of energy crisis and environmental pollution. The present work is based on the usage of waste coconut and sesame seed oil as an additive to diesel for biodiesel. The experiment was conducted on Kirloskar make single cylinder, four-stroke, water-cooled, vertical, direct injection, diesel engine used to carry out the emission test in the present research work. The biodiesel used is the blend of different ratio of diesel and additive. The exact volume ratio of mixing additive to diesel to obtain different blends of biodiesel is called blending. The biodiesel blends used in present work are B10, B20, B30, B40 and B50.

II. INTRODUCTION

The world is facing oil crisis, due to the depletion of existing fossil fuel and environmental deterioration. Fossil fuels like diesel, petroleum and coal are playing an important role in the growth of industries which accelerates the quality of life. Extensive use of these fuels has indirectly effected and has given rise to environmental issues. The statisticians have predicted that the fossil fuel reserves will not last longer than twenty years. Petrol and diesel are the two fuels which are most largely in demand. Use of fossil fuels for the purpose of burning leads to the excessive emission of Carbon monoxide, Carbon dioxide and Oxides of Nitrogen along with particulate matters, which are the main sources of emission. Hence, the fossil fuels are responsible for pollutions and global warming; hence the usage of alternative fuels started instead of fossil fuels. Biodiesel is a derivative of clean burning fuels, produced from renewable resources. It does not contain petroleum but can be blended at any level with diesel. Biodiesel is used in diesel engine without any extensive modifications. Biodiesel is environmental friendly, in toxic and substantially free from Sulphur and its mixture. Mixing the biodiesel and diesel in a proper ratio is known as Blending, which can be done with the help of a flask and volume measurements. The exact quantity of oil and the diesel are mixed in a flask and in turn by constant stirring process, this secure proper mixing of biodiesel with diesel. The performance of any engine mainly depends on the viscosity, density of the fuel and the molecular oxygen. The lower mass based heating values of the vegetable oils requires higher mass of fuel flow to maintain constant energy input to the engine. The CI engine operated by petroleum products produce CO_2, CO, HC and the emissions which are toxic in nature affect human health.

III. EMISSION EFFECTS ON HUMAN BEING AND ENVIRONMENT

Green House Gases (CO_2): Motor vehicle also emits pollutants such as carbon-di-oxide that contribute to global climate change. In fact due t the emission of such global warming gases 30% of heats trapping gases are emitted which increases the temperature of earth surface and cause danger to the human race.

Carbon monoxide (CO): This odourless, colourless, and poisonous gas is formed by the combustion of fossil fuels such as gasoline and is emitted primarily from vehicles. When inhaled it blocks the oxygen from the brain, heart, and other virtual organs.

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OPTIMIZATION OF PULSATING HEAT PIPE PARAMETERS BY TAGUCHI METHOD

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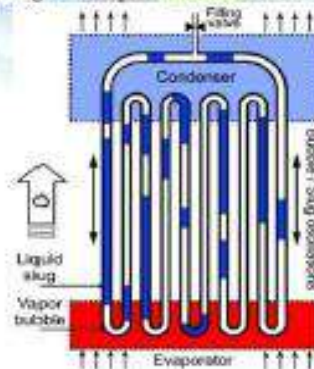Correspondence Author-Babu E R, E- mail: rajbabu@gmail.com

ABSTRACT

Pulsating heat pipe is an effective method of heat transfer through passive two phase mechanism. In the present research work, experimental studies were performed on working parameters of pulsating heat pipe such as heat input, filling ratio, working fluid etc. on thermal resistance and heat transfer co-efficient. In this paper, the PHP working parameters are analyzed by using taguchi method. The taguchi method is used to analyze the effect of working parameters of the pulsating heat pipe and predict the optimum design parameters such as heat input, filling ratio and working fluid etc. In taguchi method, three parameters and five levels were considered. The L25 orthogonal array was selected and the best optimum parameters were identified based on main effect plot for means and signal to noise ratio plot under the characteristic of smaller and larger is the better respectively. The results showed that heat input plays a significant role in performance of PHP on thermal resistance and heat transfer coefficient followed by working fluid and filling ratio. Further randomly selected combination of parameters was compared with actual results of experiment.

Key words: Pulsating heat pipe, Heat input, Filling ratio, Taguchi method etc.

I. INTRODUCTION

Pulsating heat pipe (PHP) is a two phase heat transfer device, which is developed by akachi [1] in 1990. The PHP consists of capillary tubes having three zones i.e. evaporator zone, condenser zone and adiabatic zone, which is arranged in a serpentine manner as shown in Fig. 1.

EMISSION OF DIESEL ENGINE USING A MIXTURE OF WASTE COCONUT OIL AND SESAME OIL BIODIESEL BLENDS AND DIESEL FUEL

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DEVELOPMENT OF PORTABLE IMPROVED SUGARCANE CRUSHER

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ABSTRACT

Traditional power operated 3-Cylinder traditional type sugarcane crusher, 3-Cylinder heavy duty sugarcane crusher and 3- Cylinder gear box type sugarcane crusher commonly used for crushing sugarcane in the jaggery making cottage industries and power operated 2-Cylinder power driven sugarcane crusher used by road side venders for extraction of juice for local consumption have been evaluated for their performance. Among the four types of sugarcane crushers evaluated, power operated 3- Cylinder gear box type sugarcane crushers was found to be more effective in crushing of sugarcane with respect to higher crushing efficiency, higher output capacity and less power consumption. Based on the feedback from locally used power operated 3-Cylinder sugarcane crushers, portable improved sugarcane crusher was developed and fabricated. It consists of M.S. frame to hold the mechanism including 5-crushing cylinders, 1.0 HP electric motor, power transmission systems, juice collection tray and casing. The improved 5- Cylinder sugarcane crusher developed was evaluated under actual field conditions and its performance was compared over the performance of 3- Cylinder gear box type sugarcane crushers used in the study area. The experimental data indicates that the performance of improved 5- Cylinder sugarcane crusher was found to be superior with respect to higher percent of juice extraction, higher output capacity of crushing sugarcane per unit time with less power consumption as compared to 3- Cylinder gear box type sugarcane crusher which is found to be the best among the locally used sugarcane crushers evaluated in the present study.

Key words: Traditional Sugarcane Crusher, Improved Sugarcane Crusher, Juice Extraction Efficiency, Output Capacity, Power Consumption

I. INTRODUCTION

Sugarcane is an important member of the plant kingdom and it is a species of herb belonging to the grass family (*Poaceae*). It has the pride of place among the commercial crops in India and provide raw material for the second largest industry in the country. In sugarcane production, India is No.2 in the world after Brazil (Table 1.0) cultivating in an area of over 4.83 million hectares, with an annual production of over 341 million tons of sugarcane. Sugarcane grow typically up to the height of 6 meters having clumped up, cylindrical, stout jointed fibrous stalks of 1.25 cm to 7.25 cm diameter (Munoz et al, 2007) & (FAO, 2015).

Table 1 Top ten sugarcane producers in the world

Sr.No	Country	Production(TMT)	Productivity(Tons/ha)
1	Brazil	7,39,267	72.30
2	India	3,50,200	62.80
3	China	1,25,536	65.50
4	Thailand	1,00,096	66.40
5	Pakistan	63,750	47.90
6	Mexico	61,182	70.60
7	Colombia	34,876	84.10

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DESIGN AND IMPLEMENTATION OF AN ARCHITECTURE FOR A REMOTELY OPERATED PLC LABORATORY USING LABVIEW

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ABSTRACT

In India, imparting practical knowledge about industrial automation to engineering students is still in its infancy. Technical facilities are available only at a few engineering colleges. As a result, it is necessary to share these facilities. One efficient way of doing this is through a remotely operated laboratory, where equipment related to automation, such as a PLC, can be used from distant places.

This paper describes a LabVIEW based approach for remote operation of a Programmable Logical Controller (PLC). A client - server architecture was built using LabVIEW technologies, such as DataSocket and Network Variables, Web Service, and Remote Panels, to access and program the PLC through internet. A LabVIEW VI was created to provide virtual HMI for PLC operation. Various function blocks were developed to execute PLC operations. In addition, a report function was included to automatically document the experiments.

Keywords—Programmable Logical Controller (PLC); remote laboratory; LabVIEW; industrial automation; industrial internet of things.

I. INTRODUCTION

Automation is the application of various technologies to develop a system or sequence of events that executes on its own. Presently, automation can be found in various fields engineering. A key advantage of automation is repetition of tasks with high throughput and efficiency.

The integral component of any automated system is a Programmable Logical Controller (PLC). PLCs are specifically designed to operate in an industrial environment. Typical inputs are push buttons, switches, and sensors. Typical outputs are coils, lamps and solenoids.

At SJCIT, PLC utilized for trainings is the IndraLogic L10. It is a modular PLC perfectly suitable for learning purposes. It has 8 onboard digital inputs and four digital outputs. In addition, inline modules provide 16 more digital I-Os and 2 analog I-Os.

Figure 1: Snapshot showing IndraLogic L10 PLC and I-O Adapter

II. LITERATURE SURVEY

In the present paper, effort is made to design, implement and evaluate a remote Programmable Logic Controller laboratory for various applications. Presently the internet is extensively used as a connectivity tool for various purposes. From the survey of literature, it has been observed that, few attempts are made to remotely

WEAR BEHAVIOR OF AL-6061 REINFORCED WITH BORAX MMCS

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ABSTRACT

The engineering fraternity has always been on the lookout for wonder-materials which would fit the bills for all types of service conditions. It stem from the need to make progressive discoveries made by scientists, affordable. The affordability quotient has persuaded many researchers to develop such materials which would satisfy various hitherto unexplored conditions. In today's world almost all generic materials have been tried for various uses and their limitations have been met. But the never ending quest of civilization requires that materials qualify for harsh environments. The area of composites with Al-6061 as the base material has led us to investigate the wear properties of the composites. In this work Al-6061 melted and mixed with Borax at various proportions using the stir casting method. The composite is tested for wear which has given promising results. There is an improvement in the wear resistance and increase in the hardness of the material that is synthesized in this research. The composite thus obtained can be used in the applications where wear resistance is required with light weight composition.

Key Words: Aluminium 6061, Borax, Stir casting, composite.

INTRODUCTION

MMC's can be described as a group of materials in which a continuous metallic phase (matrix) is combined with one or more reinforcement phases. The aim of such a composite material is to enhance the suitability of the end product by selectively enhancing the complimentary properties, and masking the detrimental properties of the matrix and the reinforcement. [1]. Introduction of Borax has enhanced the light weight characteristics of Aluminium composites and self lubricating effect when used at various quantities [2]. In this research an attempt is made to add Borax particulate matter into the Al-6061. This study is aimed at synthesis of composites and their wear characterization studies.

Aluminium is a material which is light weight and has good resistance to corrosion. Due to the low density of Al6061, it is widely used in aerospace and navy applications. In many defense applications where materials have to undergo harsh environments these alloys and composites are the best suited materials. The chemical composition of Al6061 is presented in the Table 1

Borax, also known as sodium borate, sodium tetraborate, or disodium tetraborate, is an important boron compound, a mineral, and a salt of boric acid. Powdered borax is white, consisting of soft colorless crystals that dissolve easily in water. Because of its self lubricating and structural properties, borax is added during stir casting method. Adding borax helps in increasing hardness and decreasing weight of the Al composites.

Table.1 Chemical composition of Al6061

Element	Cr	Cu	Mg	Zn	Fe	Mn	Si	Ti	Al
Percent	0.35	0.4	1.2	0.25	0.7	0.15	0.8	0.15	95.85

EXPERIMENTAL DETAILS

Al6061 is melted at 750°C in the furnace and a mechanical stirrer attached to the motor mixes the reinforcement material. This method is the most commonly used method for obtaining a reasonably well distributed particulate reinforcement in the composite material. Fig.1 shows the stir casting apparatus used in the present study. Melting of Al 6061 and reinforcement of borax in the furnace the molten metal is poured into castings as per ASTM E8M standard for making specimen for testing.

OPTIMIZATION OF MACHINING PARAMETERS IN DRILLING OF GFRP (GLASS/VINYL ESTER) COMPOSITES FOR REDUCTION OF DELAMINATION FACTOR

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ABSTRACT

The work reported on GFRP composites were mainly focused on evaluation of favorable machining environment during machining. Moreover, a number of approaches namely optimization of the operating variables, appropriate selection of drill point geometry and development of special methods for making holes had been implemented. Motivated by the literature reports on GFRP composites, in this research work, the author proposes to use grey integrated with Taguchi to evaluate the optimal parametric combination in drilling of GFRP composites. Furthermore, in this work, the drilling parameters are taken as spindle speed, feed and drill diameter whereas machining evaluation characteristics are thrust, torque, delamination (both on entry and exit) and surface roughness.

I. INTRODUCTION

Owing to their excellent mechanical and thermal properties, such as higher specific strength, enhanced specific modulus of elasticity, high damping factor, better resistance to corrosion, effective fatigue resistance and low thermal expansion coefficient, Glass Fiber Reinforced Polymer (GFRP) composites are extensively used in manufacturing industries especially in aircraft, aerospace, and automobile industries[1]. Therefore, it is imperative to understand the machinability behavior of these composites [2]. Drilling is widely used to assemble the components in aforementioned industries. But machining of these composites is dissimilar to conventional metals due to their isotropic nature and in-homogeneity [3]. Major drawbacks of these composites in machining are fiber pull out, delaminating and burring of fibers. Thus, selection of appropriate process parameters is of significant concern in machining of (GFRP) composites [4]

During drilling, delamination occurs at the entry and exit planes of the workpiece. These are called peel-up and push-out delamination. Two different mechanisms are responsible for delamination on each side of the laminate[6]. Peel-up occurs as the drill enters the laminate. That is, as the cutting edge of the drill comes into contact with the laminate, the cutting force acting in the peripheral direction is the driving force for delamination[7]. It generates a peeling force in the axial direction through the slope of the drill flute that results in separating the laminas from each other forming a delamination zone at the top surface of the laminate [8]. Peel-up delamination occurs by sliding the pierced plies up the flutes of the drill similar to the action of a power screw.

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MECHANICAL CHARACTERIZATION OF PURE ALUMINIUM OXIDE (Al₂O₃)

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ABSTRACT

The mechanical and physical properties of engineering Alumina ceramics (Al₂O₃) have been reviewed from literature data for the purpose of characterizing the mechanical response of Alumina to sintering manufacturing processes in engineering applications. The aim of current investigation is the study of microstructure, mechanical, physical and tribological properties of alumina by sintering. The aluminium oxide powder is mixed with polyvinyl alcohol and is pressed in cold iso-static press to form green product. Mechanical properties of the AMMC's developed has been investigated using Vickers Hardness test rig, Impact strength test rig, UTM (Universal Testing Machine), compression

KeyWords: The mechanical and physical properties of engineering Alumina ceramics (Al₂O₃)

1 INTRODUCTION

Alumina is one of the most cost effective and widely used material in the family of engineering ceramics. The raw materials from which this high performance technical grade ceramic is made are readily available and reasonably priced, resulting in good value for the cost in fabricated alumina shapes. With an excellent combination of properties and an attractive price, it is no surprise that fine grain technical grade alumina has a very wide range of applications

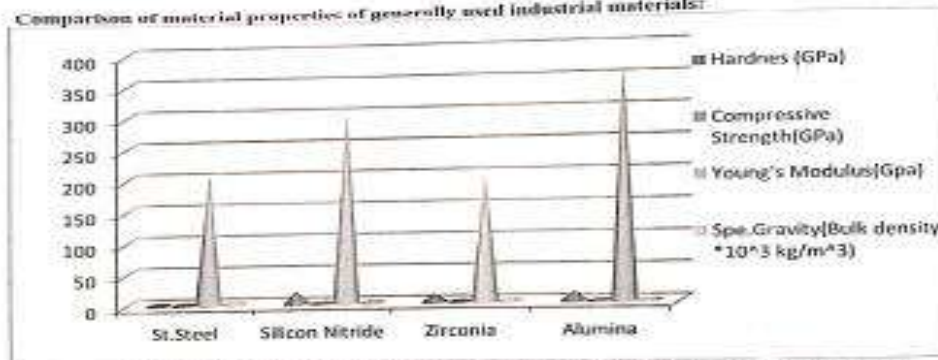Comparison of material properties of generally used industrial materials:

Fig 1.1 Clustered cone chart represents the mechanical properties of the materials

Table 1.1: Comparison of material properties

	Hardness (Gpa)	Comp. Strength(GPa)	Young's Modulus(GPa)	Specific Gravity (Bulk density *10³ kg/m³)
Stainless Steel	2.3	0.91	205	8
Silicon Nitride	20	3.90	300	3
Zirconia	13.5	1.20	200	6.3
Alumina	15.6	2.23	360	3.8

PROSPECTIVE EVALUATION OF PUMPKIN SEED OIL AS AN ALTERNATIVE FUEL – A NOVEL EXPERIMENTATION

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ABSTRACT

There is major issue worldwide on the level of contamination caused by emissions of I.C. Engines that debilitate the issues concerning high cost of raw petroleum. This has prompted an alternative for diesel engine. The pursuit has been centered on vegetable oil due to its sustainable source from agribusiness and the way that it is richly accessible and uniformly circulated everywhere throughout the world. One of such vegetable oil sources is "Fluted Pumpkin plant" ("Telfairia Occidentalis Hook F.") which is from the cucurbit case family and is described by its thick and enlarged fruit size. It is a creeper vegetative shrub that spreads low over the ground and has expansive lobed leaves and tendrils. Generally, the oil from pumpkin seeds can be extracted in a mechanical extractor utilizing "normal hexane" as solvent and transesterified to get bio fuel whose fuel properties can be assessed following the American Society for Testing and Materials (ASTM) techniques for biodiesel. The biodiesel thus obtained can likewise be utilized in different blends with the petroleum diesel in Four stroke naturally aspirated Diesel Engines. Phytosterols present in the pumpkin seed oil are likewise being considered for their part in bringing down cholesterol levels. The pumpkin seeds (oil and cake) can be profitable as additives in a variety of applications, since they give a decent wellspring of protein, and are rich in antioxidants which can help prevent cancer; they are high in "monounsaturated and polyunsaturated fatty acids". At the point when pumpkin seed oil is expelled from the seed, a by-product in the form of "pumpkin seed cake" is produced. Pumpkin seeds basically comprise of protein and fat giving a concentrated source of energy. The current work involves extraction of bio fuel from pumpkin seeds and blending it with the diesel at different constituent percentage of 10, 20, 30 and 40, followed by evaluation of the characteristics. The results clearly infer that the blending of the bio diesel with the petroleum diesel will vary the properties such as Flash Point, Fire Point, Viscosity and Calorific Value which may have further effect on the performance characteristics of "Internal combustion engines".

Keywords—Pumpkin Seed oil, Alternative, Bio-Fuel, Blend, Trans-esterification, Performance, Analysis.

I. INTRODUCTION

Fossil fuel is used as a major energy source across the world, the rampant usage of fossil fuels will lead to depletion of the resources in coming future. As the petroleum derivatives are on the verge of depletion, there is a need to discover an alternative fuel to satisfy the energy needs of the world. Today with the ascent in costs of petroleum based fuels and the pollution levels, it is becoming increasingly difficult for human population across the globe. Henceforth, an alternate source of fuel in the form of Bio fuel is outstanding amongst other accessible sources to satisfy the energy request of the world. Bio fuel is the man's best seek after alleviation from the deficiencies of fossil fuels. Because of expanding condition mindfulness, Bio fuels is picking up acknowledgment across the globe as a sustainable fuel which will soon become a contrasting option to diesel fuel with no adjustments to the Engine. Bio fuels can be synthesized from "ethanol and vegetable oil and animal fats". Use of Bio-fuels result in favorable circumstances; they are sustainable, more secure, biodegradable, do

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DEVELOPMENT AND MECHANICAL CHARACTERIZATION OF CHOPPED SIDA ACUTA FIBRE REINFORCED EPOXY COMPOSITE

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ABSTRACT

The present study focuses on the utilization of chopped sida acuta fibres as reinforcing material in the fibre reinforced polymer (FRP) composites. In the present investigation, water retted sida acuta chopped fibres were used as reinforcement material in the polymer composites with epoxy as matrix material. The chopped sida acuta fibre composites were fabricated for different fibre loadings (10 wt.%, 15 wt.% and 20 wt.%) utilizing hand lay-up technique. The test samples of chopped sida acuta fibre composites were prepared according to ASTM standards to investigate their mechanical properties like; tensile strength, tensile modulus, compression strength, flexural strength, impact strength and hardness of chopped sida acuta fibre composites were examined according to ASTM D standards. The obtained mechanical properties of chopped sida acuta fibre composites show the strength of the composite increases with increase in fibre loading from 10 wt.% to 20 wt.%. Also the study reveals that the chopped sida acuta fibre reinforced epoxy composites are suitable for medium strength structural applications.

Key words – Chopped sida acuta fibre; Mechanical properties; Fibre loading

I. INTRODUCTION

Natural fibre composites are utilized for structural purposes do exist, but then usually with synthetic thermo set matrices which of course limit the environmental benefits. The natural fibre composites can be very cost effective material for following applications: Building and construction industry: partition boards, panels for partition and false ceiling, floor, wall, window and door frames, pre-fabricated buildings, roof tiles which can be used in times of natural calamities such as floods, cyclones, earthquakes, etc.

There are several studies available on the mechanical properties and effect of fibre loading of natural fibre reinforced polymer composites with the combination of jute fibre/epoxy resin and jute fibre/polyester resin [1 & 2]. Jute - Glass Fiber Reinforced Polyester composites with different fiber composition is possible by simple hand lay-up technique. It has been noticed that the mechanical properties of the composites such as tensile strength, flexural strength, impact strength of the composites are also greatly influenced by the fibre composition. In Tensile Test, 50% GFRP - 50% Jute composition yielded the highest tensile strength of 84.59 MPa. In Flexural Test, 60% GFRP - 40% Jute composition yielded the highest flexural strength of 113.93 MPa. In Impact Test, 50% GFRP - 50% Jute composition yielded the highest impact energy of 7.12 Joules [3].

The plant Sida acuta belongs to Malvaceae family, available abundantly in forest edges and waste lands in India [4]. Plant sida acuta is locally also called as Bheemana kaddi gida [5] and the sida acuta fibres are generally utilized for making ropes and the sida acuta stems are utilized for making brooms and baskets.

Literature survey reveals no single researcher has characterized the mechanical behaviour like; tensile, compression, flexural, impact strength and hardness of chopped sida acuta fibre reinforced epoxy composite at different fibre loadings (10, 15 and 20 wt.%).

STRENGTH ANALYSIS OF E-GLASS AND JUTE FIBER REINFORCED POLYESTER COMPOSITES

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ABSTRACT

Nowadays composites have been a wide area of research due to their better characteristics like strength to stiffness and weight to strength abilities. These properties lead composites to use in various applicable fields such as automotive, aviation, sporting and marine industries. Always composites are continuous lookout for analyzing without compromising on their physical and mechanical behaviour. In this work, fiber reinforced composites were manufactured using E-glass and jute fiber with polyester as reinforcement. The composite laminates are prepared with 60:40 fibre-resin volume fraction percentages. The mechanical strength parameters such as flexural strength, tensile strength, interlaminar shear strength [ILSS] and impact strength of the composite laminate is studied as per the ASTM standards.

Keywords- E-glass, Jute, Interlaminar shear strength [ILSS], Impact strength

I. INTRODUCTION

Fiber reinforced plastics (FRP) are receiving wide attention lately, because they have many attractive mechanical characteristics. They are considering pre-eminence to metals for certain applications, having lighter for similar strength ratings and also corrosion resistant [1]. Composites are engineering materials made up of two or more constituents to form a single bulk mass [2]. There are number of options for matrix and reinforcing materials and they can be manufactured with various combinations, percentages and orientations to obtain a composite material with required properties [3]. In order to produce an optimized design, it is essential to evaluate the composite material for its properties like, tensile strength, flexural strength, impact resistance and interlaminar shear strength (ILSS).

Fiber reinforced plastics are most every now and they are utilized in aerospace structures, marine segments and automobile fields henceforth mechanical strength, damage tolerance and damage resistance are more essential features under static and dynamic loading, in light of the fact that they experience or exposed to unplanned impact loads [4].Among these impact conditions, the low-velocity impact induced damages, delamination is the dominant failure mode and may cause severe damage of the structural strength when the structure is under a compressive load [5]. Many researchers have been carried out to understand the mechanism of delamination and the effect of delamination on the performance of composite laminates under various loading conditions [6, 7].

As mention in the above statement, composite materials are high strength to weight ratio due to manufacturing difficulties but they may contain voids, cracks and inclusions present in the composites leads to failure within the specified tolerance. To overcome this drawback, these materials have drawn into fibers which may have flaws, but few of the perfect once in a bundle will help for predicted strength characteristics [8] Matrix system spreads the load between fibers and protects the fibers against abrasion, wear and impact. Properties of resulting composite will combine the characteristics of resin system and fibers both, thus exhibiting many useful properties like high tensile strength, high stiffness, high fracture toughness, and impact etc [9]. The properties of PMCs can be varied, depending on functional requirements, with the change of

RESISTANCE SPOT WELDING: A REVIEW

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ABSTRACT

Welding is a basic manufacturing process for the manufacture of components or parts with noble mechanical properties. Resistance Spot Welding (RSW) is regularly used as a successful joining method for a variety of jobs in the automotive and manufacturing fields. Precipitation hardening (PH) steels are known to be significant as a structural material among the emerging light alloy steels and are used for fabricating components by conventional metal working processes. The PH group of stainless steel is usually considered to be weldable by the common fusion and resistance technique. A review is carried out on resistance spot welding with different materials, optimization techniques are discussed. Best properties of PH steels are outlined in order to improve the strength properties with conventional welding, analysis on micro-structural variations.

Keywords: Resistance spot welding, Precipitation hardening steels

I. INTRODUCTION

The joining of dissimilar materials will have several advantages, including complex mechanical properties, which reduces the cost and weight of the welded parts, which is very necessary in the field of the automotive and aerospace industries. Due to the difficult formation of bonds between two different materials by fusion welding induces metallurgical incompatibility, which includes individualities such as brittle phase formation, high residual stress induced by physical mismatch and segregation of high and low melting phases due to mismatch in the chemical composition[1, 2]. The resulting intermetallic compounds have high hardness and negligible plasticity, resulting in a significant reduction in the mechanical properties of the demanding titanium and stainless steel materials. Resistance spot welding (RSW) is most widely used methods for joining materials in the automotive field, which is inexpensive and more efficient. This is the simplest and most widely used form of resistance welding where the surface is joined in a small number of points [3].Due to the current flow through the work pieces held together by the use of pressurized electrodes, the heat generated by the resistance creates coalescence within a small area. The heat generated depends on the current between the work pieces, the duration and the resistance [4]. It is necessary to maintain the maximum temperature at the interface of the work piece to be welded. In order to achieve this, the resistance of the work piece and the contact resistance between the electrode and the work piece should be kept as low as possible compared with the resistance of the bonding surface. This can be achieved by controlling the contact area, the pressure applied, the electrode material, and its dimensions and working surface quality [5].

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FLEXIBLE MANUFACTURING SYSTEMS (FMS): A REVIEW

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ABSTRACT

Today's manufacturing environment demands able manufacturing performance to accomplish the task in the stipulated time interval. Hence, flexibility of the manufacturing systems becomes an important issue which has led to the development of Flexible manufacturing systems (FMS). This unique production system encapsulate various components such as computer programmed machine tools, automated material handling systems, robots, and

Inspection and self diagnostic facilities into a single production system. FMS are recognized by the replacement of computer control set up of the hard mechanization generally found in exchange lines. The high venture required for a FMS and the capability of FMS as a key aggressive device make it alluring to take part in explore around there. This paper presents a review related to the various aspects of FMS. Articles underscoring numerous methodological points of view are basically audited. It is believed that this article results in bridging the gaps between the various crucial aspects required for its implementation.

Keywords: flexible manufacturing systems (FMS); scheduling; mathematical model; tools; route pam.

I. INTRODUCTION

The new challenges in the contending business can be encountered by modern manufacturing systems. The introduction of Flexible manufacturing System (FMS) has paved way for the manufacturing industries to improve their performance together with attaining the flexibility. It facilitates the combination of high levels of flexibility, high productivity and low level of work- in-process inventory [1]. Flexibility is regarded as an attribute that provides manufacturing system to withstand certain level of variations in part styles without any interruption in production line. When flexibility exists throughout the life cycle of a product, only then system is regarded as a flexible system. The flexibility of the production system can be determined by different tools such as part variety, schedule change; error recovery and new part test. Browne et al. [2] studied various types of flexibilities in his research work. It included routing, machine, operation, production, expansion, process, product and volume. After few years, Sethi and Sethi [3] added material handling, programme and market flexibility criteria to the earlier flexibilities.

The concept of FMS is that it merges the ideology of flow shop and batch shop manufacturing system. Further, it is architecture in such way that the flexibility of job shops is achieved along with accomplishing the effectiveness of dedicated production systems. Also, care must be taken to meet the demands with decreasing time. It is learnt that through FMS different products with various batch size scan be manufactured simultaneously.

It is learnt from the literature that there are three major components of FMS, i.e., workstations, automated material handling with storage system and a central computer. Workstations are processing stations of FMS, which are involved in performing operations on the part types. For transferring of parts from one station to another, an automated material handling system is used while central computer is used for controlling and coordinating the performance of workstation and material handling system.

EEG Based Emotion Recognition Using Wavelets and Neural Networks Classifier

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and Vijayendra Abijith

Abstract Emotions have a vital role in the day-to-day life of human beings, the need and importance of emotion recognition systems have increased with the role of human computer interface applications. In this paper, machine learning methods are used to model a relationship using the publicly available dataset SEED (SJTU Emotion EEG Dataset) which contains EEG signals of 15 participants recorded when excited to video stimuli. The signal processing techniques in time domain and time-frequency domain (Wavelet analysis) are used to extract the desired features. The discrete wavelet transforms are used to extract frequency bands. The features such as Statistical features, Hjorth parameters, differential entropy, and the combination on symmetric electrodes (differential asymmetry DASM and rational asymmetry RASM) are extracted. Artificial neural networks and Support Vector Machine (SVM) are applied on the feature set to develop prediction models to extract the emotion information carried by the participant from emotional characteristics exhibited in different frequency bands. These models are evaluated on the dataset and emotions are classified using ANN into three different states such as positive, negative and neutral states with an accuracy of 91.2%.
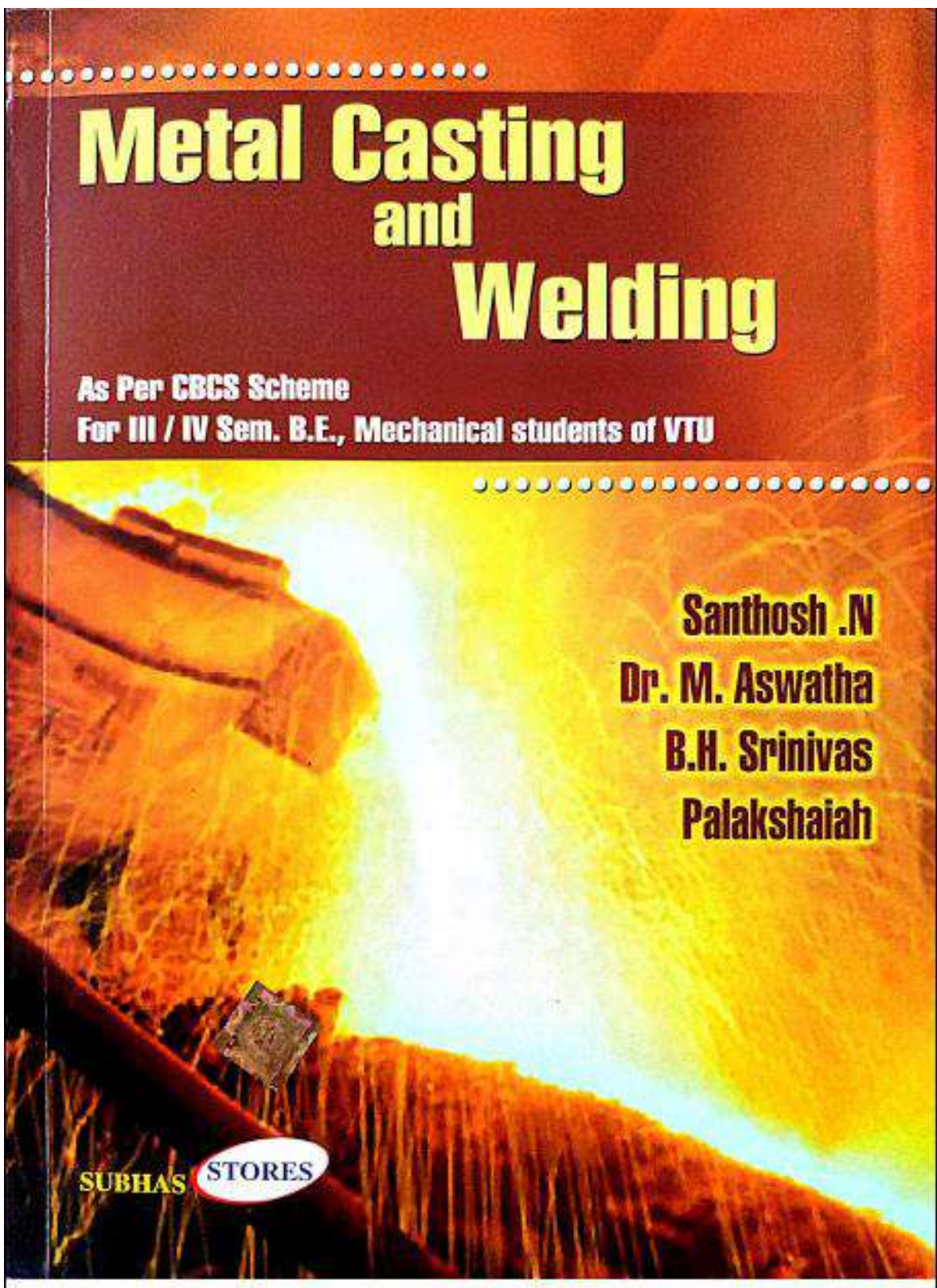
Keywords Affective computing · Electroencephalogram · Emotions
SVM · ANN

1 Introduction

Emotion recognition through EEG is used largely in the field of affective computing. It involves the use of emotions in HCI (Human-computer interaction) systems giving machines a certain degree of emotional intelligence. Various methods have been proposed for these machine learning systems such as (i) the use of multimedia environments that recognise the emotions of the users, (ii) recommendation and tagging systems, (iii) gaming and films that respond to user emotions, and (iv) biofeedback devices that have been worn in the manner of headsets and might help users gain control over their emotional states [1].

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Metal Casting
and
Welding

As Per CBCS Scheme
For III / IV Sem. B.E., Mechanical students of VTU

Santhosh .N
Dr. M. Aswatha
B.H. Srinivas
Palakshaiah

SUBHAS STORES

Low Velocity Impact Studies on Synthetic and Bio Fiber Reinforced Polyester Composites

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Abstract : Laminated composite members are sensitive to impact damage like common metallic structures. The effectiveness of composite laminates affecting in various applications is lack of perception about the effect of low velocity impact damage on structural stability. Present work provides a response and damage mechanisms of synthetic and bio fibre reinforced polyester composites under low velocity impact. Experimental test is conducted using drop weight testing equipment with various falling heights and impact energies. Impact damage analysis was carried-out to investigate damage behavior, delamination and fiber pull-out of the sample using conventional photograph.

Keywords : Low Velocity Impact [LVI], Synthetic fiber, Bio fiber, Impact energy

I. INTRODUCTION

Fiber reinforced composite (FRP) materials are receiving wide attention lately as they have many attractive mechanical properties. Having lighter for similar strength ratings and also corrosion resistant, they are considered pre-eminent to metals for certain applications [1]. Composites are engineering materials made up of two or more constituents to form a single bulk mass [2]. There are number of options for matrix and reinforcing materials and they can be mixed in different combinations, ratios, and directions to obtain a composite material with desired properties [3].

FRP's are most frequently used in aircraft structures and automotive applications. Hence damage tolerance and damage resistance are more important features under impact loading, because they are exposed to unplanned impact loading such as low velocity, Intermediate velocity and ballistic velocity [4]. Among these impact conditions, the low-velocity impact induced damages and delamination are the dominant failure modes and may cause severe damage of

the structural strength when the structure is under a compressive load [5]. The debonding of the adjacent layer occurs when the propagating tip of the matrix crack reaches the brittle interface, the high stress concentration and initiate delamination. Lot of research has been carried out to understand the mechanism of delamination and the effect of delamination on the performance of composite laminates [6, 7].

This research work focused on the study of delamination initiation of composite laminates under low-velocity impact for glass/polyester and jute/polyester composites. The impact responses of composite laminates under low-velocity impact were studied by considering the effect of the delamination initiation.

II. EXPERIMENTAL WORK

A. selection of materials

Extensive literature survey leads to research in composite damage under low velocity impact condition. It has been analyzed that, most of the research carried out on carbon and Kevlar fiber reinforced epoxy composites. So there is a choice to select jute and glass fibre as reinforcing material and polyester as matrix. Because it has been found that little work has been carried on glass fiber and jute fibre reinforced polyester composites.

B. Fabrication process

Hand layup process is used for developing E-glass and Jute fibre reinforced polyester composites. The schematic form of hand layup technique is as shown in Fig.1. Initially Mould is cleaned using acetone, allowed it to dry and a thin layer of releasing agent (Polyvinyl acetylene) is applied on the mould. The same time woven fabric was cut to the required size (300×300 mm²). Polyester resin has been prepared by mixing accelerator (Cobalt) and catalyst (MEKP) of 2%