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163.	Dr. Srija Unnikrishnan, Dr. Sunil Surve	Proceedings on 2017 International Conference on Advances in Computing, Communication and Control (ICAC3)	https://ieeexplore.ieee.org/xpl/conhome/8308484/proceeding	2017-18	205-210

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IOPscience

PAPER • OPEN ACCESS

Studies and Practice of Geometrical Test Procedures & Reconditioning of CNC Lathe Machine Tool

Jerin Beno[1], M VeeraBhadra Rao[2] and Sunil Kumar Das[3]

Journal of Physics: Conference Series, Volume 2070, Second International Conference on Advances in Physical Sciences and Materials 2021(ICAPSM 2021) 12-13 August 2021, India (Virtual)

Citation Jerin Beno *et al* 2021 *J. Phys.: Conf. Ser.* **2070** 012228

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https://doi.org/10.1088/1742-6596/2070/1/012228

Abstract

Machining Centres have been major production units for many decades with desired levels of accuracy, economy in costs of production and ease of control. Though new disruptive technologies such as rapid manufacturing, near net shape manufacturing technologies are replacing these machining units, still small and medium Indian Industries go with the conventional ways of large-scale production using conventional and classical machining approaches. With huge setups in place, such machines with high productivity demands, require stringent parts alignment tests frequently from time to time, referred to as Geometrical or Alignment tests to enable accurate finishing and machining of parts and smooth and uninterrupted production. This paper puts forth some basic Geometrical Tests performed on SB CNC 60 Lathe Machine Tool unit, identifying major deviations measurements and reconditioning the machine parts. The main objective of running such tests is to prevent breakdown of the machine and ensure safety working when handling older and heavier conventional machines.

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Process Control & Inspection using 5s Method and Computation with Pareto Analysis

Publisher: IEEE

Jerin Beno ; M VeeraBhadra Rao ; Jason Beno ; Sunil Kumar Das All Authors

Abstract: The term '5S' is a classic Japanese management strategy for cutting down on waste, improving resource management, and maintaining equipment & facilities. It is based on a... **View more**

Metadata

Abstract:
The term '5S' is a classic Japanese management strategy for cutting down on waste, improving resource management, and maintaining equipment & facilities. It is based on an efficient housekeeping approach that increases productivity, decreases human effort, and improves the working environment. This research will look at how an audit checklist, along with analyzing the Pareto chart, improves the 5S procedures in the Indian sector and how it may have a beneficial influence on staff performance, and as a result, enhance the company's productivity. Each element of the 5S evaluation method enhances and impacts team members' training, enabling individuals to grow, thereby saving lead time up to 50-55% along with 10-15% improvements in productivity.

Published in: 2021 International Conference on Advances in Computing, Communication, and Control (ICAC3)

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INSPEC Accession Number: 21720596

DOI: 10.1109/ICAC353642.2021.9697131

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

5S approach was developed in Japan and is an abbreviation for five Japanese words: Seiri, Seiton, Seiso, Seiketsu, and Shitsuke that translates to "sort, "set in order", "shine", "standardize" and "sustain" which is a process improvement technique widely used in industries and domestic areas. The 5S concept focuses on effective workplace organization, simplifies the workplace environment, and reduces waste while increasing quality and safety. It incorporates the visual examination of objects within our organizational

PAPER • OPEN ACCESS

Airflow noise reduction in digital stethoscope add-on device

S G Dubey[1], D S S Sudhakar[1] and S Saha[1]

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IOP Conference Series: Materials Science and Engineering, Volume 1070, International Conference on Recent Innovations in Engineering and Technology (ICRIET 2020) 4TH-5TH December 2020, Tamil Nadu, India

Citation S G Dubey *et al* 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1070** 012109

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[1] Department of Mechanical Engineering, Fr. Conceicao Rodrigues College of Engineering, Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai – 400050, India, Affiliated to Univ. of Mumbai

[2] Ayu Devices Pvt Ltd, M-09, CSRE 3rd Floor, SINE Incubator, IIT Bombay, Powai, Mumbai-400076, India

https://doi.org/10.1088/1757-899X/1070/1/012109

Abstract

Stethoscope is an essential device for doctors, but it has a steep learning curve. The use of an electronic stethoscope facilitates the doctor to examine the patient remotely with high quality audio. This paper deals with, occurrence and rectification of airborne noise based on ANSYS fluent flow simulation to predict the air flow inside the enclosure and acoustic performance improvement by designing the enclosure.

PAPER • OPEN ACCESS

Investigations into performance of conventional and conformal cooling channels of a plastic injection mold.

Advait C Purav[1], Deepika S Singraur[1] and D S S Sudhakar[1]

IOP Conference Series: Materials Science and Engineering, Volume 1070, International Conference on Recent Innovations in Engineering and Technology (ICRIET 2020) 4TH-5TH December 2020, Tamil Nadu, India

Citation Advait C Purav *et al* 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1070** 012122

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[1] Department of Production Engineering, Father Conceicao Rodrigues College of Engineering, Mumbai, Maharashtra, India

https://doi.org/10.1088/1757-899X/1070/1/012122

Abstract

In this paper, a comparative simulation analysis with traditional, conventional and conformal cooling channels of a plastic injection moulded part with variation in wall thickness has been analysed with the aim of determining which configuration will give better results in terms of part cooling time, volumetric shrinkage and warpage. The objective is to improve the part quality and to reduce the overall cycle time needed to manufacture the part.

ScienceDirect

Materials Today: Proceedings

Volume 49, Part 5, 2022, Pages 2034-2041

Design of a fixture for wire-cut EDM: A generic approach

Riddhesh D. Khatu, Bhushan T. Patil, Dipali K. Bhise, Hitendra B. Vaishnav

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https://doi.org/10.1016/j.matpr.2021.08.214

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Abstract

The increase in the need for high precision parts across various engineering fields demands a rapid pace in terms of manufacturing products, which leaves a little window for lead times related to auxiliary manufacturing requirements like tooling and fixtures. Similar to their application in conventional machining processes, fixtures serve as work-holding devices for non-conventional machining processes as well. This paper tries to bridge the gap between fixtures in traditional and non-conventional machining processes by developing a generic approach for designing a fixture for Wire-Cut EDM based on the methodologies followed for conventional processes. Different phases of the design process have been discussed in detail including the need to manufacture new or modify existing fixtures. Ashby charts method for material screening, and AHP and TOPSIS for material ranking have been included to help select the correct material. Additionally, due consideration is given to manufacturing and assembling the fixture body with the optimal processes to ensure cost savings. The approach can cut down on the lead time required from the conceptualization to the actual assembly of the fixture from a month to about a week depending upon machine availability on the shop-floor.

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Keywords

Fixture design; wire EDM; Ashby chart; CAD/CAM; AHP; TOPSIS

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Algorithm for Vertical Handover using Network Fitness Function

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Archana Karandikar All Authors

Abstract: There has been deployment of Heterogeneous Wireless Networks (HWNs) across the world. As a result, a roaming mobile user encounters networks with various Radio Access Tec... **View more**

Metadata

Abstract:
There has been deployment of Heterogeneous Wireless Networks (HWNs) across the world. As a result, a roaming mobile user encounters networks with various Radio Access Technologies (RATs). For reliable connectivity and best user experience, the issue is to identify and execute the handover to the best network among the available candidate networks. This problem can be solved by efficient Vertical Handover (VHO) algorithms. In this research paper, we present Vertical Handover Decision Algorithm (VHDA) based on Network Fitness Function. The input parameters considered in VHDA are Received Signal Strength (RSS), bandwidth, cost and user velocity. Network Fitness Function of available candidate networks has been calculated using the parameters and decision for handover is made basis the highest score.

Published in: 2021 International Conference on Control, Automation, Power and Signal Processing (CAPS)

Date of Conference: 10-12 December 2021

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DOI: 10.1109/CAPS52117.2021.9730657

Publisher: IEEE

Conference Location: Jabalpur, India

Contents

I. Introduction

Significant developments in antenna design, access technologies, signal processing and VLSI implementation have propelled developments in the field of mobile communication. Multiple radio access technologies are present across the globe with coverage overlap. These wireless n/ws which are hybrid, in nature, are referred as HWNs. Figure 1 shows such a scenario of HWN. Figure 1

Open Access

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Number of page(s)	6
Section	Automation
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Published online	09 August 2021

ITM Web of Conferences **40**, 01007 (2021) https://doi.org/10.1051/itmconf/20214001007

Design and Assessment of Electric Vehicle Performance Parameters based on Drive Cycle

Binsy Joseph* **and Deepak Vishnu Bhoir (Dr)****

Department of Electronics Engineering, Fr Conceicao Rodrigues College of Engineering, Bandra(W), Mumbai-50, India

* e-mail: binsy_joseph@fragnel.edu.in

** e-mail: bhoir@fragnel.edu.in

Abstract

Electric vehicle plays a significant role, in the future transportation across the world. EV has the potential to reduce air pollution and emission of Greenhouse gasses significantly compared to the existing fossil-fuel-based vehicles. Even though substantial progress can be expected in the area of embarked energy storage technologies, charging infrastructure, customer acceptance of Electric Vehicles is still limited due to the problems of Driving range anxiety and long battery charging time. We can solve most of these problems with the infrastructure development ,optimum sizing and design of the vehicle components and extensive study on vehicle dynamics under various real-time driving conditions. This research focuses on the Matlab software based co-simulation of Electric Vehicle system, including the battery pack and motor, to predict the vehicle performance parameters like driving range, efficiency, power requirement, and energy characteristics under different driving scenarios. The vehicle's acceleration performance, energy consumption, and efficiency are determined by simulation and verified analytically. Using ADVISOR software the fuel economies and tail pipe emission for various vehicle models are determined by simulation and results are compared with Hybrid Electric vehicle models.

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Fuzzy Logic Controller for an EV's Dual-Source Hybridization
E3S Web of Conferences 297, 01039 (2021) https://doi.org/10.1051/e3sconf/202129701039

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Deep Learning Framework for Facial Emotion Recognition using CNN Architectures

Publisher: IEEE

Rohan Appasaheb Borgalli ; Sunil Surve All Authors

Abstract:FER (facial expression recognition) is a significant study subject in the artificial intelligence and computer vision areas because of its widespread applicability in bot... **View more**

Metadata

Abstract:
FER (facial expression recognition) is a significant study subject in the artificial intelligence and computer vision areas because of its widespread applicability in both academic and industrial sectors. Though FER can be carried out primarily utilizing multiple sensors, research shows that using facial images/videos for recognition of facial expression is better because visual expressions carry major information through which emotions can be conveyed.In the past, much research was conducted in the field of FER using different approaches such as the use of different sensors, machine learning, and deep learning framework with dynamic sequences and static images. The most recent state-of-the-art outcomes demonstrate In comparison to conventional FER techniques, deep learning Convolutional Neural Network (CNN) based systems are significantly more powerful. Deep learning-based FER methods utilizing deep networks enable extraction of features automatically instead of traditionally handcrafted feature extraction.This paper focuses on implementing different custom and standard CNN architectures for training and testing them on facial expression static image datasets scenario KDEF, RAFD, RAF-DB, SFEW, and AMFED+, both lab-controlled and wild.

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Date Added to IEEE *Xplore*: 13 April 2022

DOI: 10.1109/ICEARS53579.2022.9751735

PAPER • OPEN ACCESS

Deep learning for facial emotion recognition using custom CNN architecture

Mr. Rohan Appasaheb Borgalli[1] and Dr. Sunil Surve[2]

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Journal of Physics: Conference Series, Volume 2236, 2nd International Conference on Computational Intelligence & IoT (ICCIIoT) 2021 23/02/2022 - 24/02/2022 Online

Citation Mr. Rohan Appasaheb Borgalli and Dr. Sunil Surve 2022 *J. Phys.: Conf. Ser.* **2236** 012004

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[2] Professor, Department of Computer Engineering Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai University, Mumbai, India

https://doi.org/10.1088/1742-6596/2236/1/012004

Abstract

Human facial expressions are an indication of true emotions. To recognize facial expressions accurately is useful in the field of Artificial Intelligence, Computing, Medical, e-Education, and many more. The facial expression recognition (FER) system detects emotion through facial expression. But, it is challenging to detect facial emotions accurately. However, recent advancements in technology, research, and availability of facial expression datasets have led to the development of many FER systems which can accurately detect facial emotions. Past research in the field of FER indicates With Convolutional Neural Networks (CNNs), deep learning techniques are the most advanced presently. Custom CNN Architecture is used to implement basic facial emotion recognition in static images in this paper. A K-fold cross-validation method was used to train them using FER13, CK+, and the JAFFE data set. On the seven classes of fundamental emotions, including anger, disgust, fear, happiness, neutrality, sorrow, and surprise, the FER13, CK+, and JAFFE datasets had an accuracy rate of 91.58 percent. Given the difficulty of developing unique CNN architecture, this study's accurate findings contrast well with those of previous studies.

Recent Trends in Electronics and Communication pp 145–154

A Simple and Sturdy Hybrid Interference Canceller for a DS-CDMA System in Multipath Environment for Static and Mobile Users

Monica Khanore & Srija Unnikrishnan

Conference paper | First Online: 14 December 2021

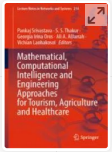
Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 777)

Abstract

In direct sequence code-division multiple access (DS-CDMA) system, the users' spreading codes lose their orthogonality because of asynchronous transmission, near-far effect, and multipath propagation of user signals. This engenders multiple access interference (MAI). MAI is detrimental to the quality of reception which can be quantified by bit error rate (BER) performance of the system. The users' mobility results in Doppler shift of carrier frequency of the user signals, which further degrades the system performance. In this paper, a simple and sturdy hybrid interference cancellation detector is discussed and the performance test of the detector is performed in Rayleigh fading multipath environment for static and moving users. The detector is further tested for convergence. The combination of the interference cancellation method and the detection strategy used avoids the necessity of the RAKE combiner for estimating transmitted data. Detector performs very well for both static and moving users, and the detector's convergence is assured.

Keywords

HIC **MAI** **Multipath** **Doppler shift** **Convergence**



Mathematical, Computational Intelligence and Engineering Approaches for Tourism, Agriculture and Healthcare pp 233–242

QoS Evaluation for Wireless Networks Using *K*-Nearest Neighbor (k-NN) Algorithm

Siddharth Goutam & Srija Unnikrishnan

Conference paper | First Online: 20 October 2021

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 214)

Abstract

This research paper aims to assess and predict the Quality of Service (QoS) of wireless networks based on K- Nearest Neighbor (k-NN) Algorithm. QoS for the wireless network is mainly dependent on the parameters like packet loss, latency and jitter. In this paper, we have implemented classification of QoS and also ensured the accuracy of our results using regression analysis.

Keywords

Vertical Handover (VHO) **Quality of Service (QoS)**

Vertical Handover Decision Algorithm (VHDA) **K-Nearest Neighbor (k-NN) Algorithm**

Packet-loss **Latency** **Jitter**

PAPER • OPEN ACCESS

Effect of payload security in MQTT protocol over transport and application layer

Arunima Varma[1] and Srija UniKrishnan[1]

IOP Conference Series: Materials Science and Engineering, Volume 1166, International Conference on Materials Science and Manufacturing Technology (ICMSMT 2021) 8th-9th April 2021, Coimbatore, India

Citation Arunima Varma and Srija UniKrishnan 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1166** 012019

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[1] Department of Electronics Engineering, Fr. Conceicao Rodrigues College of Engineering, Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai – 400050, Affiliated to University of Mumbai, India

https://doi.org/10.1088/1757-899X/1166/1/012019

Abstract

Digital revolution has made our life dependent on devices that are can be connected to the internet. Hence, making Internet of things (Iot) an inevitable part for now and years to come. The transition from normal devices to those devices that can be connected to internet, has been exponential, in contrast, the technique used by the protocols in those devices to prevent cyber-attacks and keep user data intact has not been in the same pace as that of its usage. This concerns the end user as it risks the data, allowing it to be misused. In this paper we discuss, MQTT (message queue telemetry transport) a lightweight messaging protocol, wherein the payload is acting as the driver for the data to be carried. This payload can include all sort of information, private as well as public. The paper experiments with the vulnerability of the payload when exposed to a cyber-attack, here, Man in the middle (MITM) attack when the same payload is provided with 2 different types of security. Initially at the transport layer and later at the application layer. At first a channel-based security using Transport security layer (TLS) is provided to the payload and later, an object-based security using Advanced Encryption Scheme (AES) is provided to the same payload. Both of these payload encryption technique for MQTT protocol is discussed elaborately.

Comparative Analysis of Deep Learning Techniques For Credit Card Fraud Detection

Publisher: IEEE

Archana Pascal Lopes ; Sangeeta Parshionikar ; Aniruddha Kale ; Nikhil Sharma ; Albyn Alex Varghese All Authors

Abstract: Today, many types of frauds are carried out in the credit and debit card transactions. These types of transactions are usually carried out due to the increasing popularit... **View more**

Metadata

Abstract:
Today, many types of frauds are carried out in the credit and debit card transactions. These types of transactions are usually carried out due to the increasing popularity of online transactions. Therefore, there's need to detect the online frauds while using credit card. There is a danger of stealing credit card information for malpractices. This is sometimes done by making fake calls or sending fake SMS or by sending phishing mails. There are many algorithms that can detect frauds, such as machine learning. In this paper, we study the various aspects of machine learning to detect frauds. This paper deals with Local Outlier Factor, Isolation Forest and Convolution Neural Network techniques. We determined accuracy, precision, recall, F1 score and loss for these techniques. We achieved an accuracy of 99% for both deep learning and supervised machine learning techniques.

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Bitcoin Price Prediction

Publisher: IEEE

Mareena Fernandes ; Saloni Khanna ; Leandra Monteiro ; Anu Thomas ; Garima Tripathi All Authors

Abstract: Advancement in technological developments introduced virtual currency exchange methods viz Bitcoin, Litecoin, Ethereum and so on which are evolving rapidly. Cryptocurrenc... **View more**

Metadata

Abstract:
Advancement in technological developments introduced virtual currency exchange methods viz Bitcoin, Litecoin, Ethereum and so on which are evolving rapidly. Cryptocurrencies were introduced to eliminate financial intermediaries leading to direct peer-to-peer transactions. With the spread of the global Coronavirus pandemic, the relationship between Bitcoin and the equity market has expanded. Cryptocurrencies are highly volatile but can also prove to be good investments. Cryptocurrency, being a novel technique for transaction systems, has led to a lot of confusion among investors and any rumours or news on social media has been claimed to significantly affect the prices of cryptocurrencies. The huge percentage increase/decrease in Bitcoin's price over a short period of time is an intriguing phenomenon that cannot be foreseen. For a long time, bitcoin price prediction has been a hot topic of study.In this paper, we discuss the implementation and results of the Deep Learning Bitcoin Price Prediction Model and prepare a strategy to maximize gains for investors. The paper covers to framework with a set of deep learning models, analysis methods with a fixed set of factors to predict daily Bitcoin prices and design-integration of price prediction of different cryptocurrencies using RNN (Recurrent Neural Network), LSTM (Long Short-Term Memory) and GRU (Gated recurrent units). The idea of incorporating Public Sentiment in the prediction of the hikes and falls of the Bitcoin market from Social Media platforms like Reddit and Twitter leading to meaningful predicted results. This prediction can bring confidence to the common man to invest with lesser risk and more profit. Also, this can enable the digital new-age currency to become a primary method of transaction.

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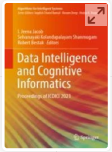
Publisher: IEEE

Conference Location: Mumbai, India



Data Intelligence and Cognitive Informatics pp 809–820

Contactless Attendance System

Sanil Rodrigues, Rincy Pereira, Selvin Tuscano & Garima Tripathi

Conference paper | First Online: 01 February 2022

Part of the Algorithms for Intelligent Systems book series (AIS)

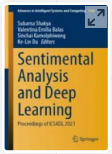
Abstract

Attendance is a mandatory requirement of every institution. Managing and preserving the Attendance register every day is a troublesome and time-consuming task. There are many automated methods for the same like biometrics, RFID, Voice Recognition, etc. Nowadays, Machine Learning has been highly used for computer vision and its applications. So, it uses the concept of Machine Learning and deep learning in Face—Recognition for automatic attendance systems. In this proposed system it uses face Detection Algorithms that can correctly recognize up to 97% to provide the computer systems the ability to find and recognize human faces fast and precisely in images or videos so that the methods can be used in recording attendance.

Keywords

Machine Learning **Deep Learning** **Face Recognition** **Biometrics**

Computer Vision



Sentimental Analysis and Deep Learning pp 155–175

Pneumonia and Diabetic Retinopathy Detection Using Deep Learning Algorithm

Meera Ghaskadvi, Sakshi Khochare, Rozebud Gonsalves & Prajakta Dhamanskar

Conference paper | First Online: 26 October 2021

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1408)

Abstract

Diseases knock on a man's door when he least expects it. One such disease is Pneumonia. It occurs due to the inefficiency of lungs and can lead to major health threats in not just young adults but also children if not detected timely. Diabetic Retinopathy, a disease commonly seen in diabetic patients can be lethal and make a person lose their eyesight. To diagnose these diseases timely, the amalgamation of health with technology is inevitable. With the medical circle of our country being consistently under a great deal of pressure particularly in these difficult times of the pandemic, we have made a one-stop site that can test the presence of different illnesses like diabetic retinopathy and pneumonia by using a deep learning algorithm called convolutional neural networks. We wish to limit the endeavors and the human contact needed in the whole cycle of getting oneself tested so that the presence of illnesses can be tested from the comfort of your home, without investing cash and energy, and by staying away from human touch and hence keeping yourself safe from the covid-19 infection. We have taken CT Scan images as input and have obtained high accuracy, recall, and precision values. We have obtained an accuracy of 90.06% and 92.88% for Pneumonia and Diabetic Retinopathy respectively. Thus we have successfully created a one-stop website that can be used by healthcare professionals as well as organizations.

Keywords

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Autonomous Timetable System Using Genetic Algorithm

Publisher: IEEE

Yashaswini Sunil Chaudhari ; Vanessa William Dmello ; Srushti Suraj Shah ; Prajakta Bhangale All Authors

Abstract: Time Management is one of the most important factors in a student's life. Many studies have shown a relationship between the anxiety and stress of a student's life with e... **View more**

Metadata

Abstract:
Time Management is one of the most important factors in a student's life. Many studies have shown a relationship between the anxiety and stress of a student's life with effective time management. Timetable Generation is one of the most tedious jobs with the capacity for many errors and mistakes. There are several different methods proposed to solve this problem. Motivated by these studies, this article proposes an application for an autonomous system that handles the generation of the weekly timetable. The proposed framework utilizes genetic algorithm for the generation of a weekly timetable depending on various factors like time, subjects, and the difficulty of the subject for a respective student. With the genetic algorithm operators and the constraints provided by the student, the timetable generated fulfills all the required constraints and minimizes minor hindrances related to the timetable generated. The proposed framework provides the ability to the student, to customize their weekly timetable on factors related to their respective needs. This system is proposed to reduce the time taken to make a viable timetable and to provide better time management strategies to students in higher education systems.

Published in: 2022 4th International Conference on Smart Systems and Inventive Technology (ICSSIT)

Date of Conference: 20-22 January 2022

Date Added to IEEE *Xplore*: 25 February 2022

ISBN Information:

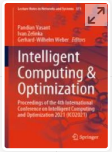
INSPEC Accession Number: 21707361

DOI: 10.1109/ICSSIT53264.2022.9716370

Publisher: IEEE

Conference Location: Tirunelveli, India

Contents



International Conference on Intelligent Computing & Optimization

ICO 2021: **Intelligent Computing & Optimization** pp 196–206

A Decentralized Federated Learning Paradigm for Semantic Segmentation of Geospatial Data

Yash Khasgiwala, Dion Trevor Castellino & Sujata Deshmukh

Conference paper | First Online: 01 January 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 371)

Abstract

Data-driven deep learning is recognized as a promising approach to building precise and robust models to classify and segment complex images. Road extraction from such complex aerial images is a hot research topic in geospatial data mining as it is essential for sustainable development, urban planning, and climate change research. It is unheard of for individual satellites to possess many data samples to build their personalized models. Centralizing satellite data to train a model on varied data is also infeasible due to privacy concerns and legal hurdles. This makes it a challenge to train Deep Learning algorithms since their success is directly proportional to the amount of diverse data available for training, preventing Deep Learning from reaching its full potential. Federated Learning (FL) sidesteps this problem by collaboratively learning a shared prediction model without sharing data across satellites. This paper constructs a semantic segmentation-based FL system that leverages the strengths of shared learning and Residual architecture combined with Unet for road extraction. We train and evaluate our system on a public road dataset reorganized into a heterogeneous distribution of data scattered among multiple clients and compare it with models trained locally on individual satellites. We further try to enhance the performance of our FL-based model by implementing various versions of Unet.

Keywords

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Voice-Enabled Vision For The Visually Disabled

Publisher: IEEE

Sujata Deshmukh ; Praditi Rede ; Sheetal Sharma ; Sahaana Iyer All Authors

Abstract: We have proposed a single system for analyzing text from an image and converting it into an audio track in the desired language. The visually handicapped can utilize this... **View more**

Metadata

Abstract:
We have proposed a single system for analyzing text from an image and converting it into an audio track in the desired language. The visually handicapped can utilize this approach to sense the attitude and demeanor of the person they are dealing with. All of the aforementioned tasks linked with this application are executed by simply issuing commands. The peculiarity of this system is that it reads a handwritten paper, analyses personality based on it, and provides audio output to the blind. This technology makes it possible for the visually impaired to read and understand First Information Reports (FIRs), business cards, chats, doctor's prescriptions, invoices, addresses, and other papers.

Published in: 2021 International Conference on Advances in Computing, Communication, and Control (ICAC3)

Date of Conference: 03-04 December 2021

Date Added to IEEE *Xplore*: 07 February 2022

ISBN Information:

INSPEC Accession Number: 21738560

DOI: 10.1109/ICAC353642.2021.9697125

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

According to a World Health Organization (WHO) report dated February 26, 2021, at least 2.2 billion individuals worldwide suffer from near or far vision impairment [1]. Reading, interpreting, and comprehending texts is a huge challenge for visually impaired people. Another issue is that a misunderstanding by a human can lead to data misinterpretation. The majority of Braille-based reading materials are available to the blind. Books, documents, and other printed materials must be converted to raised dots in order for the blind to read them.

Fwd: Decision on your submission in 2021 Conference on Technologies for Future Cities (CTFC 2021)

1 message

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Thank you for showing interest and submitting a paper in 2021 Conference on Technologies for Future Cities (CTFC 2021).

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Thanks,
Team CTFC 2021

Soft Computing for Security Applications pp 749–763

Cyberbullying Detection in Native Languages

Sakshi Shetty, Jesica Dsouza, Ameaza Rodrigues & Monali Shetty

Conference paper | First Online: 26 October 2021

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1397)

Abstract

Cyberbullying can manifest in various forms like cyber-stalking, identity theft, etc. Teenagers are more prone to be victims of cyberbullying since they spend a significant amount of their time daily, engaging with various social media entities. UNESCO drew attention to this issue by producing case studies from several geographically distant countries. These studies show that the urgency of countering cyberbullying cannot be gainsaid and is a subject of human rights. Similar to bullying, cyberbullying affects a person's mental well-being, often leading to low self-esteem, self-harm, anxiety, depression, suicidal thoughts, etc. Due to the widespread instances of cyberbullying and harassment, combating cyberbullying is a pressing issue. We have completed a thorough literature review of Cyberbullying. The literature study concluded that social media spaces are rife with instances of harassment and bullying. There is a paucity of mere documentation of cyberbullying, let alone actions to prevent it. Of late, researchers are in favor of countering cyberbullying through automation. Machine Learning models have been designed to detect bullying and harassment through text in comments. Nevertheless, these systems are lacking in terms of texts/comments that are available in regional scripts. Training machine learning models with regional languages shall make them more efficient in countries like India, where various regional languages, differing in scripts, are used. Hindi has around 73 million native speakers (1.1% of the world's population). In this paper, we have designed automated systems for Hindi that will significantly impact the safety of online communication spaces.

Interactive Map Application For Real-Time Crime Reporting

Publisher: IEEE

Syed Irfan Amjad Abidi ; Alan Anthony Almeida ; Lance Garrick Soares ; Ashwini Pansare All Authors

Abstract: Crime is very common in India and it happens in many different ways throughout the country. Along with violent crimes (like homicide, robbery, and assault), and property ... **View more**

Metadata

Abstract:
Crime is very common in India and it happens in many different ways throughout the country. Along with violent crimes (like homicide, robbery, and assault), and property crimes (like burglary, theft, motor vehicle theft, and arson), there are also major problems with organized crime, illegal drug trade, illegal arms trafficking, corruption, and cybercrime as well. Surprisingly, location has a significant impact on crime in India, with Delhi at the top of the list with the highest crime rate among all Indian states. Crime prevention is critical to maintaining law and order in the country. Deterring criminals through the deployment of more police is one of the major strategies practiced [1]. Apart from an increase in crime rates, there has also been a sudden rise in unsolved cases and crimes, with culprits still at large. The major reason for this is a crime not being reported, minimal or no evidence against the offender, and corruption.In this paper, we address exactly that aspect of crime reporting which will minimize crime. The methodology proposed in this paper consists of two aspects: an android and a web application. These systems together can be used by police authorities to assist in curbing crime and to provide assistance to the victims or witnesses.

Published in: 2021 International Conference on Advances in Computing, Communication, and Control (ICAC3)

Date of Conference: 03-04 December 2021

INSPEC Accession Number: 21720577

Date Added to IEEE *Xplore*: 07 February 2022

DOI: 10.1109/ICAC353642.2021.9697179

BERT based Multiple Parallel Co-attention Model for Visual Question Answering

Publisher: IEEE

Mario Dias ; Hansie Aloj ; Nijo Ninan ; Dipali Koshti All Authors

Abstract: Humans can easily interpret visual and textual content whereas for a machine this is a challenging task. Visual question answering is a well-known problem in the field of... **View more**

Metadata

Abstract:
Humans can easily interpret visual and textual content whereas for a machine this is a challenging task. Visual question answering is a well-known problem in the field of computer vision and NLP where an image and a question related to the image are given and the machine has to generate a natural language answer. This paper explores the use of transformer BERT as a language model in VQA. The BERT-based multiple parallel co-attention visual question answering model has been proposed and the effect of introducing a powerful feature extractor like BERT for language modeling has been studied. From the experimental results, it is concluded that the proposed model improves over the original baseline VQA model by 3%.

Published in: 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS)

Date of Conference: 25-27 May 2022

DOI: 10.1109/ICICCS53718.2022.9788253

Date Added to IEEE *Xplore*: 08 June 2022

Publisher: IEEE

ISBN Information:

Conference Location: Madurai, India

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Modern Approaches in Machine Learning & Cognitive Science: A Walkthrough pp 249–256

Stroke Awareness ChatBot Assistant with Stroke Risk Prediction Using Demographic Data

Kranti Wagle & Himanshu Alwe

Chapter | First Online: 21 April 2022

Part of the Studies in Computational Intelligence book series (SCI,volume 1027)

Abstract

Stroke is a second leading cause of death globally according to WHO Global Health Estimates and is listed in top 5 causes of disability globally from past few decades. Especially in developing country like India having population over 1 Billion, stroke rate is much higher than any other developing countries, and in this current pandemic situation the incident of stroke has doubled in past few years. So awareness about general population on stroke risk factors and symptoms is necessary for prevention against stroke and immediate effective treatment. The aim of this project is to assist general population of risk factor, warning symptoms of stroke, prevention and immediate effective treatment of stroke as soon as possible. To achieve this Chatbot is design using Deep Learning for the purpose of awareness, diagnostic evaluation, stroke prediction from user input data and assisting immediate measures if stroke risk prediction is positive. The main goal of this research is to look at how few popular Machine Learning algorithms function and to forecast stroke with high accuracy.

Keywords

Stroke **ChatBot** **Demographic data** **Machine Learning** **Random Forest Classifier** **Decision Tree Classifier** **Support Vector Classifier** **Deep Learning** **Neural Network**

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Prediction of Parkinson's Disease using Machine Learning and Deep Transfer Learning from different Feature Sets

Publisher: IEEE

Supriya Kamoji ; Dipali Koshti ; Valiant Vincent Dmello ; Alrich Agnel Kudel ; Nash Rajesh Vaz All Authors

Abstract: Precursors that appear diminutive hold a world of significance with regard to indicating and diagnosing premature stages of degenerative diseases, especially neurological... **View more**

Metadata

Abstract:
Precursors that appear diminutive hold a world of significance with regard to indicating and diagnosing premature stages of degenerative diseases, especially neurologically concerned ailments like Parkinson's disease (PD). PD usually shows symptoms like spasm in the limbs, jaw or head, rigidness of the limbs and trunk, sluggish movement, etc. and it is crucial to detect Parkinson Disease in early stages by keeping an eye out for these preliminary symptoms. In this paper, various datasets were researched, analyzed and run through certain algorithms to detect several symptoms. The Freezing of Gait dataset was used to predict if there were symptoms related to legs and trunk by analyzing the patient's gait, the Parkinson Clinical speech dataset to detect deviation in audio frequency and lastly the Parkinson Disease wave and spiral drawing dataset which can help find out impairment in writing due to a tremor in hand or arm. The detection of impairment in handwriting seems to be the most convenient method and Convolutional Neural Network using Transfer Learning is implemented on this image dataset.

Published in: 2021 6th International Conference on Communication and Electronics Systems (ICCES)

Date of Conference: 08-10 July 2021

Date Added to IEEE *Xplore*: 02 August 2021

ISBN Information:

INSPEC Accession Number: 21013028

DOI: 10.1109/ICCES51350.2021.9488944

Publisher: IEEE

Conference Location: Coimbatre, India

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Categorization of Diabetic Retinopathy and Identification of Characteristics to Assist Effective Diagnosis

Publisher: IEEE

Jenell Mathias ; Simran Gadkari ; Merlin Payapilly ; Ashwini Pansare All Authors

Abstract: Diabetic Retinopathy is a condition caused as a result of damage to the blood vessels in the retina due to poor blood sugar control. Diabetes results in a gradual deterio... **View more**

Metadata

Abstract:
Diabetic Retinopathy is a condition caused as a result of damage to the blood vessels in the retina due to poor blood sugar control. Diabetes results in a gradual deterioration of the other organs firstly the retina thus causing adverse effects to vision. However, this damage can be prevented or treated if identified in its initial stages which is possible if monitored on a timely basis. The methodology proposed in this paper consists of two components: the classification component and the feature extraction component. The classification component deals with the utilization of transfer learning that includes a CNN model pre-trained on the ImageNet dataset retrained on the retinal dataset to develop a model that most effectively categorizes diabetic retinopathy based on the level of severity. The feature extraction component further extracts characteristics using appropriate image processing libraries. Such an easily accessible system is also capable of most effectively assisting the diagnosis of retinopathy especially in rural areas where instruments to detect such diseases are rarely available.

Published in: 2021 International Conference on Emerging Smart Computing and Informatics (ESCI)

Date of Conference: 05-07 March 2021

Date Added to IEEE *Xplore*: 09 April 2021

ISBN Information:

INSPEC Accession Number: 20553624

DOI: 10.1109/ESCI50559.2021.9396908

Publisher: IEEE

Conference Location: Pune, India

Contents

I. Introduction

Diabetic Retinopathy (DR) is a medical condition that affects people suffering from diabetes, causing progressive damage to the retina which in turn leads to partial to total blindness of the eye [12]. The National Diabetes and Diabetic Retinopathy survey, 2019

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Leveraging Deep Learning for Nail Disease Diagnostic

Publisher: IEEE

Mahendra Mehra ; Steve D'Costa ; Ryan D'Mello ; Joseph George ; D.R. Kalbande All Authors

Abstract: There are many types of nail diseases, and although the nail is just a small part of our body, the nail unit can be a significant sign of some underlying disease based up... **View more**

Metadata

Abstract:

There are many types of nail diseases, and although the nail is just a small part of our body, the nail unit can be a significant sign of some underlying disease based upon its features. Subungual Melanoma remains a life-threatening disease. Although it can be cured in its early stages, it is difficult to diagnose it during that time. It often leads to a late disease diagnosis, which makes it difficult to cure the disease. The present medical tests for disease diagnosis are costly and not available in rural parts. This project proposes an AI approach to detect and classify nail diseases from images. A distinct class of two diseases i.e., yellow nail syndrome and Subungual Melanoma, is classified in this project. The project uses an Artificial Neural Network based model for training and testing. We have used the concept of transfer learning for the training model because making a model from scratch is not feasible with fewer data and less GPU. The model is an implementation of VGG16 by Keras framework with two added layers of ANN. Since we could not find any dataset, we made a new dataset for our proposed framework. This work has been tested on our dataset and has shown to have an excellent performance in identifying diseases.

Published in: 2021 4th Biennial International Conference on Nascent Technologies in Engineering (ICNTE)

Date of Conference: 15-16 January 2021

Date Added to IEEE *Xplore*: 30 July 2021

ISBN Information:

INSPEC Accession Number: 20995398

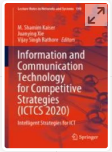
DOI: 10.1109/ICNTE51185.2021.9487709

Publisher: IEEE

Conference Location: NaviMumbai, India

Contents

The Human nail is made up of a hardened protein called Keratin, which protects the tissues' sensitive parts around the edge of



Information and Communication Technology for Competitive Strategies (ICTCS 2020) pp 535–544

College Project Preservation and Emulation Using Containerization Over Private Cloud

Yameen Ajani, Krish Mangalorkar, Yohann Nadar, Mahendra Mehra & Dhananjay Kalbande

Conference paper | First Online: 06 July 2021

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 190)

Abstract

As part of the curriculum, students learn different subjects and in order to showcase their learning, mini projects in the respective subjects every year and a major project in the final year of their study has to be developed. Students work on personal machines which have preset environments and a tools base to facilitate seamless running of the code and project demonstration. The problem here is when these projects are submitted by students, they are received in softcopy form and are stored along with a readme file. All the projects which are submitted have different runtime environments and specific conditions which need to be replicated for successful execution of the project. So whenever there is a need to refer to or demonstrate the projects in the future to various committees or junior students, setting up of environment and tools base must be done for several projects keeping in mind the various versions of softwares to be used and resolving conflicts arising due to dependencies issue. All of this simply multiplies the effort required by the teachers/evaluators and significantly decreases the efficiency of the overall process hence limiting the access of the project to just one terminal that has been setup. More often, projects are preserved in the form of CDs and/or physical files which are subject to wear and tear leading to an arduous process of recovery. Ours is a cloud-based web application supported by DevOps practices, which helps users in creating images for their project and storing them in a persistent state. Also, it will help users to emulate projects by running containers of their image. We have built a cloud based private network which acts as the backbone of our system. The projects are saved as

Inventive Communication and Computational Technologies pp 731–746

Real-Time Hand Tracking and Gesture Recognizing Communication System for Physically Disabled People

Riya Gupta, Dishank Oza & Sunil Chaudhari

Conference paper | First Online: 11 January 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 311)

Abstract

Regardless of its importance, a systematic literature analysis and classification scheme for sign language are lacking. Communication is the most basic form of interaction. Deaf people lack this form of communication, and hence, sign language interaction is of utmost importance for them to be understood. In recent years, emerging technology developments, such as smartphones, have provided consumers with a slew of new features. If such mobile devices can recognize sign languages, sign language users can access a far more comprehensive range of mobile applications. This paper proposes a paradigm for sign language interaction between a consumer and a computer in a complex environment. The interface that is being proposed here can be used in various applications such as image browsers, games, and so on. Even in a complicated setting, the suggested model exhibited good accuracy and effectively recognized motions in low-resolution picture mode. The suggested model was tested using a labeled dataset of hand movements consisting of 99,000 gestural images. In our suggested Inceptionv3 based model, we achieved superior results by extracting features from the hand and identifying hand motions with 91% accuracy. We also compared our model to Resilient Back, VGG-16, and ResNet50, all of which had accuracies of 75–85%. The trained model may be used to recognize static hand pictures as well as dynamic motions captured on video in real-time.

Keywords

Inventive Communication and Computational Technologies pp 547–562

FGTD: Face Generation from Textual Description

Kalpana Deorukhkar, Kevlyn Kadamala & Elita Menezes

Conference paper | First Online: 11 January 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 311)

Abstract

The majority of current text-to-image generation tasks are limited to creating images like flowers (Oxford 102 Flower), birds (CUB-200–2011), and common objects (COCO) from captions. The existing face datasets such as Labeled Faces in the Wild and MegaFace lack description while datasets like CelebA have attributes associated but do not provide feature descriptions. Thus, in this paper, we build upon an existing algorithm to create captions with the attributes provided in the CelebA dataset, which can not only generate one caption, but it can also be extended to generate N captions per image. We utilize sentence BERT to encode these descriptions into sentence embeddings. We then perform a comparative study of three models-DCGAN, SAGAN, and DFGAN, by using these sentence embeddings along with a latent noise as the inputs to the different architectures. Finally, we calculate the Inception Scores and the FID values to compare the output images across different architectures.

Keywords

Generative adversarial networks **Face generation** **Text to image generation**

Caption creation **Natural language processing** **Deep learning**

Text to face generation

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2021 IEEE International Conference on Advances In Computing, Communication And Control

Computing

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Movie Recommender System using Critic Consensus
A Nayan Varma and Kedareshwara Petluri

Designing and Analysis of an Unmanned Aerial Vehicle without Propulsion and Developing an Autonomous Navigation System using Reinforcement Learning
Gaurav Shetty and Amit Dubey

Layout of a Neuromorphic Integrated Circuit for Differential Motion Detection
Vinay Vishnani, Lance Fernandes, Omkar Deshmukh, Payal Shah and S. S. Rathod

Voice-Enabled Vision for The Visually Disabled
Sujata Deshmukh, Praditi Rede, Sheetal Sharma and Sahaana Iyer

Deep Learning Approach to Predict Software Development Life Cycle Model
Jainam Dhami, Nishant Dave, Onkar Bagwe, Abhijit Joshi and Prachi Tawde

Web Application for Machine Learning based Music Genre Classification
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Proofs of books / book chapters / conference papers published in A.Y. 2020-21

Proceedings of International Conference on Intelligent Manufacturing and Automation pp 359–366

Machine Learning as a Smart Manufacturing Tool

Meera B. Kokate, Bhushan T. Patil & Geetha Subramanian

Conference paper | First Online: 01 July 2020

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

In smart manufacturing, machine learning is used in various manufacturing fields at various stages such as for future prediction in the manufacturing system, pattern recognition, fault detection, quality control and monitoring. Machine learning (ML) is used for classification and regression purpose which can be achieved using the past data. Machine learning algorithms and combination of algorithms are widely used in various machining processes. This paper reviews different machine learning algorithms used for specific applications in the product life cycle.

Keywords

Machine learning (ML) **Smart manufacturing** **Big data** **Smart machining**

Support vector machine (SVM) **Support vector regression (SVR)** **Neural network (NN)**

Algorithm for handover decision based on TOPSIS

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Archana Karandikar All Authors

Abstract: Globally, there has been a big leap in the use of smart phones which are equipped to provide access to multiple interfaces as required in Next Generation Networks. Next G... **View more**

Metadata

Abstract:
Globally, there has been a big leap in the use of smart phones which are equipped to provide access to multiple interfaces as required in Next Generation Networks. Next Generation Networks are heterogeneous in nature, supporting various radio access technologies. In such a scenario, efficient Vertical Handover becomes a necessity to provide Ubiquitous connectivity, transparent to the user and the running applications. In this paper, we have presented VHDA based on Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS). The input parameters to VHDA are RSS, bandwidth, latency, jitter, packet loss and network coverage.

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DOI: 10.1109/UCET51115.2020.9205319

Publisher: IEEE

Conference Location: Glasgow, UK

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Algorithm for handover decision using Fuzzy Logic

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Pradeep Singh ; Archana Karandikar All Authors

Abstract: The main aim of this research paper is to design and implement decision for Vertical Handover (VHO) using Fuzzy Logic. The main parameters considered in the design of Ver... **View more**

Metadata

Abstract:
The main aim of this research paper is to design and implement decision for Vertical Handover (VHO) using Fuzzy Logic. The main parameters considered in the design of Vertical Handover Decision Algorithm (VHDA) are Received Signal Strength, Bandwidth, Cost and Velocity of the user. The statistical analysis of handover with respect to velocity of the user is also presented in the paper.

Published in: 2020 IEEE Bombay Section Signature Conference (IBSSC)

Date of Conference: 04-06 December 2020

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Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

Next Generation Networks are heterogeneous in nature and will be comprising of IP based networks. The presence of various Radio Access Technologies (RATs) will make NGNs heterogeneous [1], [2]. Figure 1 shows the presence of heterogeneous wireless networks.

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Algorithm for Vertical Handover using Multi Attribute Decision Making Techniques

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Archana Karandikar All Authors

Abstract: The demand for high data rate paired with least cost, from mobile users, has been ever growing as mobile apps are being increasingly used for day to day service as well a... **View more**

Metadata

Abstract:
The demand for high data rate paired with least cost, from mobile users, has been ever growing as mobile apps are being increasingly used for day to day service as well as commercial applications. This can be met to some extent by deploying efficient Vertical Handover Decision Algorithms (VHDAs) among prevalent Heterogeneous Wireless Networks (HWNs), giving due importance to bandwidth and cost. In this paper, we have presented the VHDA implementation in a real life scenario, based on measured values of input parameters RSS, bandwidth, cost and velocity of the user. We have compared the results from MADM techniques like Simple Additive Weighting (SAW), Multiplicative Exponential Weighting (MEW) and Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS).

Published in: 2020 IEEE International Conference on Communication, Networks and Satellite (Comnetsat)

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Publisher: IEEE

Conference Location: Batam, Indonesia

Contents

There has been significant developments in the field of wireless technologies which have led to growth and revolution in the telecommunication industry. There are multiple radio access technologies which are prevalent across the geography and having overlapping coverage, in many areas. Such hybrid networks which provide wireless access are called as Heterogeneous Wireless Networks (HWNs) [1] [2] [3]. In HWNs, Vertical Handover (VHO) becomes a necessity so as to provide seamless mobility with no

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Decision for Vertical Handover using k-Means Clustering Algorithm

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Neel Kudu All Authors

Abstract: In this research paper, we have implemented the decision for Vertical Handover using k-Means Clustering. We have analyzed the accuracy of the algorithm. The input paramet... **View more**

Metadata

Abstract:
In this research paper, we have implemented the decision for Vertical Handover using k-Means Clustering. We have analyzed the accuracy of the algorithm. The input parameters considered are Received Signal Strength (RSS), Quality of Service (QoS), Bandwidth and Network Coverage. We have derived the Quality of Service for a network using network parameters like packet loss, latency and jitter.

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Publisher: IEEE

Conference Location: Mumbai, India

Science and Information Conference
SAI 2020: **Intelligent Computing** pp 150–160

Exudate-Based Classification for Detection of Severity of Diabetic Macula Edema

Nandana Prabhu, Deepak Bhoir, Nita Shanbhag & Uma Rao

Conference paper | First Online: 04 July 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1230)

Abstract

Macula Edema is observed in many patients having diabetes for more than ten years. It is more so in patients who have fluctuating sugar level or uncontrolled diabetes. In the case of Macula Edema, in spite of being the commonest cause, the patient realizes the issue, only when there is deterioration of vision. Experts use surrogates such as exudates near to fovea in fundus photographs for detection of Macula Edema through clinical examination. The severity is based on the proximity of the exudates to the fovea. In the present scenario with the rising rate of diabetes, an automated technique can act as an aid for the quick detection of the disease and also adds value to healthcare. This paper proposes a morphological method for extraction of exudates. A novel approach is proposed for locating the macula irrespective of the position of optic disc. The overall accuracy obtained for classification is 94.74%. The balanced accuracy obtained for classification of Normal, Non Clinically Significant Macula Edema and Clinically Significant Macula Edema is 97.92%, 92.42% and 96.77%, respectively.

Keywords

Diabetic Retinopathy **Macula Edema** **Exudates** **Balanced accuracy**

International Advanced Computing Conference

IACC 2020: **Advanced Computing** pp 31–53

Leveraging Deep Learning and IoT for Monitoring COVID19 Safety Guidelines Within College Campus

Sahai Vedant, D'Costa Jason, Srivastava Mayank, Mehra Mahendra & Kalbande Dhananjay

Conference paper | First Online: 11 February 2021

Part of the Communications in Computer and Information Science book series (CCIS,volume 1367)

Abstract

The widespread coronavirus pandemic 2019 (COVID-19) has brought global emergency with its deadly spread to roundabout 215 countries, and about 4,448,082 Active cases along with 535,098 deaths globally as on July 5, 2020 [1]. The non-availability of any vaccine and low immunity against COVID19 upsurges the exposure of human beings to this virus. In the absence of any vaccine, WHO guidelines like social distancing, wearing masks, washing hands and using sanitizers is the only solution against this pandemic. However, there is no idea when the pandemic situation that the world is going through will come to an end, we can take a breath of relief that someday we will surely go back to our colleges. Although having students wait in line to be screened for COVID19 symptoms may prove logistically challenging. Enthused by this belief, this paper proposes an IoT and deep learning-based framework for automating the task of verifying mask protection and measuring the body temperature of all the students entering the campus. This paper provides a human-less screening solution using a deep learning model to flag no facemasks on students entering the campus and non-contact temperature sensor MLX90614 to detect elevated body temperatures to reduce the risk of exposure to COVID19.

Keywords

WebApp **IoT** **COVID19** **Deep learning**

Blockchain and AI in Pharmaceutical Supply Chain

Proceedings of the International Conference on Smart Data Intelligence (ICSMDI 2021)

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Date Written: May 24, 2021

Abstract

At present, counterfeit drugs pose a serious threat as it is difficult for people to know the true value of purchased medicines due to a significant lack of transparency in the current system. Also, tampering within the supply chain is difficult to investigate when suspicion of illegal or unethical practices. Our solution is an amalgamation of two powerful technologies - Blockchain and AI. Blockchain is an open, distributed ledger that can efficiently record transactions between two parties in a verifiable and permanent way. Since blockchains are

Innovations in Electrical and Electronic Engineering pp 397–409

Review of SLAM Algorithms for Indoor Mobile Robot with LIDAR and RGB-D Camera Technology

Chinmay Kolhatkar & Kranti Wagle

Conference paper | First Online: 26 July 2020

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 661)

Abstract

Simultaneous localization and mapping are techniques of mapping the homogeneous environments by localizing the sensors' position in an environment with centimetre accuracy. This paper reviews the different techniques used in mapping and localization of mobile robot and designing of low-cost mobile platform with sensors like RPLIDAR and Microsoft Kinect. This paper also discussed the use of Robot Operating System and different packages and topics used for implementation of SLAM. Along with software implementation of ROS, this paper also covers the comparison of different hardware boards such as NVIDIA Jetson Nano and NVIDIA TK1 GPUs for running heavy and complex CUDA algorithms. Lower slave boards such as Arduino Mega and STM32 are also discussed in this paper. This paper also focuses on use of different localization techniques such as AMCL, ORB-SLAM, Hector SLAM, Gmapping, RTAB-MAP and particle filter SLAM. Robot Operating System played the crucial role in all the complex processing and communication between different running nodes. Autonomous navigation is achieved using ROS navigation stack, and simulations for the same are done in Rviz and gazebo real-time environments. 2D point cloud-based algorithms with laser scanner are compared against the 3D visualization techniques. At the end, clear comparison between all the benchmark algorithms such as Hector SLAM, Gmapping, RTAB-MAP, ORB-SLAM and **ZEDfu** is done for clear understanding while selecting an algorithm for future research.

Keywords

Materials Today: Proceedings

Volume 46, Part 17, 2021, Pages 7661-7669

Unconventional Machining of ceramic matrix Composites – A review

Khushi M. Mehta, Shray Kumar Pandey, Vasim A. Shaikh

https://doi.org/10.1016/j.matpr.2021.01.961

Abstract

With an increase in demand for materials that are lightweight, thermally stable, and can sustain higher temperatures, ceramic matrix composites or CMC's turned out to be potential candidates however, the major challenge with these materials was the manufacturing aspect and so, there was a demand for machining methods which could easily machine these materials without having much tool wear, provide higher material removal rate (MRR), and produce low surface roughness. Conventional machining (CM) processes like milling, grinding, drilling, and so on were turning out to be disadvantageous as the hardness of these materials is high and it results in excessive tool wear, high surface roughness, and low MRR. Recent researches in unconventional machining processes such as laser machining, plasma machining, electric discharge machining, and abrasive water jet machining, etc. are showing positive results when compared with CM. The current work presents a review of the unconventional machining process of these difficult to machine materials. The unconventional machining processes considered here are the laser-assisted machining process, rotatory ultrasonic machining process, and abrasive water jet machining process. Furthermore, it also discusses how these machining processes are better than conventional machining processes and it compares their MRR, surface roughness (SR), change in the properties, and also discusses the effect of these machining processes on the same parameters.

Keywords

Composites; Ceramic matrix composites; Abrasive water jet machining; Rotary ultrasonic machining; Laser-assisted machining; Laser-assisted micromachining

PAPER • OPEN ACCESS

Identifying optimization methods using MQL and Cryo-treatments for turning inconel alloy with nanofluids

Sameer Bukane[1], Vasim A Shaikh[1] and M VeeraBhadraRao[1]

Published under licence by IOP Publishing Ltd

Journal of Physics: Conference Series, Volume 1706, First International Conference on Advances in Physical Sciences and Materials 13-14 August 2020, Coimbatore, India

Citation Sameer Bukane *et al* 2020 *J. Phys.: Conf. Ser.* **1706** 012219

[1] Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai, India

https://doi.org/10.1088/1742-6596/1706/1/012219

Abstract

Nickel-based superalloy, which is also known as Inconel alloyconsiderably used in varioussectors due to its exclusive properties like excellent corrosion resistance, thermomechanical properties, and having high melting temperaturesof 1390°C to 1425 °C. This paper intends is to look over the effect of both nanofluid MQL technique and the combined impact of cryo-minimum quantity lubrication technique on turning of Inconel material using coated carbide inserts or cryogenic treated inserts. It alsoreveals optimization techniques such as Taguchi methodsfor studying machining performance and machine learning techniques.

PAPER • OPEN ACCESS

A105 Work-Material Turning Experimentation using L_9 Orthogonal Array Runs with Dry, MQL and Nano-Al_2O_3 Assisted MQL Machining Conditions

Shehzad Shaikh[1], Vasim A Shaikh[1], M VeeraBhadra Rao[1] and Bhushan T Patil[1]

IOP Conference Series: Materials Science and Engineering, Volume 1070, International Conference on Recent Innovations in Engineering and Technology (ICRIET 2020) 4TH-5TH December 2020, Tamil Nadu, India

Citation Shehzad Shaikh *et al* 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1070** 012131

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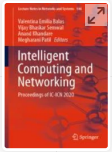
https://doi.org/10.1088/1757-899X/1070/1/012131

Abstract

A105 carbon structural steel material exhibits high strength and hence pose machining difficulties such as excessive tool wear due to high cutting temperatures. Abrupt cutting actions due to improper selection of feed rates have posed to bad surface finish of work-pieces. These materials find best applications in flanges and pipe fittings and generally turning operations are conventional methods to change its dimensions and attaining accuracy levels. An attempt is made to experiment on A105 work material using lubricant vegetable coconut oil under minimum quantity lubrication (MQL) assisted by nano-particles such as Al_2O_3in order to find suitable combinations of working environments, to compare with dry cutting, and also to decide suitable feed rates and cutting speeds combinations.



Intelligent Computing and Networking pp 169–175

Driver Activity Monitoring Using MobileNets

Garima Tripathi, Deval Srivastava, Priyank Shah & Saim Shaikh

Conference paper | First Online: 23 October 2020

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 146)

Abstract

This paper presents a method to monitor the driver's activity and continuously look for red flags such as distracted driving, overuse of mobile phones while driving, drowsiness, sleeping. This is achieved by using a camera-based system and the MobileNet neural network which has been fine tuned on our self-made dataset.

Keywords

Computer vision **Machine learning** **Activity monitoring** **MobileNets**

Image processing **Raspberry pi** **Neural networks** **Deep learning**

Second International Conference on Sustainable Technologies for Computational Intelligence pp 223–232

Predict Foreign Currency Exchange Rates Using Machine Learning

Nilesh Patil, Sweedal Masih, Jeneya Rumao & Veena Gaurea

Conference paper | First Online: 19 October 2021

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1235)

Abstract

Through trade, also known as import and export activities, countries around the globe have become more linked and interconnected in today's business world. The exchange rate is critical in allowing a monetary transaction to take place in a structured and coherent manner during a trading period. The support vector machine (SVM) has proven to be a successful method for estimating the financial markets after conducting research on various forecasting methods. In this research, the prediction of exchange rate of USD/AUD and other 59 countries was done. The forecast and analysis of the US dollar against other foreign currencies has been completed. This research has proven that SVM works best for relatively smaller data with respect to its accuracy.

Keywords

Support vector machine (SVM) **Machine learning** **Foreign exchange market** **Exchange rates** **Prediction**

Accessible and Secure Artificial Intelligence Based Banking Solution

Proceedings of the International Conference on Smart Data Intelligence (ICSMDI 2021)

8 Pages
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Nilesh M. Patil (https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=4714531)
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Fr. Conceicao Rodrigues College of Engineering

Date Written: May 25, 2021

Abstract

Cyber assaults are on the rise all over the world, and India has seen a sharp spike in digital infringement cases in recent years. ATM frauds, Denial of Service attacks, Credit Card frauds, phishing, etc are all examples of online wrongdoings. Cyber fraud is being experienced by innocents and especially people with disabilities (PwDs). So, we have implemented a completely accessible and secure banking solution that is truly based on techniques such as Facial Recognition which adds an extra layer of authentication, and Optical Character Recognition which

Soft Computing for Security Applications pp 635–645

Deep Learning Approach for Stock Price Prediction and Trading

Nilesh Patil, Jeswin Thomas, Ethan Palani & Chinmay Gawde

Conference paper | First Online: 26 October 2021

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1397)

Abstract

In today's world, a lot of businesses are using Machine Learning and Artificial Intelligence to increase their efficiency and profits. To cater to the needs of stock brokers, our research aims to provide predictions of any stock price in the Indian Stock Market. This research includes an informative user interface where the user is able to see the stock price predictions along with a suggested trading strategy which would hypothetically allow him to make the most profit on that particular stock. Also, we have included a section where we provide a sentiment score on the recent news articles about a particular stock which in turn helps the investor to foretell whether these current affairs will affect the stock price. Our research brings forth to the users a full-fledged system that would benefit not only an experienced trader but also a layman who has just begun his trading career.

Keywords

Stock price prediction **Trading agent** **Machine learning** **Deep learning**

Long short term memory

SSRN

PROCEEDINGS

International Conference on Smart Data Intelligence (ICSMDI - 2021)

29-30, April 2021

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Trichy, India

International Conference on Smart Data Intelligence
(ICSMDI 2021)

Smart Gallery using Google Vision

Shalva Thakurdesai [a], Shubham Vira [b], Gouri Kanitkar [c], Dr. Jagruti Save [d]

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A B S T R A C T

The proposed project comprises a system which helps intelligent gallery management. For this, a server, mobile interface and web interface has been made. The mobile interface uploads photos to the server and ensures privacy of photos. The server processes the photos and saves the data like size, object analysis and OCR in the database. The web interface let's user login and query the photos for different objects and OCR. The user also has option to sort photos by size or date of upload. If the user wants to clear the gallery, all the images can be deleted or downloaded at once. The user can also search for similar images by giving an image as a query alongside text queries. Technologies used include HTML, CSS, SQL, flutter ensures cross platform compatibility and PHP makes API calls and manages the backend. Google vision ensures reliable image processing.

Keywords : Image processing; Label detection; OCR; Google vision; Image query; Image annotation.

1. Introduction

Considering the current situation of the smartphones and the vast number of use cases they have in our life, memory conservation in smartphones has become an issue. Along with this, social networking and messaging applications like WhatsApp, Snapchat have resulted in collection of more spam photos every day. These spam photos mix in the gallery and become difficult to sort and use up the local storage of the device. To tackle similar issues and to manage the photos in a smartphone better, this project has been proposed. The proposed project will have a mobile application made using flutter framework [1] which will be secured with user credentials such as id and password [2]. On entering proper credentials, the user is given the power to upload photos from the local device that is the mobile phone. These images are processed and stored in the SQL database [3]. The user will be able to go on the website and manage the images stored on the server which is a php based server [4].

1.1. Current problems

In today's day and age, when data is so abundant and almost every app on our mobile is responsible in some way or the other for generating data, ever increasing price of smartphone variants with high internal memory seems inevitable. Most of the people today are on WhatsApp and especially India being the largest markets for WhatsApp a lot of data is shared on WhatsApp every day. Out of all this data being generated much of it is spam data and there needs to be a system to preserve the important data and that too smartly with intuitive user interface.

1.2. Hypothesis

Today's data crisis can be solved by intelligently dealing with the important data and getting rid of the spam data. One way to solve this problem is by uploading the important images on a server which stores the images and sort them by the contents of the images. Images contain a variety of data like landmarks, landscapes, cars planes, trains, plants, motorbikes, people, text, etc. Google Vision and Microsoft Cognitive Services proves to be cost effective and reliable or the purpose [5]. Saving these uploaded images based on the contents and letting the user search for these using the content of the images can prove to be useful.

1.3. Objectives

The objective of the proposed project is to smartly store the important media content that we get on a daily basis from the spam images and be able to access them in a smart and user-friendly manner. The users must also be able to access the images from any device as the storage is web hosted and can manage the image database on the server using a web-based interface. For doing this, following is our objective

- Create a password protected mobile application [2].
- Give the user access to phone gallery [1].

Webform Optimization using Machine Learning

Publisher: IEEE

Akshaykumar Hanmandla ; Jaydeep Ranoliya ; Dhananjaykumar Ojha ; Saurabh Kulkarni **All Authors**

Abstract: Forms are used in websites for improving business and user experience[3]. If the form length is big, then we get more information but information is less accurate and vic... **View more**

Metadata

Abstract:
Forms are used in websites for improving business and user experience[3]. If the form length is big, then we get more information but information is less accurate and vice versa. Nowadays, A/B testing algorithm is being used for getting the optimal web form from a number of web forms to choose. A/B test distributes the forms uniformly to the visitors. The winning form will be the form which has more no. of conversions. So, after deploying new version of form, A/B test explores all the forms equally[1]. Even though some forms do not perform well, it still explores which is wastage of time and resources. So, there is more time given for exploration in A/B test. And also owner of website during testing period focuses more on testing than running the website, due to which there may be a loss of visitors. To overcome this problem, we can use some automated machine learning algorithms to predict the optimal web form from a number of forms to choose. These algorithms does not waste time and resources exploring inferior forms due to which we will get the results in less time and also we can simultaneously run the website.

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Plant Disease Detection and Suggestions using Mobile App

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5 Pages
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University of Mumbai, Fr. Conceicao Rodrigues College of Engineering

Date Written: July 9, 2021

Abstract

70% of rural households depend on agriculture as a livelihood but farmers have never really benefited from the advancements in technology. As of 2020, agriculture is responsible for 19.9% of India's GDP. Therefore in a country like India, damage to the agricultural produce due to plant and crop diseases can be very crucial. The purpose of agriculture is not only to contribute to the economy and feed the ever increasing population but it is a major source of energy and a solution to solve the problem of global warming. Due to plant diseases the quality and quantity of agricultural products is affected

Second International Conference on Sustainable Technologies for Computational Intelligence pp 295–304

Skin Cancer Detection and Severity Prediction Using Computer Vision and Deep Learning

Sangeeta Parshionikar, Renjit Koshy, Aman Sheikh & Gauravi Phansalkar

Conference paper | First Online: 19 October 2021

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1235)

Abstract

Amongst all the diseases prevalent in today's world, dermatological diseases take its place at the top of the ladder. Although it is ubiquitous, its diagnosis isn't quite as easy as its occurrence and experience plays a crucial role. The most common malignancy affecting humans is skin cancer. Traditional diagnosis of this disease comprises clinical screening and biopsy. Categorization of skin ruptures using images is a difficult task because of minute granular variations in the appearance of skin ruptures. This paper dwells on creating a system that efficiently combines Computer vision and Deep Learning on dermoscopic images and identifies the type of skin cancer. We used Computer Vision which recognizes and exercises images in the same manner that human vision does. We further use Convolution Neural Networks (CNNs) to recognize skin cancer based on specific peculiar pathological attributes observed in analyzing the skin. Based on its severity, we further divide it into five classes. The attributes to distinguish the images into different classes are the colour and size of the affected region. The system also contains a one-class classifier that eliminates any false image and processes only dermoscopic images to obtain precise image analysis results. The proposed method, which uses Transfer Learning to predict the presence and severity of dermatological diseases, proves to be efficient and promising. We achieved an accuracy of 79.96% compared to 77.5% in the ensemble learning method and 94.37% compared to the SVM-based system. Severity being a new domain in this field, we have achieved an accuracy of 79.54%.

Second International Conference on Sustainable Technologies for Computational Intelligence pp 317–337

Predicting the Impact of Android Malicious Samples Via Machine Learning

Archana Lopes, Sakshi Dave & Yash Kane

Conference paper | First Online: 19 October 2021

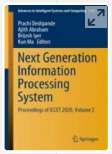
Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1235)

Abstract

The Android operating system, as well as smartphone apps for just about everything, is widely available in the official Google Play store and several third-party markets. Furthermore, the critical function of smartphones contributes to the storage of a large amount of data on computers, not only personal but also corporate and technical data, attracting malware creators and developers to create resources that can permeate user's devices to take out data. The antivirus programme today counts on a database that is signature-based and only fruitful in detection of known malware. To combat the threats of Android malware, the paper proposes an Android malware detection system that employs machine learning techniques.

Keywords

Android malware **Malicious samples** **Hybrid machine learning** **Algorithms** **Datasets and classifiers**



Next Generation Information Processing System pp 233–241

Verification of 32-Bit Memory Using Layered Testbench with Optimum Functional Coverage and Constrained Randomization

Sangeeta Parshionikar, Sheryl Serrao & Yash Ramesh Kumar

Conference paper | First Online: 14 June 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1162)

Abstract

As intricacy of electronic designs, chips, ASICs increases, an efficient, organized and automated approach is required to create testbench. Verification using System Verilog layered testbench is the systematic way to verify the design without any bugs. Also, it checks whether design meets all the specifications correctly. In this paper, a memory model has been implemented and verified by creating real-world verification environment as per design requirement. At top level, scenarios are created, and testbench is broken down to small pieces using classes. Verification is carried out using System Verilog layered testbench methodology. Firstly, verification plan is prepared considering coverage sequences, constrained random stimulus, application of test cases and verification process for memory module. To improve the coverage which is measure of correctness of verification, randomization methodology is used. All input test cases are randomized, and missed or corner cases are covered by directed test cases. Mentor graphics Questa Sim 10.0b is used to carry out simulation. Both code and functional coverage are analyzed. Our research work achieved 100% code coverage and 85% functional coverage. Also, scoreboard and monitor verification blocks are implemented to check the predicted output with actual one.

Keywords

Verification **Functional coverage** **Random stimulus** **Layered testbench**

Transactor **Monitor** **Scoreboard**

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Real Time Emotion Detection Using Deep Learning

Publisher: IEEE

Noel Jaymon ; Sushma Nagdeote ; Aayush Yadav ; Ryan Rodrigues All Authors

Abstract: Facial expressions depict emotions and produce information on the personalities and thoughts of people. The machine performs different tasks constantly in order to increa... **View more**

Metadata

Abstract:

Facial expressions depict emotions and produce information on the personalities and thoughts of people. The machine performs different tasks constantly in order to increase its use in public. Machines that are able to understand emotions can be used to execute a wide range of tasks. Machine perception demands machines to grasp information about their environment. The understanding of human facial expressions is a key component to understand emotions and also to find broad applications in the field of human-computer interaction. Tensorflow framework, Keras library and the Xception Architecture of CNN are used to train the model on the Fer2013 dataset.

Published in: 2021 International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)

Date of Conference: 19-20 February 2021

Date Added to IEEE *Xplore*: 06 April 2021

ISBN Information:

INSPEC Accession Number: 20840482

DOI: 10.1109/ICAECT49130.2021.9392584

Publisher: IEEE

Conference Location: Bhilai, India

Contents

I. Introduction

Emotions play a very important role in building relationships and having effective communication between people. A variety of emotions are experienced by people on daily basis. People do not realise or understand most of them because they cannot be noticed by the bare eye. Hence, with the help of technologies like machine learning and deep learning, we can detect and recognise the emotions that are generally difficult to be captured with just the naked eye. In the past few years there has been a rapid growth of technology in building smart solutions which has increased the need to detect a persons emotions. Some of the fields in which

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Deep Learning-based Smart Street Lamps – A Solution to Urban Pollution

Publisher: IEEE

Supriya Kamoji ; Dipali Koshti ; Joshua Noronha ; Edison Arulraj ; Edwin Clement All Authors

Abstract: Smarter devices create an opportunity for numerous applications that contribute towards the welfare of the society. The system contributes in creating a street lighting s... **View more**

Metadata

Abstract:
Smarter devices create an opportunity for numerous applications that contribute towards the welfare of the society. The system contributes in creating a street lighting system which focuses on solving the issues pertaining to environment, energy and public safety. The proposed system is a modular system having the components: LED module, PIR sensor, LDR sensor, Pollution sensor and a camera. The brightness of the lights is reduced to conserve energy in the absence of motion and when there is adequate ambient light. The Car tracking module of the system identifies the blacklisted cars using number plate identification. The number plate identification has been done using RCNN's along with some image processing algorithms. The air quality surrounding the street lamps can be detected and documented using the Pollution sensor. This data enables us to create a pollution heat map of the city and identifies areas of high traffic congestion. There is a charging port provided on a light pole for charging electric cars, which is the prepaid service.

Published in: 2020 Second International Conference on Inventive Research in Computing Applications (ICIRCA)

Date of Conference: 15-17 July 2020

Date Added to IEEE *Xplore*: 01 September 2020

ISBN Information:

INSPEC Accession Number: 19913365

DOI: 10.1109/ICIRCA48905.2020.9182980

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

I. Introduction

Street lights consume major part of electricity approximately 20 to 40 % of the total electricity generated [1]. Most of these are CFL, metal halides or sodium vapor lights. These lights consume high power and are of high cost. The developing countries like India are facing challenges of rising demand of power; hence the conservation of electricity has become a great concern as most of the

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Hybrid Approach for Effective Disaster Management Using Twitter Data and Image-Based Analysis

Publisher: IEEE

Kartick Hariharan ; Ashley Lobo ; Sujata Deshmukh All Authors

Abstract: Modern technologies and social media offer exceptionally new approaches for fulfilling the needs of decision-makers during the disaster situation. The integration of real... **View more**

Metadata

Abstract:

Modern technologies and social media offer exceptionally new approaches for fulfilling the needs of decision-makers during the disaster situation. The integration of real-time data with AI-based dynamic models generated from archive information acts as a powerful tool for decision-makers during the recovery operation of a disaster-affected area. Existing systems work either on images or tweets, but no system takes into account both the factors. The proposed novel approach demonstrates Image and Twitter-based flood mapping model which collates Images of flood zones and Twitter Data and presents them in a GIS-based system to facilitate an effective response to the disaster and provide subsequent relief operations. This system uses Named Entity Recognition to extract information from relevant tweets along with image segmentation and object detection to find out flood severity in a given flood site. This information is stored and displayed on a GIS interface to aid relief and recovery operations

Published in: 2021 International Conference on Communication information and Computing Technology (ICCICT)

Date of Conference: 25-27 June 2021

Date Added to IEEE *Xplore*: 12 August 2021

ISBN Information:

INSPEC Accession Number: 21079365

DOI: 10.1109/ICCICT50803.2021.9510029

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

During disasters, social media such as Twitter get flooded with messages for aid and help. These messages can provide valuable information on people stranded in a region and the amount of relief material needed. Along with these messages, people also post images that reflect the damage caused. These images are a very good source to discover the gravity of the damage caused or the

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Virtual assistance using question generation Answering

Publisher: IEEE

Carol Sebastian ; Princeton Baretto ; Sherwin Pillai ; Supriya Kamoji All Authors

Abstract: Question Generation and Answering, being a complex undertaking, has gained significant attention in the earlier years. Although significant leap forwards are accomplished... **View more**

Metadata

Abstract:
Question Generation and Answering, being a complex undertaking, has gained significant attention in the earlier years. Although significant leap forwards are accomplished, it needs imperative optimization when used in a real-time system. The paper proposes an approach to enhance the orthodox methods to support the collegiate programs by introducing a virtual assistant that answers any questions pertinent to the context; without letting the users read the internal document(s). With the help of Twilio API, a cloud-based architecture capable of generating a question-answer pair is brought into the WhatsApp interface, offering a user-friendly experience.

Published in: 2021 International Conference on Communication information and Computing Technology (ICCICT)

Date of Conference: 25-27 June 2021

Date Added to IEEE *Xplore*: 12 August 2021

ISBN Information:

INSPEC Accession Number: 21079312

DOI: 10.1109/ICCICT50803.2021.9510131

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

Querying a given document or understanding a considerable record is always a tedious task. Whether it be a research paper based on any topic or a textbook in pdf format, most of the content is becoming online, which opens up a huge opportunity to use the online content for better understanding and easily accessible information. Assume we have a multi-page pdf, and we need to refer to it to answer a specific question, but we do not know which part of the pdf the answer exists, here we can leverage Deep Learning and Natural Language Processing (N.L.P.) techniques. Question answering is becoming an exciting part of the N.L.P. due to the

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A Detection, Tracking and Alerting System for Covid-19 using Geo-Fencing and Machine Learning

Publisher: IEEE

Dipali Koshti ; Supriya Kamoji ; Kevin Cheruthuruthy ; Surya Pratap Shahi ; Mayank Mishra All Authors

Abstract: The Covid-19 outbreak has taken the world completely unawares, exposing the vulnerability of public health systems in coping with infectious pandemic. The current death t... **View more**

Metadata

Abstract:
The Covid-19 outbreak has taken the world completely unawares, exposing the vulnerability of public health systems in coping with infectious pandemic. The current death toll of the pandemic is staggering, and it is the need of an hour to eradicate the virus at the earliest and prepare a system that stands tall to armor the world in case the future holds any unpredictable biological or health crisis of this scale. This research work proposes a complete Covid-19 Detection, Tracking and Alerting Mobile Application Kit which helps people to defend against Covid-19 spread. This is a first of its kind application that uses Geofencing and Machine learning together to combat the spread of Coronavirus. This app is a three fold app. The firstfold is a Detection System for a user to undergo a Symptomatic Quiz based on a Risk Assessment ML Model to detect the presence of Covid in the user's body. The second fold is an efficient Tracking system that uses Geofencing technology to keep track of all the people who come into contact with the user. And the third fold is an Alerting system that sends the alert message to all those people who came into contact with the user if the user is tested as Corona positive. Thus, by using the technology, Geofencing allows to perform contact tracing of potential patients and alerts the possible network of people, who might be infected by coronavirus.

Published in: 2021 5th International Conference on Intelligent Computing and Control Systems (ICICCS)

Date of Conference: 06-08 May 2021

Date Added to IEEE *Xplore*: 26 May 2021

ISBN Information:

INSPEC Accession Number: 20694189

DOI: 10.1109/ICICCS51141.2021.9432254

Publisher: IEEE

Conference Location: Madurai, India

Contents

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Machine learning-based Selection of Optimal sports Team based on the Players Performance

Publisher: IEEE

Monali Shetty ; Sankalp Rane ; Chaitanya Pandita ; Suyash Salvi All Authors

Abstract: This paper is about a model that can select best playing 11 in the Indian cricket team. The performance of each player depends on several factors like the pitch type, the... **View more**

Metadata

Abstract:
This paper is about a model that can select best playing 11 in the Indian cricket team. The performance of each player depends on several factors like the pitch type, the opposition team, the ground, and several others. The proposed model contains data from the One Day International of the past several years of team India. The dataset used for this model created using data from trusted sites like espn.com. This method is distinct in the sense that it gives you a 360-degree view of the player's skill set, be it, batting, bowling, and fielding. The vital part of this model is to find the best all-rounder player. Random forest algorithm used for predicting performance. The player performance classified into several classes, and a random forest classifier used to predict the player's performance. This model gives 76% accuracy for batsmen, around 67% accuracy for bowlers, and 95% for an all-rounder. A model is developed with some extra features like weather, matches played that have not considered in any existing model. Using this model, the best team can be selected to play in given conditions.

Published in: 2020 5th International Conference on Communication and Electronics Systems (ICCES)

Date of Conference: 10-12 June 2020

Date Added to IEEE *Xplore*: 10 July 2020

ISBN Information:

INSPEC Accession Number: 19770820

DOI: 10.1109/ICCES48766.2020.9137891

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

1. Introduction

Cricket is the second most-watched program on television. The popularity of this sport is soaring high in southeast countries like India, Pakistan, Bangladesh, and Sri-Lanka. One of the major issues now is playing 11, which should be selected. People of

Proofs of books / book chapters / conference papers published in A.Y. 2019-20

Recent Advances in Mechanical Infrastructure pp 235–244

Transient Analysis of an Injection Mould with Conformal Cooling Channels

Shivsagar G. Sharma, Deepika Singh Singraur & D. S. S. Sudhakar

Conference paper | First Online: 19 October 2019

Part of the Lecture Notes in Intelligent Transportation and Infrastructure book series (LNITI)

Abstract

Injection moulding is a manufacturing process to create plastic parts and it consists of four major processes injection, packing, cooling and ejection. Cooling process takes almost half of the whole cycle time in injection moulding. Injection moulds were cooled by creating straight drilled channel in mould but that channel does not provide uniform and efficient cooling since it does not conform to the shape of the mould. Conformal cooling channel takes the exact shape of the mould cavity, and therefore it provides efficient cooling. Circular, profiled circular and trapezoidal profile cooling channels have been designed for injection mould. To optimize the effectiveness of the cooling, channels with constant heat transfer between mould and cooling channels, constant perimeter and different convective heat transfer coefficient have been taken. Thermal analysis has performed on Ansys 14.5 and Taguchi method has used to optimize the best cooling channel.

Keywords

Conformal channels **Heat transfer** **Constant perimeter** **Taguchi**

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Recent Advances in Materials and Manufacturing (ICRAMM 2019)

12 - 14, September 2019 I Belagavi I www.icramm.com

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PAPER • OPEN ACCESS

Low cost and open source software-based CNC router for machining contours

Aniket T Suryawanshi[1], D S S Sudhakar[1] and Bhushan T Patil[1]

IOP Conference Series: Materials Science and Engineering, Volume 872, Second International Conference on Materials Science and Manufacturing Technology 9-10 April 2020, Hotel Aloft, Coimbatore, Tamil Nadu, India

Citation Aniket T Suryawanshi *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **872** 012084

sudhakar@fragnel.ac.in

[1] Fr. Conceicao Rodrigues College of Engineering, Bandra West, Mumbai-400050

https://doi.org/10.1088/1757-899X/872/1/012084

Abstract

After the advance of NC technology to CNC technology there are attempts to bring openness in the control to bring modularity, flexibility and accuracy in the system to replace proprietary controllers. To experiment the same a portable open architecture-based CNC machine is developed for engraving application. Open source software's are used to identify the contour, generate CNC g-code and microcontrollers to execute the motion control. The mechanical structure is developed to meet the requirement of low cost without sacrificing the accuracy. Besides the accuracy of the profile to be machined, feed rate is another criterion which should be achieved as it is intended in the program. The 3 axis CNC structure is developed and tested satisfactorily for the targeted performance.

Min (N, T) Policy M/G/1 Queue based Reduction of Power Consumption in Wireless Sensor Networks

Publisher: IEEE

Sanjeev Ghosh ; Srija Unnikrishnan All Authors

Abstract: Technological advancements in the research of integrated circuits and communications have made it possible to manufacture and deploy efficient, low cost, low power small ... **View more**

Metadata

Abstract:
Technological advancements in the research of integrated circuits and communications have made it possible to manufacture and deploy efficient, low cost, low power small devices in sensor-based applications. This has led to the feasibility of using a network of sensors to be used for the collection, processing, analysis, and distribution of valuable information collected in an array of environments. A critical issue in wireless sensor networks is the scarcity of power, and hence optimal use of available power is of prime importance. It is seen that in any sensor node, switching from idle to busy state and vice versa takes up a significant portion of the power. There are a few queue-based techniques that aim to reduce the number of transitions to reduce the consumption of power. This, however, introduces a delay in the processing of the packets. To alleviate this, we study a technique to reduce the average consumption of power in a sensor node by making use of the Min (N, T) policy M/G/1 queue. Utilizing both a counter (N) and a timer (T) to trigger a radio server to transmit queued packets would ensure reduced power consumption at the sensor node for communication and also mitigate the latency delay introduced due to the N - policy. We analyze the performance of this system with respect to power consumption. The simulations performed show that the simulation results are close to the theoretical results, thus indicating the validity of the technique studied.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

INSPEC Accession Number: 19454733

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Recovery of compressed audio signal over a sparse channel in MIMO-OFDM systems

Publisher: IEEE

Ami Munshi ; Srija Unnikrishnan All Authors

Abstract: In this paper we have performed objective as well as subjective analysis to assess the quality of recovered audio signal when it is transmitted over a sparse audio channe... **View more**

Metadata

Abstract:
In this paper we have performed objective as well as subjective analysis to assess the quality of recovered audio signal when it is transmitted over a sparse audio channel in SISO and MIMO-OFDM systems. The audio signal at the receiver is recovered using Compressive Sensing based Least Square channel estimation technique (LS-CS). We have considered scenarios where the audio signal is transmitted in its original form as well as in its compressed form. We observe that even when we compress the audio signal by just retaining the coefficients having 99.99% energy, optimum recovery of the signal is possible by sensing very less percentage of total channel coefficients using LS-CS channel estimation technique.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

Date Added to IEEE *Xplore*: 16 March 2020

ISBN Information:

INSPEC Accession Number: 19454764

DOI: 10.1109/ICAC347590.2019.9036791

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

With incessant advances in the field of wireless communication, channel estimation continues to remain a topic of research to obtain optimum recovery of data at the receiver in a noisy channel. Classical and Bayesian channel estimation techniques like Least Square (LS) and Minimum Mean Square Error (MMSE) respectively have been widely used and explored due to its simplicity and performance efficiency while estimating channel coefficients [1]–[4]. Compressive sensing is another avenue of research which can be employed along with the traditional channel estimation techniques to improve the performance of the system by sensing just

Algorithm for handover decision in IEEE 802.11 WLAN Environment based on Fuzzy Logic

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan All Authors

Abstract: The main aim of this research paper is to design and implement decision for handover in IEEE 802.11 WLAN environment using Fuzzy Logic. The main parameters considered in ... **View more**

Metadata

Abstract:
The main aim of this research paper is to design and implement decision for handover in IEEE 802.11 WLAN environment using Fuzzy Logic. The main parameters considered in the algorithm are Received Signal Strength, distance and Vehicle velocity. Change in the handover points, based on the variation in the trajectory of the user and network load on the access points, is presented.

Published in: 2019 IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE)

Date of Conference: 15-16 November 2019

Date Added to IEEE *Xplore*: 02 March 2020

ISBN Information:

INSPEC Accession Number: 19430636

DOI: 10.1109/WIECON-ECE48653.2019.9019984

Publisher: IEEE

Conference Location: Bangalore, India

Contents

I. Introduction

With Wireless Local Area Networks (WLANs) being widely used in public spaces, offices, homes and educational institutions, handover in WLAN environment needs to be optimized and made efficient, for users to get the maximum advantage [1]. The handover should essentially support continuity of service and ensure that the Quality of Service (QoS) does not get degraded [2]. The design of handover algorithms can be more effective if propagation characteristics are considered [3] [4] [5]. In this paper, we have designed and implemented the algorithm for handover in IEEE 802.11 WLAN environment using the free space propagation model.

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Decision for Vertical Handover based on Naive Bayes Algorithm

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan All Authors

Abstract: The main aim of this research paper is to design and implement decision for Vertical Handover using Naïve Bayes Algorithm. The accuracy of the designed algorithm is valid... **View more**

Metadata

Abstract:
The main aim of this research paper is to design and implement decision for Vertical Handover using Naïve Bayes Algorithm. The accuracy of the designed algorithm is validated using analytical and statistical frameworks. The main parameters for Vertical Handover considered in the algorithm are Received Signal Strength, Quality of Service Bandwidth and Network Coverage. Quality of Service is derived on the basis of network attributes like packet loss, latency and jitter.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

Date Added to IEEE *Xplore*: 16 March 2020

ISBN Information:

INSPEC Accession Number: 19454778

DOI: 10.1109/ICAC347590.2019.9036820

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

There has been a considerable increase in the popularity and usage of dual mode handsets. The reason for the same is mainly on account of the following two major factors i.

Increased and improved coverage of the heterogeneous cellular networks

ii.

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Handoff decision algorithm in WiFi zone using Fuzzy Logic

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan All Authors

Abstract: The main contributions of the research paper are designing and implementation of an algorithm for handoff decision in WiFi coverage zone based on Fuzzy Logic. We have des... **View more**

Metadata

Abstract:
The main contributions of the research paper are designing and implementation of an algorithm for handoff decision in WiFi coverage zone based on Fuzzy Logic. We have designed and implemented the handoff algorithm in WiFi coverage zone considering Free Space Propagation Model. We have considered Received Signal Strength, Channel Capacity, Network Load and User Velocity as the parameters in the algorithm. We have also studied the variation in point of handoff under the various conditions of Network Load, User Velocity and location of the access points.

Published in: 2019 Women Institute of Technology Conference on Electrical and Computer Engineering (WITCON ECE)

Date of Conference: 22-23 November 2019

Date Added to IEEE *Xplore*: 14 May 2020

ISBN Information:

INSPEC Accession Number: 19612652

DOI: 10.1109/WITCONECE48374.2019.9092939

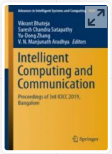
Publisher: IEEE

Conference Location: Dehradun, India

Contents

I. INTRODUCTION

With increased use of WiFi in commercial and residential complexes, colleges & universities and public areas, efficient decision for handoff in WiFi environment becomes extremely important for providing continuous services to the users [1]. The continuity of service should be maintained and the Quality of Service (QoS) should not be degraded during the handoff under any circumstances [2]. The understanding of the propagation characteristics can improve the design of handoff algorithms [3] [4][5].



International Conference on Intelligent Computing and Communication

ICICC 2019: **Intelligent Computing and Communication** pp 371–380

Performance Analysis of Convolutional Neural Networks for Exudate Detection in Fundus Images

Nandana Prabhu, Deepak Bhoir & Uma Rao

Conference paper | First Online: 18 February 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1034)

Abstract

In the diagnosis of diabetic retinopathy and macula edema, the extraction of exudates is a crucial task, particularly in the presence of optic disc and cotton wools which have similar intensity. To add to this some of the reflectance around the vessels originating from the optic disc also needs to be eliminated. In this paper, supervised method with deep learning neural network is proposed for exudate classification. The network is trained with large number of sub-images, around 48,000 for each image, which are fed as inputs to the network. The original image is pre-processed before the patches are extracted. The database e-Ophtha is used. It has 47 images with exudates and ground truths. The performance of the system is good with an accuracy of 98.67%, area under the curve 97.29, sensitivity of 72.26% and specificity of 98.76%. Analysis of the system with respect to depth of network and patch size is also performed.

Keywords

Diabetic retinopathy **Convolutional Neural Network** **Image split** **Patches**

Computing in Engineering and Technology pp 397–409

Resource-Based Modeling of Applications on Multi-cores Using Adapted Tilman Model

Preeti Nitin Jain, Dinesh Kumar Gautam & Sunil K. Surve

Conference paper | First Online: 17 October 2019

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1025)

Abstract

With the advancement in technology, computing needs have been continuously increasing and are currently being met using multicore systems. Eventually, this demands to work around the prevailing challenges to meet to deliver high performance. The growing potential of these systems and the criticality of the constrained resources exacerbate their performance. Various application programs have diverse resource needs, which form the limiting conditions for their performance. Inefficient utilization of these resources leads to contention when shared between various application programs. To model the effect of limiting resources, we propose adapted Tilman model of resource competition. The work presents solo modeling of application program behavior toward limited resources that are shared LLC and DRAM bandwidth utilization.

Keywords

Multi-core **Constrained resources** **Tilman model** **LLC** **Bandwidth utilization**

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Decoding Algorithm for Modified Linear Block Code with Syndrome Polynomial

Publisher: IEEE

Seema Talmale ; Srija Unnikrishnan ; B.K. Lande All Authors

Abstract: This article gives the encoding and decoding methodology for a Modified Linear Block Code (MLBC) from the solution space of a completely controllable discrete-time system... **View more**

Metadata

Abstract:
This article gives the encoding and decoding methodology for a Modified Linear Block Code (MLBC) from the solution space of a completely controllable discrete-time system for any k length message bits. Such an established code is (n, k) linear modified block code and it is a perfect code. The decoding algorithm is developed from the syndrome polynomial. The system avoids the limitation of multiple solutions and Maximum Likelihood decoding associated with Linear Block Codes. The code is designed for minimum Hamming distance, d_{min} of 3. The system can be generalized for d_{min} = 4 and above. The performance of the said MLBC is evaluated with the help of simulation and check on all the bit positional errors has been carried out.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

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ISBN Information:

INSPEC Accession Number: 19454763

DOI: 10.1109/ICAC347590.2019.9036747

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

In the current era, there is a need for better coding and decoding techniques, to support error-free data transmission in applications such as space research, mobile and satellite communication etc.

Procedia Computer Science
Volume 167, 2020, Pages 382-391

Prediction of Surface Roughness by Machine Vision using Principal Components based Regression Analysis

Ketaki Joshi [a], Bhushan Patil [b]

https://doi.org/10.1016/j.procs.2020.03.242

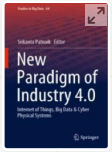
Abstract

Machine vision provides imaging based solution for inspection of quality. For components to perform their intended functions, surface quality is equally important as their dimensional quality. Surface Roughness (R_a) is a widely accepted measure for evaluating surface quality. Traditional methods for measuring surface roughness may not be feasible in the industries insisting on 100% inspection due to the efforts and time involved in measurements. Machine vision can provide an automated, economic, fast and reliable solution.

This paper presents surface texture characterization of free hand grinding surfaces using machine vision approach and evaluation of their surface roughness using regression model based on machine vision parameters. Standard slip gauges sets of free hand grinding surfaces are selected for developing the regression model. Surface images are acquired in MATLAB software and processed for texture characterization using grey level co-occurrence (GLCM) matrix features. Then principal component analysis is carried out in SPSS software to define directions of unique variances in GLCM features. Furthermore, relationship between surface roughness value and GLCM features-based principal components is modeled using multiple regression analysis. Regression model developed can be used to predict unknown roughness values for free hand ground specimens. The approach demonstrated provides an automated, non-contact type method for measurement of surface roughness.

Keywords

Machine Vision; Regression Analysis; Surface Roughness; Grey Level Co-occurrence Matrix



New Paradigm of Industry 4.0 pp 145–160

Principal Components Based Multivariate Statistical Process Monitoring of Machining Process Using Machine Vision Approach

Ketaki N. Joshi, Bhushan T. Patil & Hitendra B. Vaishnav

Chapter | First Online: 22 August 2019

Part of the Studies in Big Data book series (SBD,volume 64)

Abstract

Statistical process monitoring using control charts is a well-established quality tool for understanding and improving the performance of manufacturing processes over the time. In view of Industry 4.0, industries are looking forward for innovative, automated solutions to process monitoring and control over the traditional approaches. This chapter presents an innovative approach for monitoring the machining process using integration of three well-established techniques to provide a machine vision based multivariate statistical process monitoring technique (MSPM) with dimensionality reduction using principal component analysis (PCA). The approach is demonstrated using a case study of industrial components manufactured on conventional lathe machines. It involves extraction of critical dimensions and surface characteristics using image processing techniques, data dimensionality reduction using PCA, followed by process monitoring using Hotelling T2 multivariate statistical control chart based on principal component scores. The approach has a potential to provide an industry-ready solution to automated, economic and 100% process monitoring.

Keywords

Multivariate statistical process monitoring **Machine vision**

Principal component analysis **Hotelling T^2 chart**

Proceedings of International Conference on Intelligent Manufacturing and Automation pp 31–37

Measurement of Spur Gear Parameters Using Machine Vision

Ketaki Joshi & Bhushan Patil

Conference paper | First Online: 01 July 2020

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

This paper presents a machine vision approach as a non-contact, automated method of measuring all critical dimensions of a spur gear, using image processing algorithms. Spur gear images are captured using image acquisition devices under backlight illumination and acquired in image processing software (MATLAB). Critical spur gear dimensions, such as addendum circle radius, dedendum circle radius, pitch circle radius, module, number of teeth, pressure angle, tooth thickness, and circular pitch, were extracted using various image processing and feature extraction algorithms. The values obtained using the machine vision approach are found to be in good agreement with those obtained using traditional metrology instruments and standard spur gear formulae. The approach can be adopted for developing an automated inspection system using image data.

Keywords

Machine vision **Measurement** **Spur gear inspection**

PAPER • OPEN ACCESS

Machine vision based interferometry for measurement of flatness error in micro and nano manufacturing

Prince W Dabreo[1], Ketaki N Joshi[1], Bhushan T Patil[1] and Meera B Kokate[1]

IOP Conference Series: Materials Science and Engineering, Volume 872, Second International Conference on Materials Science and Manufacturing Technology 9-10 April 2020, Hotel Aloft, Coimbatore, Tamil Nadu, India

Citation Prince W Dabreo *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **872** 012066

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https://doi.org/10.1088/1757-899X/872/1/012066

Abstract

Interferometer and machine vision both are very trending technologies in the manufacturing industry for quality inspection purpose. Interferometers are commonly used to measure surface contour, flatness, surface finish. Machine vision also plays a vital role in the evaluation of the surface quality and surface profile of components under inspection. In this paper, a combination of interferometer and machine vision principles is used to count the number of fringes to determine taper angle and parallelism error in micro and nanometer range. An interferogram is captured by a camera and image acquisition algorithm. Image processing algorithms are used to count the number of fringes and calculating taper angle as well as flatness (parallelism) error for slip gauge surface.

PAPER • OPEN ACCESS

Simulation and optimization for a plastic component

Samhita Pashte[1], Kiran Wagle[2], Shailesh Agrawal[2], D S S Sudhakar[1], Bhushan Patil[1] and Deepika S Singraur[1]

IOP Conference Series: Materials Science and Engineering, Volume 872, Second International Conference on Materials Science and Manufacturing Technology 9-10 April 2020, Hotel Aloft, Coimbatore, Tamil Nadu, India

Citation Samhita Pashte *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **872** 012072

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https://doi.org/10.1088/1757-899X/872/1/012072

Abstract

This paper presents the simulation of injection moulding process of the subject component and noting the deflection results using finite element software. Subsequently some changes were made to the tool and part design of the subject component and the modifications which gave the minimum deflection were incorporated and used for further optimization of warpage using design of experiments.

ScienceDirect

Materials Today: Proceedings

Volume 27, Part 1, 2020, Pages 492-496

Investigating the microlubrication flow inside the nozzle using computational fluid dynamics

Dipali K. Bhise, Bhushan T. Patil, Vasim A. Shaikh, Sujata P. Deshmukh

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https://doi.org/10.1016/j.matpr.2019.11.290

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Abstract

The rising demand for the sustainable manufacturing processes and the fast-growing price in getting rid of cutting fluids has increased the requirement to find substitute solutions to the conventional metal cutting methods. Green machining is one such technique which uses Microlubrication method using biodegradable metal cutting fluids. Microlubrication uses a very small amount of cutting fluid which ranges between 5 and 150 ml/hr to reduce the friction between a cutting tool and the workpiece. To maintain a controlled machining environment, it is mandatory to use adequate lubrication. Hence, the adequate utilization of Microlubrication for heat extraction and lubrication requires continuous examination of mist. In this paper, Microlubrication flow inside the nozzle is estimated by using Computational Fluid Dynamics (CFD) simulating techniques for air pressures 2 to 4 bars for AccuLube 2000 cutting fluid. In MQL, an aerosol is a mixture of small oil particles dispersed in a compressed air which is applied as cutting fluid. The volume fraction of oil and air in the aerosol is important and affects the heat extraction of the cutting fluid. Hence, it is important to select the accurate proportion of oil and air mixture for getting a better surface finish and tool life. This paper includes investigation of a volume of fraction of oil and air in the fluid volume of the nozzle which helps to enhance the MQL performance. For CFD, multiphase volume of fluid model with realizable k-ε viscous model was selected. Simulation results show that, by changing the air pressure from 2 to 4 Bars, the volume fraction of oil decreases by approximately 22 percentage. Hence it has been hypothesized that change in the inlet air pressure directly affects the volume fraction of oil and air. By using low air pressure one can get higher volume fraction of oil which can help to increase the MQL performance.

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Keywords

MQL; Biodegradable oil; CFD; Microlubrication; Metal working fluid; Green machining

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Materials Science and Engineering
Conference Series
2019 First International Conference on
Recent Advances in
Materials and Manufacturing
(ICRAMM 2019)

Proceedings of the ICRAMM 2019 - Volume 1
Belagavi I Karnataka I India
12 - 14, September 2019 I www.icramm.com

KLE Dr. M.S. Sheshgiri College of Engineering and Technology

2019 First International Conference on Recent Advances in Materials and Manufacturing
Publication Partner: Elsevier
ICRAMM2019
Belagavi, Karnataka, INDIA

EMTP 2009

Finite element simulation of milling process with cryogenic precooling of workpiece

Prasad Kawade[a*], Hitendra Vaishnav[b], Ketaki joshi[c]

[a]St. Francis Institute of Technology, Borivali, Mumbai 400103, India
[b,c]Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai 400050, India
E-mail: prasadkawade@sfit.ac.in

Abstract Cryogenic cooling is one of the sustainable techniques implemented in machining. The cooling process is found to provide favorable machining conditions for many materials in terms of cutting temperature, tool wear and tool life, dimensional accuracy and cutting forces. This paper aims at studying the effect of cryogenic pre-cooling of the workpiece on cutting temperature. Finite element simulations are carried out for down milling of Al6063 Aluminium alloy using High speed steel (H.S.S.) tool with workpiece temperature at 220 and -1960. Finite element model developed is validated with experimental values obtained on universal milling machine using same machining conditions and workpiece-cutter combination. Comparison of temperature distribution in cryogenic and normal condition indicates that cutting temperature in the cutting zone is lower in case of cryogenically pre-cooled workpiece which may result in increase in tool life, improvement in surface finish and dimensional accuracy.

Keywords: Cryogenic Cooling, Liquid Nitrogen, Milling Process, Al6063;

1. INTRODUCTION

Conventional cooling even though preferred in machining over dry conditions creates several health and environmental problems. Therefore, liquid nitrogen has been explored as environmentally acceptable coolant in manufacturing industry. Cryogenic cooling approaches are classified into cryogenic pre-cooling of workpiece, indirect cryogenic cooling, cryogenic jet cooling and cryogenic treatment of cutting tools. Present paper focuses on effect of cryogenic pre-cooling of workpiece on machining parameters. Cryogenic pre-cooling of workpiece results into change in material properties from ductile to brittle. It has effect on cutting temperatures, tool wear and tool life, surface roughness, dimensional deviations, friction and cutting forces [1].

Literature Review

Ding and Hong (1998) presented the effect of workpiece pre-cooling on chip temperature in machining AISI1008 low carbon steel. Results indicated significant improvement in chip breakability due to workpiece pre-cooling for different feeds and speeds. They also concluded that the effectiveness of this method is highly dependent on cutting speed [2].

Wang and Rajurkar (2000) described circulating liquid nitrogen (LN2) coolant on polycristaline cubic boron nitride tool for reduction in cutting temperature while cutting different hard to cut materials. Their results indicated that LN2 cooled tool experiences less machining wear, tool material properties such as hardness and strength are maintained, surface finish of machined workpiece improves due to reduction in tool wear [3].

Materials Today: Proceedings

Volume 27, Part 1, 2020, Pages 519-523

Plastic injection molded door handle cooling time reduction investigation using conformal cooling channels

Singh S. Deepika, Bhushan T. Patil, Vasim A. Shaikh

https://doi.org/10.1016/j.matpr.2019.11.316

Abstract

Cycle time is a significant parameter in injection molding process as it affects the rate of production and governs the quality of part produced. The cycle time can be reduced by minimizing the cooling time. Cooling time contributes to the majority of the cycle time and it can be effectively reduced by proper heat dissipation. The heat of the melt should be dissipated efficiently by the cooling channel. Therefore, design and placement of cooling channel is a major factor contributing to the cycle time reduction. The improper positioning of channels for cooling leads to uneven cooling and results in defects like sink marks, warpage and thermal residual stresses. Hence, there are channels that conform to the shape of the part, allowing the part to cool uniformly with minimum defects and thus lead to the minimum cycle time. In this paper, an investigation of cooling time has been done for a door handle. The cooling pattern for the conventional cooling channels and the parameters affecting cooling time has been studied. The mold and cooling channels have been designed of U-shaped cooling channel and conformal cooling channel in SolidWorks software. The results showed a reduction of cooling time by 18.2% over U-shaped cooling channel.

Keywords

Plastic injection molding; Conformal cooling channels; Cycle time; Transientthermal analysis; Heat dissipation

PAPER • OPEN ACCESS

Turned AISI 4340 Heat-Treated Steel Surface Quality Investigations in Dry and MQL Cooling Conditions

Hiraman N Sikdar[1], M VeeraBhadra Rao[2], Bhushan T Patil[2], Vasim A Shaikh[2] and DSS Sudhakar[2]

Published under licence by IOP Publishing Ltd

IOP Conference Series: Materials Science and Engineering, Volume 872, Second International Conference on Materials Science and Manufacturing Technology 9-10 April 2020, Hotel Aloft, Coimbatore, Tamil Nadu, India

Citation Hiraman N Sikdar *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **872** 012090

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[2] Fr. CRCE, Bandstand, Bandra, Mumbai 400050, India

https://doi.org/10.1088/1757-899X/872/1/012090

Abstract

Heat treatment of machine components such as Annealing, normalizing, hardening, case hardening and other surface treatments have given better endurance to static and dynamic loads and stresses for many service applications. Most of the components are heat treated after machining once major dimensional controls are met. However, after heat treatment, it was observed the dimensional inaccuracies such as actual dimensions values, surface quality deterioration due to scale formation and material combinations with surrounding media at elevated temperatures attempts to recheck the errors and dimensional variations in the components. Machining after heat treatment also is necessary and is practiced and there arises problems of different chemistry and physical behavior of tool and material machining conditions. In order to know the effects of the heat treatment on machining, an attempt is made to study the variations in the process using design of experiment (DOE) approach taking surface roughness parameter as response.

PAPER • OPEN ACCESS

Study on rectification of issues faced by ultrasonic welding of medical "e-stethoscope" by adhesive bonding technique

S C Bhopi[1], V B R Miriyala[1], S V Parab[2], A S Haldankar[2] and S P Pandey[2]

Published under licence by IOP Publishing Ltd

IOP Conference Series: Materials Science and Engineering, Volume 872, Second International Conference on Materials Science and Manufacturing Technology 9-10 April 2020, Hotel Aloft, Coimbatore, Tamil Nadu, India

Citation S C Bhopi *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **872** 012088

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[2] Ayu Devices Pvt Ltd, M-09, CSRE 3rd Floor, SINE Incubator, IIT Bombay, Powai, Mumbai-400076, India.

https://doi.org/10.1088/1757-899X/872/1/012088

Abstract

Ultrasonic welding is used as an effective method for the welding of thin films in medical plastics for pills to the packing of medical devices. It provides the device with high adherence to sustain in the working environment. Despite being one of the most acceptable methods to fuse the materials in the medical field, it's few limitations can cause a great impact on the quality of the product. The paper deals with the problem faced by a company named "Ayu Devices Pvt Ltd." which manufactures Electronic Stethoscopes. The device case was welded using the ultrasonic welding process, but because of the frequency conveyed on different electronic components, it led to the rejection of the devices in the quality check-up. Since the rejection rate raised to an approximation of 45% at the quality check-up, there was a need to find an alternate method in a similar device case. The adhesive bonding technique using cyanoacrylate is adopted for further manufacturing of the device. A fair comparison is made based on the bond strength delivered and the rejection percentage due to electronic components failure by both the methods.

Design and Simulation of Wireless Power Transfer for Electric Vehicle

Publisher: IEEE

Binsy Joseph ; D.V Bhoir All Authors

Abstract: Wireless Power Transfer Techniques are gaining popularity in Electric Vehicle charging applications due to its safety and convenience. Wireless Electric Vehicle charging ... **View more**

Metadata

Abstract:
Wireless Power Transfer Techniques are gaining popularity in Electric Vehicle charging applications due to its safety and convenience. Wireless Electric Vehicle charging system can be a potential alternative technology to charge EVs without any plug-in problems. The fundamental challenge for implementing Wireless Power Transfer for Vehicle application is the coupling variation between the primary and secondary coils due to misalignment and air-gap between coils. Compensation circuits are necessary for the Wireless Inductive Power Transfer system, to have maximum power transfer from the primary coil to secondary coils. This paper describes the design and simulation of the Inductive Wireless Power Transfer System using PLECS software. FEM simulation is carried out to verify the effect of coupling variation between primary charging pads and secondary coil mounted on the vehicle due to air gap distance between them.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

INSPEC Accession Number: 19454782

Date Added to IEEE *Xplore*: 16 March 2020

DOI: 10.1109/ICAC347590.2019.9036745

ISBN Information:

Publisher: IEEE

Hybrid Interference Cancellation for Stationary and Non-Stationary Users in DS-CDMA

Publisher: IEEE

Monica Khanore ; Srija Unnikrishnan **All Authors**

Abstract: In addition to the Multiple Access Interference (MAI) caused by the loss of orthogonality of the spreading codes while transmission, the multi path propagation of the use... **View more**

Metadata

Abstract:
In addition to the Multiple Access Interference (MAI) caused by the loss of orthogonality of the spreading codes while transmission, the multi path propagation of the user signals further aggravates the interference which adversely affects the BER performance of the DS-CDMA system. Another factor contributing to the degradation of performance is the Doppler shift in the carrier frequency. In this paper the performance of the modified hybrid interference cancellation scheme is investigated in the presence of MAI, multipath propagation as well as Doppler shift in the Rayleigh fading environment. The scheme uses the Least Square (LS) channel estimation method. The interference cancellation scheme and the detection technique used avoid the need for the use of RAKE receiver for data estimation. The interference canceller is shown to exhibit tolerable BER in the presence of Doppler shift.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

INSPEC Accession Number: 19454766

Date Added to IEEE *Xplore*: 16 March 2020

DOI: 10.1109/ICAC347590.2019.9036740

ISBN Information:

Publisher: IEEE

Automation of Attendance System Using Facial Recognition

Publisher: IEEE

SatyaSathvik Kadambari ; Gauraang Prabhu ; Deep Mistry ; Monica Khanore All Authors

Abstract: The importance of a properly maintained attendance system is very high. Although many systems are already existing, there are many loopholes present. This paper presents ... **View more**

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Abstract:
The importance of a properly maintained attendance system is very high. Although many systems are already existing, there are many loopholes present. This paper presents an attendance system using face recognition, which is the best foot forward to reduce the loopholes encountered by these systems. The Attendance system using face recognition consists of two phases, face detection and face recognition. The performance of detection algorithms such as Viola Jones and deep learning-based detection was compared and deep learning-based detection was preferred. On the recognition front, deep learning-based face recognition was used and optimum results were obtained. It was found that dlib using Convolutional Neural Networks (CNN) yielded better results than dlib using Histogram Oriented Gradients (HOG) because HOG only detects a frontal image, while CNN detects faces from all angles and ensures no discrepancies during face detection and recognition. Also, it was observed that the speed of training datasets was higher in CNN as it uses GPU as compared to HOG, which uses CPU for training the dataset as well as recognition.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

INSPEC Accession Number: 19454776

Date Added to IEEE *Xplore*: 16 March 2020

DOI: 10.1109/ICAC347590.2019.9036819

Portable Biometric Attendance System Using IOT

Publisher: IEEE

Sebastian Chennattu ; Aditya Kelkar ; Aaron Anthony ; Sushma Nagdeote All Authors

Abstract: Our project aims at building a biometrics based attendance registry system for educational institutions such as colleges and schools. We have tried to bring together conc... **View more**

Metadata

Abstract:
Our project aims at building a biometrics based attendance registry system for educational institutions such as colleges and schools. We have tried to bring together concepts of hardware and software engineering to give an end consumer product which can replace the current manner of attendance marking. This project also utilizes the fundamentals of Internet of Things (IoT) for data transfer, storage and display. The system can be interpreted based on it's hardware and software aspects. The hardware section consists of a pod, which is a portable device that can be circulated among students in the classroom. It features an LCD screen that displays various functional options and a, which can scan, store and identify student fingerprints. The identified fingerprint ID is then stored in memory and is made ready for transfer. The data is then sent to the database on a web server where the Database Management System (DBMS) updates the attendance tables accordingly. This database can be downloaded or viewed by the respective faculty.

Published in: 2019 4th International Conference on Information Systems and Computer Networks (ISCON)

Date of Conference: 21-22 November 2019

INSPEC Accession Number: 19454898

Date Added to IEEE *Xplore*: 16 March 2020

DOI: 10.1109/ISCON47742.2019.9036275

Mathematical Modeling and Numerical Simulation of Novel Cantilever Beam Designs for Ohmic RF MEMS Switch Application

Publisher: IEEE

P. V. Kasambe ; Abbas Barwaniwala ; Bhushan Sonawane ; Jay Rana ; Nilesh Raykar ; D. V. Bhoir **All Authors**

Abstract:RF MEMS switch is characterized by its pull-in potential. Stiffness constant of cantilever beam plays an important role in determining its pull-in potential. Stiffness co... **View more**

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Abstract:
RF MEMS switch is characterized by its pull-in potential. Stiffness constant of cantilever beam plays an important role in determining its pull-in potential. Stiffness constant of the cantilever beam depends on its material properties, dimensions and geometrical shape. In this work variable width based stepped cantilever beam is proposed for reducing the pull-in potential. Mathematical (mechanical) modeling of such unconventional cantilever beam using conjugate-beam method is presented in this paper. For obtaining pull-in potential using mathematical modeling; a python script is developed whereas CoventorWare FEM tool is used for numerical simulation. It is found that pull-in potential obtained through mathematical modeling and numerical simulation are same. Moreover it is less than normal rectangular cantilever beam of the same length, width and thickness.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

INSPEC Accession Number: 19470439

Date Added to IEEE *Xplore*: 16 March 2020

DOI: 10.1109/ICAC347590.2019.9036830

Data Mining in Educational Systems for Effective Student Mentoring

Publisher: IEEE

Mahendra Mehra ; D. R. Kalbande ; Shubham Mankar ; Sohaa Mutsaddi All Authors

Abstract: In an educational institute mentoring of students is an essential feature to provide equitable services to students having a varied background and to minimise dropout rat... **View more**

Metadata

Abstract:
In an educational institute mentoring of students is an essential feature to provide equitable services to students having a varied background and to minimise dropout rates. Conventionally, the mentors seek for student data manually, from files and records with no assistance from an automated system. To cope up the worsening student teacher ratio and the exponentially increasing data, assistance from an automated system becomes significant. Through this paper, we suggest the integration of a Machine Learning driven computer program, with mentoring in order to ensure an effective guidance system. In the proposed system, Educational Data Mining (EDM) was used to create a regression based prediction model to aid professors in the mentoring process by generating an estimate of students' future performance. To make this system more accurate, aberrant factors affecting student performance like travel time, type of residence, gender, caste, parents education and working status, along with conventional academic and analytical features like CGPA and extra-curricular were used to train the Machine learning model. After implementation, it was observed that the regression model built using Support Vector Machines (with RBF Kernel) had the least square error. This model was then integrated with a mentoring system to build a computer application to assist professors. This application was rife with features like attendance and session tracking, graph generation and CGPA prediction. With the assistance of the application, mentors can better create a tailor-made plan for individual student and further enhance the effectiveness of student mentoring.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

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Time Optimal Long Distance Trip Planning for Electric Vehicles

Publisher: IEEE

Ashley Lobo ; Kartick Hariharan ; Suyash Sreekumar ; Monali N. Shetty All Authors

Abstract:A major challenge faced by Electric Vehicle users is to get an estimate of the time taken by the route that depends on parameters such as charger time, geography and temp... **View more**

Metadata

Abstract:

A major challenge faced by Electric Vehicle users is to get an estimate of the time taken by the route that depends on parameters such as charger time, geography and temperature Hence it becomes important to find out routes that are energy optimal and time efficient. In this paper, we have devised a method that will help Electric Vehicle users planning longdistance trips get routes that are optimal and get an estimate time needed to complete the trip. The proposed method takes into consideration the temperature and its effect on charging and battery capacity along with other data such as elevation, traffic to get more realistic and time-optimal routes.

Published in: 2019 5th International Conference On Computing, Communication, Control And Automation (ICCUBEA)

Date of Conference: 19-21 September 2019

Date Added to IEEE *Xplore*: 30 June 2020

ISBN Information:

INSPEC Accession Number: 19745062

DOI: 10.1109/ICCUBEA47591.2019.9129188

Publisher: IEEE

Conference Location: Pune, India

Contents

I. Introduction

Most of the petrol or diesel-based vehicles tend to cause a lot of pollution. With an increasing focus on climate change, these vehicles are being phased out and will soon be replaced with Electric Vehicles (EVs). Electric Vehicles are battery-based vehicles that require no combustion of fuel and rely on electricity stored in batteries. These vehicles come with a limited cruising range due to limited battery capacity. To travel long distances, an EV would have to go through multiple charge cycles .This brings out a new set of challenges in the form of planning the route so that the driver is assured of power when needed. Route planning should ensure

ScienceDirect

Materials Today: Proceedings

Volume 27, Part 1, 2020, Pages 492-496

Investigating the microlubrication flow inside the nozzle using computational fluid dynamics

Dipali K. Bhise, Bhushan T. Patil, Vasim A. Shaikh, Sujata P. Deshmukh

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https://doi.org/10.1016/j.matpr.2019.11.290

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Abstract

The rising demand for the sustainable manufacturing processes and the fast-growing price in getting rid of cutting fluids has increased the requirement to find substitute solutions to the conventional metal cutting methods. Green machining is one such technique which uses Microlubrication method using biodegradable metal cutting fluids. Microlubrication uses a very small amount of cutting fluid which ranges between 5 and 150 ml/hr to reduce the friction between a cutting tool and the workpiece. To maintain a controlled machining environment, it is mandatory to use adequate lubrication. Hence, the adequate utilization of Microlubrication for heat extraction and lubrication requires continuous examination of mist. In this paper, Microlubrication flow inside the nozzle is estimated by using Computational Fluid Dynamics (CFD) simulating techniques for air pressures 2 to 4 bars for AccuLube 2000 cutting fluid. In MQL, an aerosol is a mixture of small oil particles dispersed in a compressed air which is applied as cutting fluid. The volume fraction of oil and air in the aerosol is important and affects the heat extraction of the cutting fluid. Hence, it is important to select the accurate proportion of oil and air mixture for getting a better surface finish and tool life. This paper includes investigation of a volume of fraction of oil and air in the fluid volume of the nozzle which helps to enhance the MQL performance. For CFD, multiphase volume of fluid model with realizable k-ε viscous model was selected. Simulation results show that, by changing the air pressure from 2 to 4 Bars, the volume fraction of oil decreases by approximately 22 percentage. Hence it has been hypothesized that change in the inlet air pressure directly affects the volume fraction of oil and air. By using low air pressure one can get higher volume fraction of oil which can help to increase the MQL performance.

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Keywords

MQL; Biodegradable oil; CFD; Microlubrication; Metal working fluid; Green machining

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College of Engineering

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Coordination and Synchronization in Multiagent System Based on Tilman Model of Resource Sharing

Publisher: IEEE

Preeti Jain ; Sunil K Surve All Authors

Abstract: Coordination is an essential feature between multiple agents as it enables them to achieve coherency. In the absence of coordination, agents may degrade performance due t... **View more**

Metadata

Abstract:
Coordination is an essential feature between multiple agents as it enables them to achieve coherency. In the absence of coordination, agents may degrade performance due to incoherency while sharing resources. Here, coordination is best conceived as the effort of governing resource allocation, which is limited between multiple agents while optimizing performance. The work presents coordination and synchronization between agents based on the adapted Tilman model of resource sharing. A case study is performed to illustrate the real world application of the proposed solution for multicore systems. In the present work we resemble multicore system as a multiagent system (MAS). The impact of the lack of coordination leads to negative interactions when resources are limited and shared. The work focuses on the coordination and synchronization between application programs executing on Chip Multi Processor (CMP) systems sharing limited resources. This prompts the need for an increase in coordination between application programs for the optimal use of the resources and resolve the conflicts due to resource sharing. We investigate the problem and develop an algorithm based on the adapted Tilman model. The algorithm directs either the explicit partitioning of resources or scheduling applications depending upon the resource-centric nature of workloads. The proposed scheme guides in decision making of optimal pairs of co-runners and thereby assists in minimizing resource contention in multiagent systems.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

Date Added to IEEE *Xplore*: 16 March 2020

ISBN Information:

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DOI: 10.1109/ICAC347590.2019.9036776

Publisher: IEEE

Conference Location: Mumbai, India

Contents

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Home Security System using IOT and AWS Cloud Services

Publisher: IEEE

Mahendra Mehra ; Vedant Sahai ; Pratik Chowdhury ; Elvis Dsouza All Authors

Abstract: Internet of Things (IoT) is an associate in nursing an ever-growing network of smart and functional objects. It refers to the physical objects capable of exchanging infor... **View more**

Notes: This article was mistakenly omitted from the original submission to IEEE Xplore. It is now included as part of the conference record.

Metadata

Abstract:
Internet of Things (IoT) is an associate in nursing an ever-growing network of smart and functional objects. It refers to the physical objects capable of exchanging information with alternative physical objects. Nowadays, safety and security have always become a necessity for urban society. Our project proposes a security system for the IoT environment that prevents intrusion in Home, Bank, Airports, Offices, University, or any location with the security system. The primary goal of our project is to reduce human work by designing and implementing a security system that offers control through a handheld mobile phone and PC by employing IoT and cloud-based services to manage the cost of the setup. To detect malicious activity or privacy violation, we propose an Unauthorized Human Entry Detection system (UHEDS), which detect any intrusion or breach and typically report to the homeowner. The project includes an Anomaly-based technique for unauthorized entry detection and signature analysis using face recognition algorithm running on AWS cloud to differentiate between an authorized person and intruder and thus improving accuracy in authorizing the legitimate person and provide access to the private/personal zone, thereby reducing risk of sending false alerts/alarms.

Notes: This article was mistakenly omitted from the original submission to IEEE Xplore. It is now included as part of the conference record.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

Date Added to IEEE *Xplore*: 11 May 2020

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DOI: 10.1109/ICAC347590.2019.9089839

Publisher: IEEE

Conference Location: Mumbai, India

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Video Anomaly Detection using Inflated 3D Convolution Network

Publisher: IEEE

Dipali Koshti ; Supriya Kamoji ; Nehal Kalnad ; Suyash Sreekumar ; Shreya Bhujbal All Authors

Abstract: The infrastructure of every city is getting smarter day by day. This infrastructure provides us with vital information. There is a demand for a real-time system that can ... **View more**

Metadata

Abstract:
The infrastructure of every city is getting smarter day by day. This infrastructure provides us with vital information. There is a demand for a real-time system that can help identify crimes as soon as they happen, which is now possible with the rise in popularity of AI. The data captured through the surveillance system can contain anomalous and normal videos. We propose to build an anomalous event detection system by using weakly labelled training videos, and after the detection of such an activity, an alarm would be raised. A Deep residual learning framework called I3D-Resnet- 50 is used for feature extraction. This network is pre-trained on the Kinetics video action dataset. Our dataset consists of 13 distinct anomalies. Anomalous events are Robbery, Assault, Shooting, Burglary, Stealing, Arrest, Fighting, Shoplifting, Arson, Explosion, Vandalism, Abuse, Road Accident. The introduced method for video anomaly detection attains significant improvement in the results both in terms of accuracy and recall.

Published in: 2020 International Conference on Inventive Computation Technologies (ICICT)

Date of Conference: 26-28 February 2020

Date Added to IEEE *Xplore*: 09 June 2020

ISBN Information:

INSPEC Accession Number: 19675414

DOI: 10.1109/ICICT48043.2020.9112552

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

I. Introduction

Computer vision [1] is the technology for building artificial systems and it contains methods for data analysis and pattern recognition. It is the process of extracting meaningful information from images and videos and making decisions based on this information. A surveillance system is used in many public places, including airports, roads, public transport, town centres, banks and many

Image Processing based Vehicle Identification and Speed Measurement

Publisher: IEEE

Supriya Kamoji ; Dipali Koshti ; Alphaeus Dmonte ; Solomon Jose George ; Clayton Sohan Pereira All Authors

Abstract: Traffic Collisions are a major source of deaths, injuries and property damage every year. In many of the cases, the reason for the death is over speeding. The rapid recen... **View more**

Metadata

Abstract:
Traffic Collisions are a major source of deaths, injuries and property damage every year. In many of the cases, the reason for the death is over speeding. The rapid recent advancements in the computation ability of everyday computers have made it possible to widely apply deep learning methods to the analysis of traffic surveillance videos. The vehicle speed detection system developed by using video processing techniques. In this, a video is captured through a fixed camera with various parameters noted. The video from the camera is processed frame by frame, in which the 1) Each frame is processed with Image Enhancement to improve the characteristics of the image 2) Vehicle is identified with a bounding box applied to the vehicle, to note the movement in each frame 3) Movement of the vehicle is noted with change in pixel 4) Calculating the speed using distance formula considering PPM.

Published in: 2020 International Conference on Inventive Computation Technologies (ICICT)

Date of Conference: 26-28 February 2020

Date Added to IEEE *Xplore*: 09 June 2020

ISBN Information:

INSPEC Accession Number: 19675487

DOI: 10.1109/ICICT48043.2020.9112419

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

I. Introduction

The approach proposed uses image processing techniques to detect the speed of the vehicles from the video footage of the moving vehicle. The video is captured using a camera equipment and relayed back to the computer system where the actual computation takes place. The technique proposed here makes use of computer vision based library functions for speed calculation. The current speed detection system makes use of radar technology for speed detection of vehicles [1]. Radar technology works on the physics

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Dynamic real-time indoor environment mapping for Unmanned Autonomous Vehicle navigation

Publisher: IEEE

Christo Aluckal ; B.K. Mohan ; Yash Turkar ; Yogesh Agarwadkar ; Yashom Dighe ; Sunil Surve ; Sumedh Deshpande ; Brijmohan Daga All Authors

Abstract: Unmanned aerial and ground vehicles today excel at autonomous navigation due to their reliance on GNSS sensors. GNSS sensors are an unviable option for navigation in indo... **View more**

Metadata

Abstract:
Unmanned aerial and ground vehicles today excel at autonomous navigation due to their reliance on GNSS sensors. GNSS sensors are an unviable option for navigation in indoor environments due to lack of direct line-of-sight with satellites and environmental awareness. This paper introduces a robust method for unmanned autonomous vehicles (UAVs and UGVs) that generates a knowledge base in the form of a pointset about an indoor environment using geometric primitives and range imaging sensors. The method uses depth data from range imaging sensors along with pose data from visual odometry sensors to generate a map of the environment while exploring in order to build a knowledge base. This knowledge base can be used to navigate in the mapped environment while avoiding obstacles and finding optimal route from start to goal. This paper discusses the efficacy of the proposed method, it also demonstrates results generated by implementing the method in a controlled indoor environment.

Published in: 2019 International Conference on Advances in Computing, Communication and Control (ICAC3)

Date of Conference: 20-21 December 2019

Date Added to IEEE *Xplore*: 16 March 2020

ISBN Information:

INSPEC Accession Number: 19454755

DOI: 10.1109/ICAC347590.2019.9036813

Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

Unmanned Autonomous Vehicles or mobile robots, also known as UAVs (Unmanned Aerial Vehicles) and UGVs (Unmanned Ground Vehicles) are highly effective for a multitude of applications. They are extremely customizable and can be designed to carry various payloads such as cameras, LIDAR sensors and a variety of other sensors (optical, thermal, multispectral and hyper-spectral

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Virtual Mouse Using Object Tracking

Publisher: IEEE

Monali Shetty ; Christina A. Daniel ; Manthan K. Bhatkar ; Ofrin P. Lopes All Authors

Abstract: With new changes seen in computer technology day by day, it has become quite essential for us to find specific new ways of interaction with computer systems as its need i... **View more**

Metadata

Abstract:
With new changes seen in computer technology day by day, it has become quite essential for us to find specific new ways of interaction with computer systems as its need is increasing in society every day. Today, every device is making the use of touch screen technology on its systems, which isn't affordable to be used in all applications. A specific interactive module like a virtual mouse that makes use of Object Tracking and Gestures that will help us to interact can be an alternative way for the traditional touch screen and the physical mouse. The objective is to create an Object Tracking application that interacts with the system. This system proposed is a Computer Vision-based mouse cursor control system, which uses hand gestures that are being captured from a webcam through an HSV color detection technique. This system allows the user to navigate the system cursor using their hand bearing color caps or tapes that the computer webcam tracks and perform mouse operations like left-click, right-click, and double click using different hand gestures. Python and OpenCV library is used for realtime computer vision to implement the system. The camera output is displayed on the monitor.

Published in: 2020 5th International Conference on Communication and Electronics Systems (ICCES)

Date of Conference: 10-12 June 2020

Date Added to IEEE *Xplore*: 10 July 2020

ISBN Information:

INSPEC Accession Number: 19770950

DOI: 10.1109/ICCES48766.2020.9137854

Publisher: IEEE

Conference Location: Coimbatore, India

Contents

1. Introduction

One of the simplest, proficient, and significant ways of human communication is through hand gestures that people tend to make use of even unknowingly and a universally accepted language. In this paper, an online hand gesture mouse controlling system is

International Conference on Innovative Data Communication Technologies and Application

ICIDCA 2019: **Innovative Data Communication Technologies and Application** pp 194–203

Analysis of Growth and Planning of Urbanization and Correlated Changes in Natural Resources

Supriya Kamoji, Dipali Koshti & Ruth Peter

Conference paper | First Online: 31 January 2020

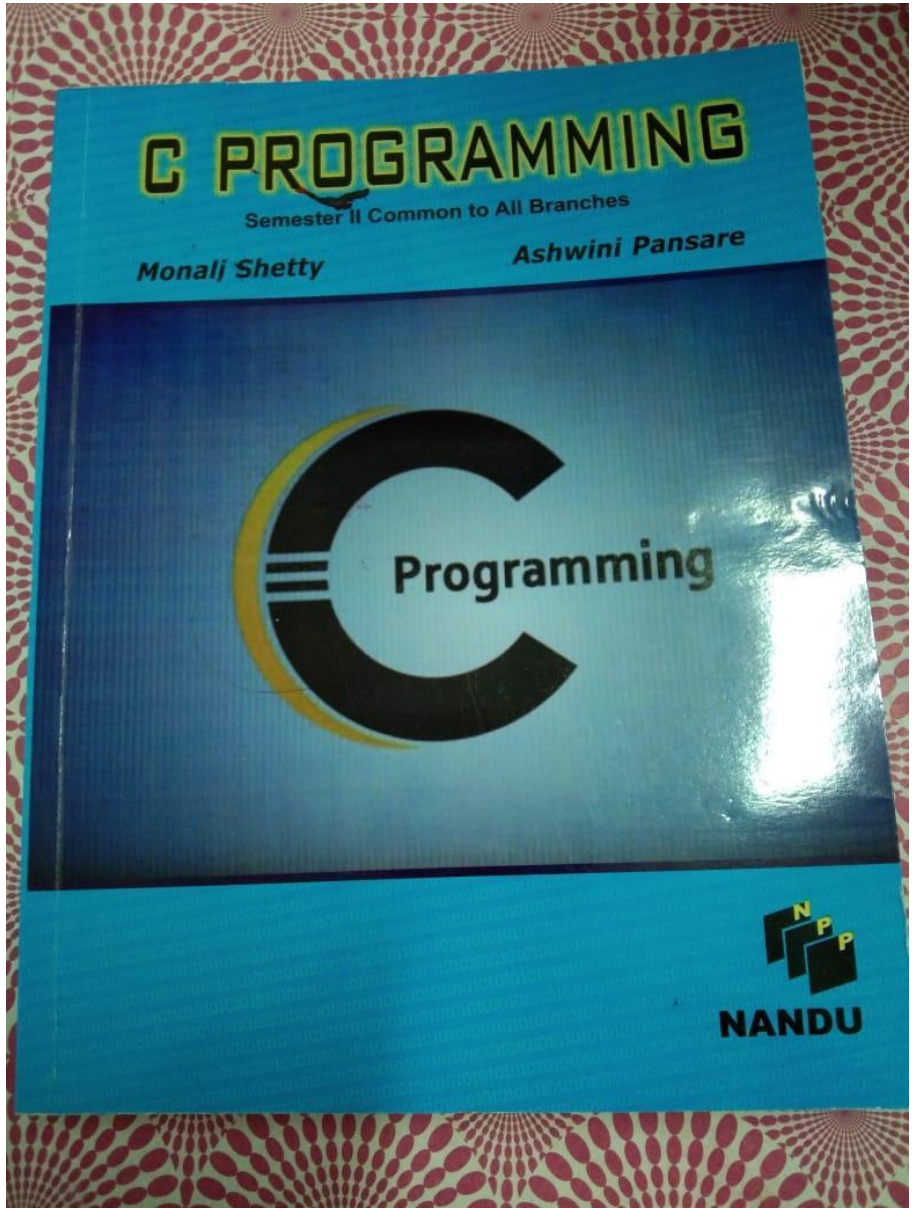
Part of the Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT,volume 46)

Abstract

Ever since the earth was inhabited, all the living beings are dependent on air, water and land that exist freely in nature to survive. However these natural resources are getting rapidly exhausted due to a number of factors like over population, excess land usage, climate change, environmental pollution etc. To have an environmentally acceptable secure future, where we can still enjoy natural resources, we need to transform the way we use natural resources. The proposed system uses the deep learning model U-Net to classify satellite tiles in land categories like forest, water bodies and urban area. The system is also capable of analysing satellite images to study the decline of various natural resources through the years and provide analysis of decline in natural resources. Based on analysis, recommendations regarding alternate solutions to urban planning can be provided.

Keywords

Natural resources **Semantic segmentation** **U-Net** **Deep learning** **Computer vision**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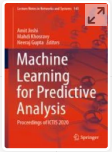

Machine Learning for Predictive Analysis pp 483–489

ML Suite: An Auto Machine Learning Tool

Nilesh M. Patil, Tanmay P. Rane & Anmol A. Panjwani

Conference paper | First Online: 23 October 2020

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 141)

Abstract

In today's age, it is important for some businesses to upgrade to machine learning techniques. The aim of this project is to create an autonomous platform for researchers/laymen who operate on data, which would auto-clean the data and suggest machine learning approach to understand and get better value out of data. The proposed project includes a minimalistic user interface and complex backend to cater to user's needs such as better data visualization and summarization, using pandas and matplotlib operations in python. The ultimate goal is to obtain an autonomy such that the user does not have to write a single line of code. The data cleaning has been generalized for different structures of datasets in Django backend. The algorithms are allotted according to target columns which will be set by user in UI. User can try different ML approaches by just choosing options in UI. The project also includes complementary features such as auto web scraping to gather similar advancements in user's research area, Automatic report generation using semantics of natural language processing and dynamic file management. The project also features a chatbot which can be used to query various document and can give answers using semantic querying. This way a layman can be introduced to power of computing using machine learning to speed up businesses and scholar work.

Keywords

NLP (Natural language Processing) **Auto-ML** **Chatbot** **Regression** **Classification**

Data visualization **Data cleaning** **Matplotlib**

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Human Computer Interaction using Hand Gestures and Voice

Publisher: IEEE

Prajakta Dhamanskar ; Aniket C Poojari ; Harshita S Sarwade ; Renita R D'silva All Authors

Abstract: Human-Computer Interaction (HCI) exists everywhere in our everyday life. It is usually achieved by using a physical controller such as a mouse, keyboard or touch screen. ... **View more**

Metadata

Abstract:
Human-Computer Interaction (HCI) exists everywhere in our everyday life. It is usually achieved by using a physical controller such as a mouse, keyboard or touch screen. This hinders the users natural experience as it creates a barrier between the user and computer as well as they are costly and take up lots of space on the desk. There are few hand tracking systems available in the market, but they are complex and expensive. The development of a marker-less hand tracking system and gesture recognition with low-cost hardware is presented here. The proposed system is a simple but effective method that allows rapid manual tracking despite the complex background. This system eliminates motion blur and is able to detect gestures like clicking and also hand tracking. The detected gesture is converted into specific functional inputs like clicking and mouse movement to control other applications. A voice module is integrated to receive voice commands from the user and perform it. This enables intuitive HCI and interactive motion gaming.

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Date Added to IEEE *Xplore*: 16 March 2020

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INSPEC Accession Number: 19454767

DOI: 10.1109/ICAC347590.2019.9036817

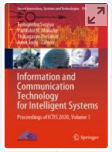
Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

Computer technologies have grown widely over the past 50 years. As technologies advance further, existing HCI technologies are becoming a bottleneck. The most common mode of HCI is the keyboard and mouse. These devices have become familiar, but they are less natural and intuitive. Besides that, with normal controllers, there is a barrier between the user and the computer. Hence,



International Conference on Information and Communication Technology for Intelligent Systems
ICTIS 2020: **Information and Communication Technology for Intelligent Systems** pp 765–775

Alzheimer's Disease Prediction Using Fastai

Chiramel Riya Francis, Unik Lokhande, Prabhjyot Kaur Bamrah & Arlene D'costa

Conference paper | First Online: 22 October 2020

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 195)

Abstract

Alzheimer's disease is a rapidly progressive neurodegenerative disease that can be diagnosed on the basis of numerous criteria such as assessing memory impairment, thinking skills, judging functional abilities, and identifying behavioral changes. Prediction of this disease at an early stage will help take better preventive measures, slowing down the degeneration process. However, the above criteria are not sufficient enough to accurately predict the presence of Alzheimer's disease which further effects the treatment of the disease leading to hazardous repercussions. Through this paper, we present a system that advances in diagnosis using detection and prediction of Alzheimer's disease and dementia. Although Alzheimer's disease occurs in a clinical set of stages, this system will classify the images into two prevalent classes Alzheimer's disease and non-Alzheimer's disease. The above system can be further integrated into hospitals for efficient diagnosis of patients, thus facilitating the increase in life expectancy of an Alzheimer's patient. Apart from predicting the MRI images, the system will be easier to use and integrate with the current system. The model makes use of MRI images from OASIS database which have been transformed and normalized using functions from Fastai library. The model which is developed using transfer learning techniques uses DenseNet algorithm for training data categorizing prevalent data and performing prediction with higher accuracy.

Keywords

Alzheimer's disease **Prediction** **DenseNet** **Fastai** **MRI images**

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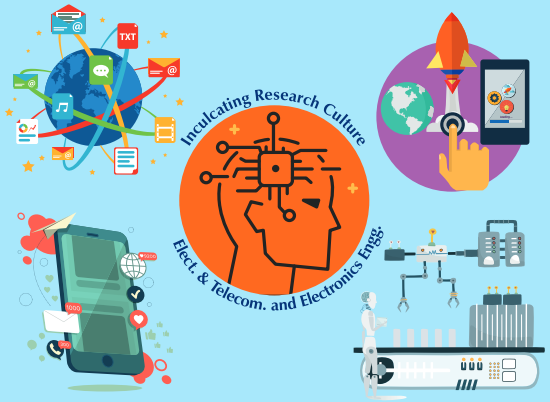

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**2nd time NBA Accredited UG Programmes : • Computer Engineering • Electronics & Telecommunication Engineering • Information Technology • Electronics Engineering (3 years w.e.f. 01-07-2016)

1st cycle of NAAC Accreditation : • "A" Grade for 5 years (w.e.f. 30-10-2017)

Power Consumption and Delay in Wireless Sensor Networks Using N-Policy M/M/1 Queuing Model

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***Abstract* – Technological advancements in low power integrated circuits and wireless communications have made it possible to use efficient, low cost, low power small devices in remote sensing applications. This has led to the feasibility of using a network of sensors to be used for the collection, processing, analysis and distribution of important information, collected in a wide variety of environments. Sensor nodes in a wireless sensor network transmit data in single or multi-hop to a central node called the base station. A very important issue in wireless sensor networks is the scarcity of power and hence optimal use of available power is of prime importance. It is seen that in any sensor node, switching from idle to busy state and vice versa takes up a major portion of the power. We study and analyze a technique that aims to reduce the number of these in order to reduce the consumption of power. In this technique the radio of the sensor node is switched on only when the number of packets in a queue exceed a certain threshold as opposed to the general tendency of transmitting a packet as soon as it is available for transmission. This however introduces delay in the processing of the packets. We analyze the performance of this system with respect to the power consumption and mean waiting time. The simulations performed show that the simulation results are close to the theoretical results thus indicating the validity of the technique studied.**

Keywords – Wireless Sensor Network; Queuing Theory;

I. INTRODUCTION

A WSN comprises of a large number of sensor nodes that are typically distributed over a wide area. The WSN also comprises of a node that acts as an information collector and is referred to as the sink node. These sensor nodes usually consist of a sensing unit, a battery and a radio. In typical deployment scenarios, the sensor nodes may be deployed in remote, unattended, and hostile environment in large numbers. In some applications, the physical size of a sensor node is kept as small as possible for stealthy missions and cost cutting. In most cases, sensor nodes in WSN are fitted with non-rechargeable batteries and have a limited lifetime. It may be difficult to recharge or replace their batteries due to their remote or hostile locations. This fact gives rise to major design issues for WSN, which is to reduce power consumption and to increase the lifetime of sensor nodes as much as possible [1][2].

Data packets usually originate at the sensor nodes as a result of its sensing activities. Moreover the sensor also behaves as a router to route the packets that arrive from other nodes. The data that are generated at the sensor nodes as well

as the ones routed by the nodes must all reach a sink node in sensor network. The traffic in a wireless sensor network usually has a many-to-one pattern, where nodes that are located nearer to the sink bear a heavy burden of the traffic. As a result, it is seen that the nodes around the sink would consume their energy much faster, leading to the eventual death of the node. This problem is known as the energy-hole problem [3]. If an energy hole appears, then packets cannot be delivered to the sink anymore. The longevity of a WSN entirely depends on the life of sensor nodes that are closer to the sink of the WSN. As described in [4], there are four main sources of power consumption: collision, overhearing, control packet overhead, and idle listening.

Overhearing and idle listening use power by keeping the radio receiver in an ON state without actually getting any useful information. However, compared with the other three types of power consumption for a generic node, packet collisions lead to energy waste which is much more. Medium contention in a contention-based protocol is one of the main reasons of packet collisions among sensor nodes. Shih et al [5] have demonstrated that power consumption is very high in case of the radio transmitter switching from one mode to another. Here, we study an approach to alleviate total average times of both medium contention and mode switching of radio receiver [3]. The approach discussed here is based on N-policy M/M/1 queuing model.

The nodes located near the sink of the WSN use more energy than other nodes because of the larger forwarding burden. This would lead to a faster depletion of the battery and eventually to the

QoS based Vertical Handover Decision Algorithm using Fuzzy Logic

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan All Authors

Abstract: With increasing number of emerging real time mobile applications, the Quality of Service of networks becomes an important decision criterion for handover. Mobile users as... **View more**

Metadata

Abstract:
With increasing number of emerging real time mobile applications, the Quality of Service of networks becomes an important decision criterion for handover. Mobile users aspire to keep their ongoing open mobile applications alive while moving across various wireless networks. Hence Vertical Handover between Wireless networks is required for the seamless and continuous use of applications when the user is moving. In this paper, we have presented a Vertical Handover Decision Algorithm with input parameters as Received signal strength, Bandwidth, Network Coverage and Quality of Service.

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DOI: 10.1109/ICNTE44896.2019.8945953

Publisher: IEEE

Conference Location: Navi Mumbai, India

Proceedings of International Conference on Intelligent Manufacturing and Automation pp 463–471

A Perspective of Integrated Machine Vision Based-Multivariate Statistical Process Control

Ketaki N. Joshi & Bhushan T. Patil

Conference paper | First Online: 05 November 2018

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

Machine vision systems have proven their potential of effectively inspecting objects under consideration for surface and dimensional defects using various texture analysis techniques. However, current use of machine vision systems in industry is broadly limited to acceptance or rejection of product based on its quality. Their potential of providing complete solution to quality is not completely explored and utilized. Hence their exist opportunities for utilizing machine vision systems not only for inspection, but going one step ahead and using it for quality control. The information extracted by machine vision systems, over the period, can be analysed for monitoring production processes and detecting out-of-control signals. This paper provides a review of the attempts made by various researchers in the direction of integrating machine vision techniques with statistical quality control methods for providing vision based solution for quality control.

Keywords

Machine vision **Multivariate techniques** **Statistical process control**

RF Signal Generation for MRI System Using PS-PL Communication in FPGA Over Ethernet

Publisher: IEEE

Aditi S Deshpande ; Imran Sheikh ; Kranti Wagle ; Dharmesh Verma All Authors

Abstract:FPGA (Field Programmable Gate Array) is an open-source framework consisting of a small hardware core and a host-software library. It provides a platform for extensible co... **View more**

Metadata

Abstract:
FPGA (Field Programmable Gate Array) is an open-source framework consisting of a small hardware core and a host-software library. It provides a platform for extensible communications, allowing the specialized chips in the FPGAs to program and perform very specific functions in hardware. Implementation of a function in software can be done in the exact manner as in case of an FPGA and thus can be executed in hardware. This paper presents the designing and simulation of RF Signal Generation for MRI systemsusing the PS to PL communication over FPGA platform with the help of Ethernet communication protocol. The working of embedded processor inside FPGA is such that it can receive data via Ethernet in the form of packets. Further processing of the data is carried out on the received Ethernet packets from which actual data is extracted, processed and finally transmitted to the other required subsystems, as in this case to RF Transmit coils. The concept explained in this paper enables the host PC to transmit data to Xilinx-based FPGA board via Ethernet using a standard synchronous inter-networking protocol (TCP/IP). The implementation platform is an evaluation board which has an Arm processor on FPGA. Using the VIVADO tool, the processor is configured inside the Zynq SOC. SDK (Software Development Kit) helps in configuring the software part of the processor. The link between the PC and the evaluation board is well established using the Ethernet interface and the output is given to the AXI GPIO (General Purpose Input Output) pins. The output from GPIO is given to subsequent system like DUC (Digital-Up Converter) and from DUC it is further passed on to RF DAC.

Published in: 2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA)

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DOI: 10.1109/ICCUBEA.2018.8697393

Publisher: IEEE

Conference Location: Pune, India

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Compressive Sensing in Channel Estimation for SISO and MIMO OFDM Systems

Publisher: IEEE

Ami Munshi ; Srija Unnikrishnan All Authors

Abstract: In this paper, we have explored the effectiveness of compressive sensing (CS) for channel estimation in SISO and MIMO OFDM system. We have developed a hybrid LS-CS estima... **View more**

Metadata

Abstract:

In this paper, we have explored the effectiveness of compressive sensing (CS) for channel estimation in SISO and MIMO OFDM system. We have developed a hybrid LS-CS estimation technique. On comparing this technique with Least Square (LS) estimation, we infer that by sensing only few channel coefficients, the transmitted data can be estimated from the received data when hybrid LS-CS estimation technique is implemented. By sensing lesser percentage of total channel coefficients in hybrid LS-CS estimation, BER obtained in SISO OFDM scenario is less at a particular SNR, while in case of MIMO OFDM it is comparable to LS estimation. Another significant observation made is that if the channel is sparser, then the hybrid LS-CS estimation technique yields superior results.

Published in: TENCON 2018 - 2018 IEEE Region 10 Conference

Date of Conference: 28-31 October 2018

Date Added to IEEE *Xplore*: 24 February 2019

ISBN Information:

ISSN Information:

INSPEC Accession Number: 18487667

DOI: 10.1109/TENCON.2018.8650423

Publisher: IEEE

Conference Location: Jeju, Korea (South)

SECTION I.
Introduction

PROCEEDINGS SERIES
International Design Engineering Technical Conferences and Computers and Information in Engineering Conference

ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference

August 26–29, 2018
Quebec City, Quebec, Canada

Conference Sponsors:

Design Engineering Division

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Volume 4: 23rd Design for Manufacturing and the Life Cycle Conference; 12th International Conference on Micro- and Nanosystems

ISBN: 978-0-7918-5179-1

Previous Paper Next Paper

PROCEEDINGS PAPER

Design and Simulation of High SNR Varying Thickness Embedded Strain Sensing Polymer Microcantilever for Biosensing Applications

P. V. Kasambe, K. S. Bhole, D. V. Bhoir

Author Information

Paper No: DETC2018-85731, V004T08A004; 7 pages
https://doi.org/10.1115/DETC2018-85731
Published Online: November 2, 2018

To convert induced surface stress of a bio-functionalized microcantilever into an electrical signal; U shaped piezoresistive detection technique is mostly preferred over other techniques due to its several advantages. But the inherent disadvantage of this technique is thermal stress sensitivity as a source of noise which reduces its signal to noise ratio [SNR]. Polymer microcantilever has larger stress sensitivity due to its low youngs modulus of elasticity. Varying thickness cantilever satisfy this desired criteria as compared to other configurations of cantilever and has high resonance frequency. Taking all these aspects into consideration, the objectives of proposed study is to design and simulate multilayer varying thickness microcantilever. The numerical analysis is performed using CoventorWare a commercial MEMS design and FEM Multiphysics tool. It is observed that the SNR of the varying thickness microcantilevers design is improved by more than 70%, over normal rectangular design.

Volume Subject Area: 12th International Conference on Micro- and Nanosystems
Topics: Design, Polymers, Simulation, Cantilevers, Stress, Elastic moduli, Finite element methods, Finite element model, Microcantilevers, Microelectromechanical systems, Noise (Sound), Numerical analysis, Resonance, Signal to noise ratio, Signals, Thermal stresses

Advances in Computer Communication and Computational Sciences pp 263–281

Content-Based Audio Classification and Retrieval Using Segmentation, Feature Extraction and Neural Network Approach

Nilesh M. Patil & Milind U. Nemade

Conference paper | First Online: 22 May 2019

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 924)

Abstract

The volume of audio data is increasing tremendously daily on public networks like Internet. This increases the difficulty in accessing those audio data. Hence, there is a need of efficient indexing and annotation mechanisms. Non-stationarity and discontinuity present in the audio signal rise the difficulty in segmentation and classification of audio signals. The other challenging task is to extract and select the optimal features in audio signal. The application areas of audio classification and retrieval system include speaker recognition, gender classification, music genre classification, environment sound classification, etc. This paper proposes a machine learning- and neural network-based approach which performs audio pre-processing, segmentation, feature extraction, classification and retrieval of audio signal from the dataset. We have proposed novel approach of classification and retrieval using FPNN by combining fuzzy logic and PNN characteristics. We found that FPNN classifier gives better accuracy, F1-score and Kappa coefficient values compared to SVM, k-NN and PNN classifiers.

Keywords

SVM **k-NN** **PNN** **FPNN** **Accuracy** **Recall** **Precision**

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Resource Centric Characterization and Classification of Applications Using KMeans for Multicores

Publisher: IEEE

Preeti Jain ; Sunil K Surve All Authors

Abstract: The knowledge on the behavior of an application program towards consumption of shared resources in multicore systems could assist in characterizing and classifying these ... **View more**

Metadata

Abstract:
The knowledge on the behavior of an application program towards consumption of shared resources in multicore systems could assist in characterizing and classifying these programs. Further categorizing applications assists in predicting optimal coschedules for multicores, which eventually leads to lower contention and enhance performance. The proposed work characterizes applications on the basis of variations in IPC due to various resource allocations. Further classification is done based on parameters of cache memory and Dram bandwidth utilization obtained using hardware counters. A statistical approach is used for classifying the applications. The variance values obtained for an application's behavior towards different resource allocations is considered to build training and test set and KMeans learning algorithm is applied to classify the workloads. The accuracy obtained with the proposed method is 85.71%.

Published in: 2019 International Conference on Information Networking (ICOIN)

Date of Conference: 09-11 January 2019

Date Added to IEEE *Xplore*: 20 May 2019

ISBN Information:

Print on Demand(PoD) ISSN: 1976-7684

INSPEC Accession Number: 18691048

DOI: 10.1109/ICOIN.2019.8717981

Publisher: IEEE

Conference Location: Kuala Lumpur, Malaysia

Contents

I. Introduction

In the race to achieve high performance from computing devices, the uni-processor systems gradually got replaced by multicore systems. Though these systems did achieve high performance, but also introduced contention due to resource sharing. The major shared resources like cache memory, memory bandwidth, hardware prefetchers, and memory controllers are shared among several

राष्ट्रीय औद्योगिक इंजीनियरी संस्थान (नीटी), मुंबई

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by VeeraBhadraRao Miriyala, Bhushan T. Patil, Vasim A. Shaikh, D.S.S.Sudhakar

was presented in the

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by Deepika Singh Singraur, Bhushan T. Patil, Yogesh Rampariya, Ragini C. Patil

was presented in the

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through **Paper Presentation entitled**

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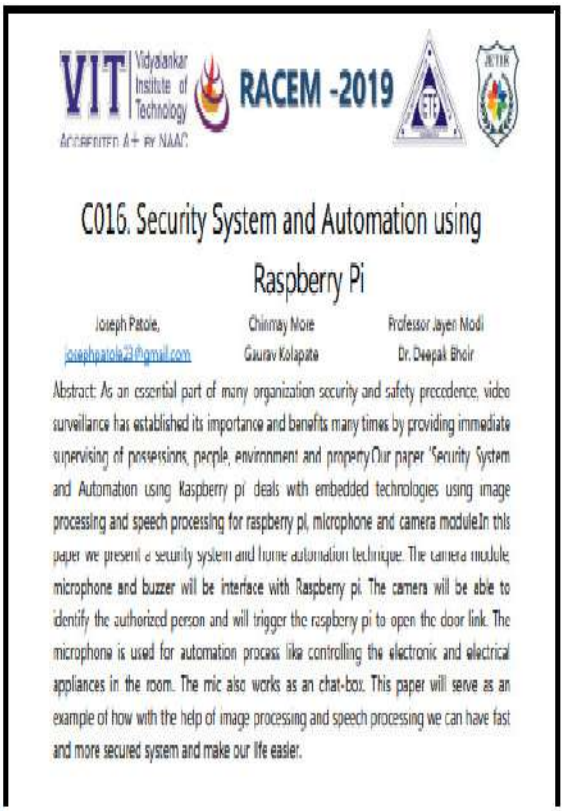

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C016. Security System and Automation using Raspberry Pi

Joseph Patole, Chinmay More, Professor Jayen Modi
josephpatole23@gmail.com, Gaurav Kolapate, Dr. Deepak Bhoir

Abstract: As an essential part of many organization security and safety precedence, video surveillance has established its importance and benefits many times by providing immediate supervising of possessions, people, environment and property.Our paper 'Security System and Automation using Raspberry pi' deals with embedded technologies using image processing and speech processing for raspberry pi, microphone and camera moduleIn this paper we present a security system and home automation technique. The camera module, microphone and buzzer will be interface with Raspberry pi. The camera will be able to identify the authorized person and will trigger the raspberry pi to open the door link. The microphone is used for automation process like controlling the electronic and electrical appliances in the room. The mic also works as an chat-box. This paper will serve as an example of how with the help of image processing and speech processing we can have fast and more secured system and make our life easier.

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Efficient Portable Camera Based Text to Speech Converter for Blind Person

Publisher: IEEE

Trupti Shah ; Sangeeta Parshionikar All Authors

Abstract: Text Reader for Blind Person using camera module ensuring portability is the prototype made using the Raspberry Pi 3b and Python to read the text from the handheld object... **View more**

Metadata

Abstract:
Text Reader for Blind Person using camera module ensuring portability is the prototype made using the Raspberry Pi 3b and Python to read the text from the handheld objects of the blind person. This paper proposes a better approach for text localization and extraction for detection of text areas in the images. The text size is an important factor whose dimension should be properly elected to make the method more general and insensitive to various font shapes and sizes. The proposed method involves four steps detection of an object, localization of the text, extraction of the text and text to speech conversion. The Region of Interest is extracted from the cluttered background and then the text localization algorithm is applied to locate and extract the text. After extracting the text from the ROI, it is converted it into speech. It works more efficiently with Optical Character Recognition. Convolutional recurrent neural network is proposed for training the words separately. The experiment and training are performed on Synth 90k word dataset. Finally using OCR and CRNN a proposed model has been developed.

Published in: 2019 International Conference on Intelligent Sustainable Systems (ICISS)

Date of Conference: 21-22 February 2019

DOI: 10.1109/ISS1.2019.8907995

Date Added to IEEE *Xplore*: 21 November 2019

Publisher: IEEE

ISBN Information:

Conference Location: Palladam, India

Contents

I. Introduction

There is a total of 285 million visually impaired people in the world. Of these population, almost 30% are blind. This number is increasing rapidly due to abnormalities because of genetic hereditary issues [1]. The approach is basically to sense real time objects with utmost accuracy and gives output in the speech format. Recent advancements in Computer vision and image processing fields

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A novel hybrid technique for user navigation pattern prediction using KHM and FP growth

Publisher: IEEE

Janisa Colaco ; Shubha Tiwari ; Sheetal Antony All Authors

Abstract:A huge amount of data is available on the web. Several users tend to access the data available on the internet. This makes it difficult to understand the browsing behavio... **View more**

Metadata

Abstract:
A huge amount of data is available on the web. Several users tend to access the data available on the internet. This makes it difficult to understand the browsing behavior of the user. The browsing history of the user is recorded in the web server log files. Such log files need to be analyzed. The approach described in this paper is based on a novel hybrid technique for analyzing the browsing patterns. It involves a novel and hybrid approach based on clustering and pattern mining algorithm. The approach discussed in this paper is being implemented and the results are analyzed and compared with other related system using two different datasets. The results are also compared concerning the execution time, accuracy and number of frequent patterns.

Published in: 2018 International Conference on Circuits and Systems in Digital Enterprise Technology (ICCSDET)

Date of Conference: 21-22 December 2018

Date Added to IEEE *Xplore*: 02 September 2019

ISBN Information:

INSPEC Accession Number: 18959626

DOI: 10.1109/ICCSDET.2018.8821149

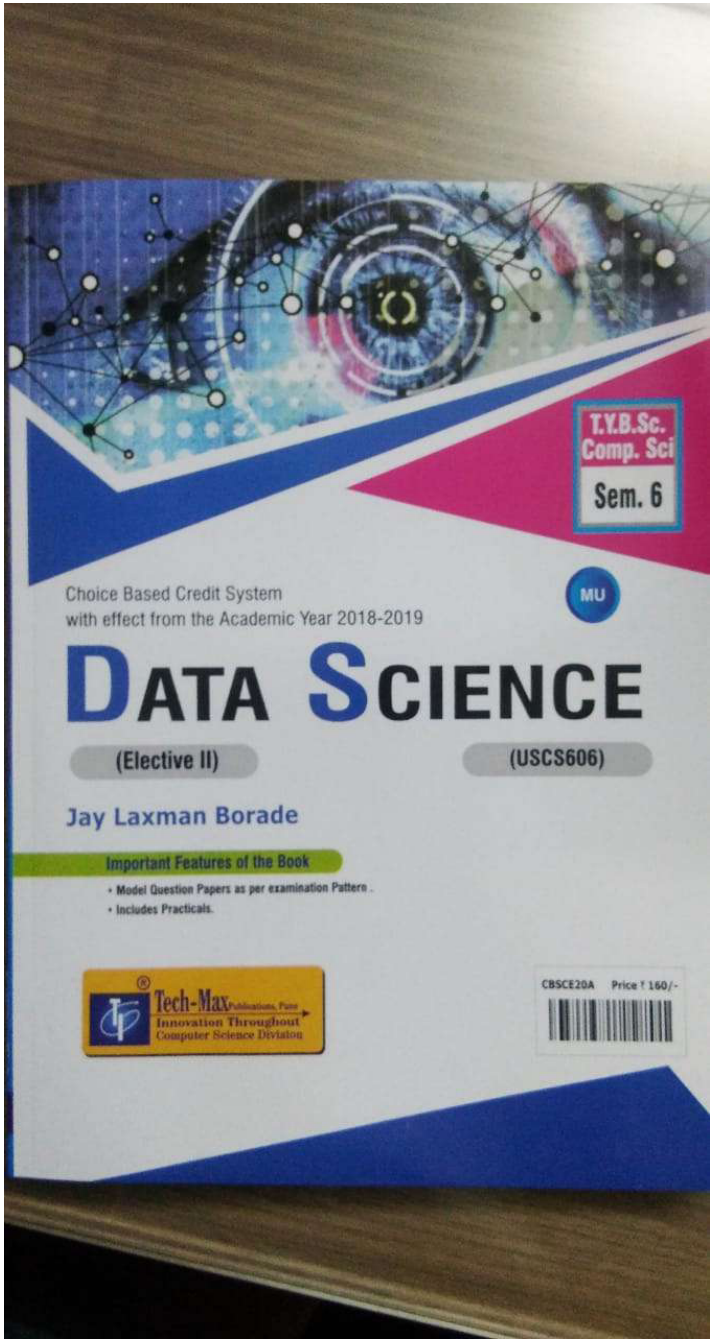
Publisher: IEEE

Conference Location: Kottayam, India

Contents

I. Introduction

Web mining involves using data mining techniques for identifying useful information from the web documents or services. There are certain categories of information that can be discovered by web mining.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Geethapriya

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Teachers- Engineering Emotions in the Classrooms

Dr. Trehan Khushbu
Assistant Professor,
Mumbai,
Maharashtra, India.

About Author:

Assistant Professor (Communication Skills), Humanities and Science Department Father Conceicao Rodrigues College of Engineering, Mumbai, India
Doctorate in Canadian Literature (Ph.D. Course Work with 72%), Certified Dale Carnegie Trainer, completed 220 hours Advanced Diploma Program in TESOL from American TESOL with Specialization in Business English Teachers' Training.
-Conducted lectures and trained hundreds of students to hone their Presentation skills, Group discussion attributes and personal interview techniques to excel in campus placements.

"School is an emotional caldron : a constant stream of academic and social challenges that can generate feelings ranging from loneliness to euphoria."

- Marc Brackett
(A senior research scientist in psychology at Yale University)

The chrysalis of any nation depends primarily on the absolute standards of its educational institutions. In this tech-saturated Google era, the education in our country has witnessed revolutionary changes during last decade. On one hand, there is stupendous explosion of knowledge and inclusion of information, communication and technology in education; on the other hand, it has increased the challenges and responsibilities of the teacher. Furthermore, the digital era has greatly influenced the teaching patterns in educational institutions thereby making teaching profession quite a challenging one than it was a few decades ago.

Teachers are the ones who shape this whole process of education by creating interest in students to develop progress and achieve whatever they aim for. Thus they are the sole factor for the resurgence and strengthening of the education system. An effective teacher is required to interact with the students, influence them and enable them to achieve better, become good citizens through academic and personal-social interaction with them by understanding and handling the situation with emotions in the right way at the right time. This paper is an attempt to substantiate the fact that by being emotionally intelligent helps teachers managing students' emotions in particular situations that makes the difference.

Key Words:

Emotions, Effective Teachers, Education System, Personal-Social Interaction, Intelligence

Introduction:

Life not only gives individuals professional challenges (to be solved theoretically) but also the challenges connected with personal emotions (the interpersonal problems connected with family and institutional relationships).

Both the problems (personal and professional), more often than not, are resolved by the psychic balance of an individual and the way he responds to solve these problems. And thus, the success of interpersonal relationships depends not only on the intellectual abilities, but also on the emotional development (the way an individual manages is own and the other peoples' emotions). People who are emotionally intelligent are able to effectively connect with others, have strong inter-personal relationships, productive in their work and are more satisfied during their life. This satisfaction level helps them build a positive self-image and self- esteem. Those who are not able to understand and manage their emotions are largely dominated by their emotions and find it difficult to adapt to certain situations in life.

Theoretical Substantiation:

The concepts of "emotion" and "intelligence" have been debated throughout history. Both Aristotle and Plato emphasized that "low level emotions have no direction and need to be directed by the logic." Descartes, with his hypothesis "I think therefore I am," claimed that emotions arise together with thoughts. Affected by the philosophy of reason, Descartes defined emotions as primitive elements that need to be controlled (Graves, 1999, Çakar, 2002:9-

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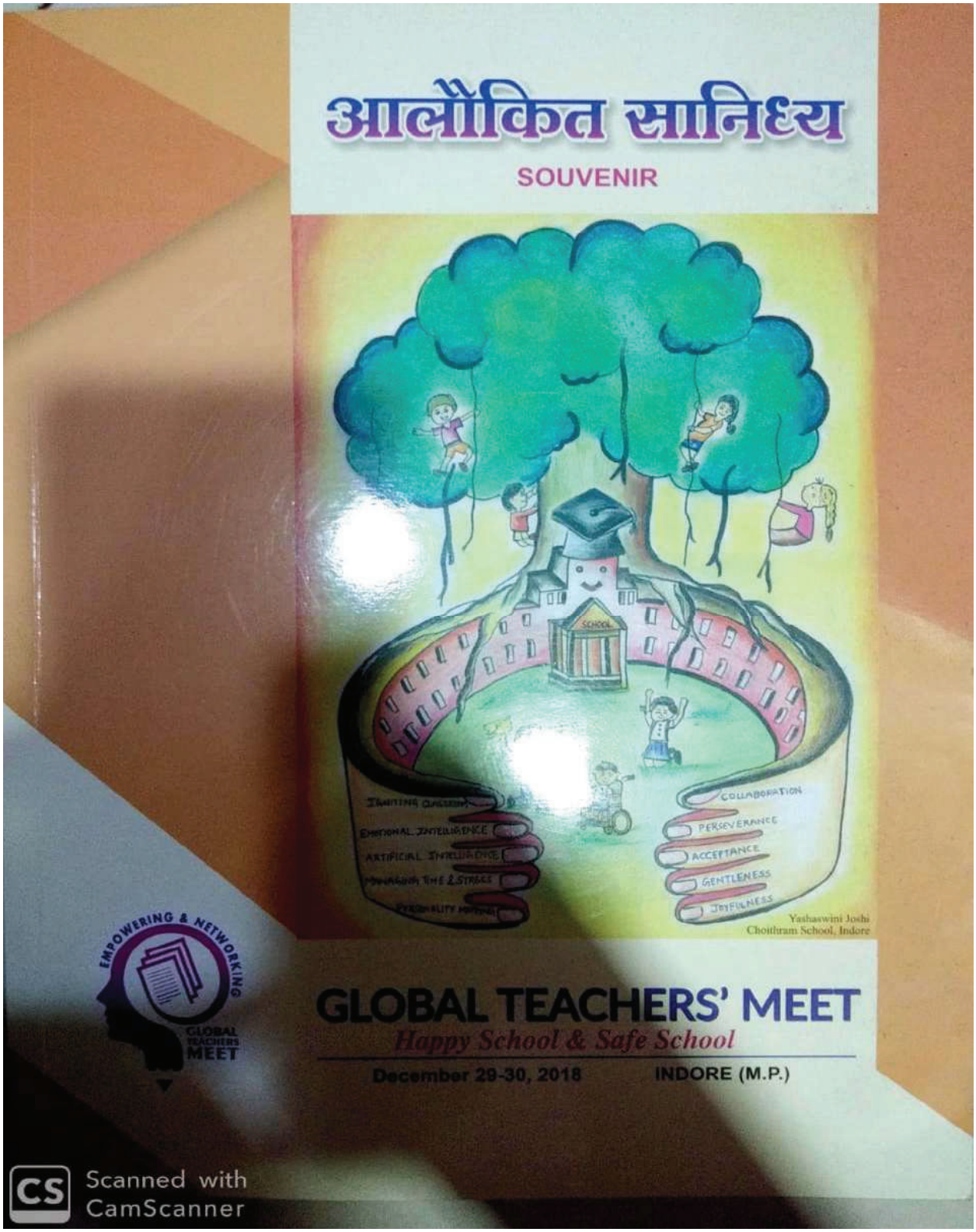
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Dear Prof. Swati Ringe,

Greetings from McGraw Hill!

This is to acknowledge your valuable contribution towards the development of our book *Programming with JAVA, 6e by E. Balagurusamy*. Your work on the development of projects mentioned below is commendable. Keeping with the style and flow of the book, your work has helped us develop a good product once again.

Description of the Contribution

1. Correction/ Addition/ Expansion of Chapters 2, 5 and 7
2. New topic on Object Oriented Programming Methodology in Java

We look forward to having a long-standing association with you and strengthening it further.

Thank you once again for your valuable time and contribution.

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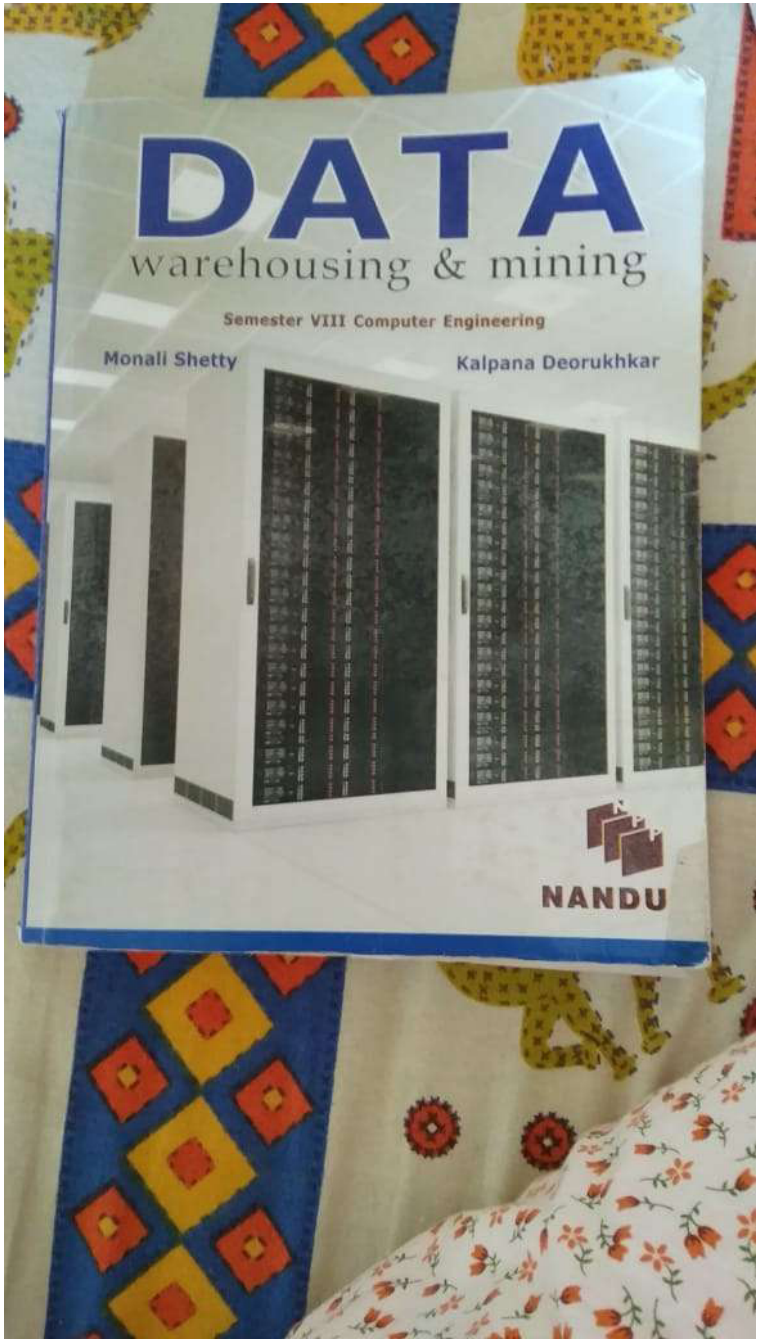
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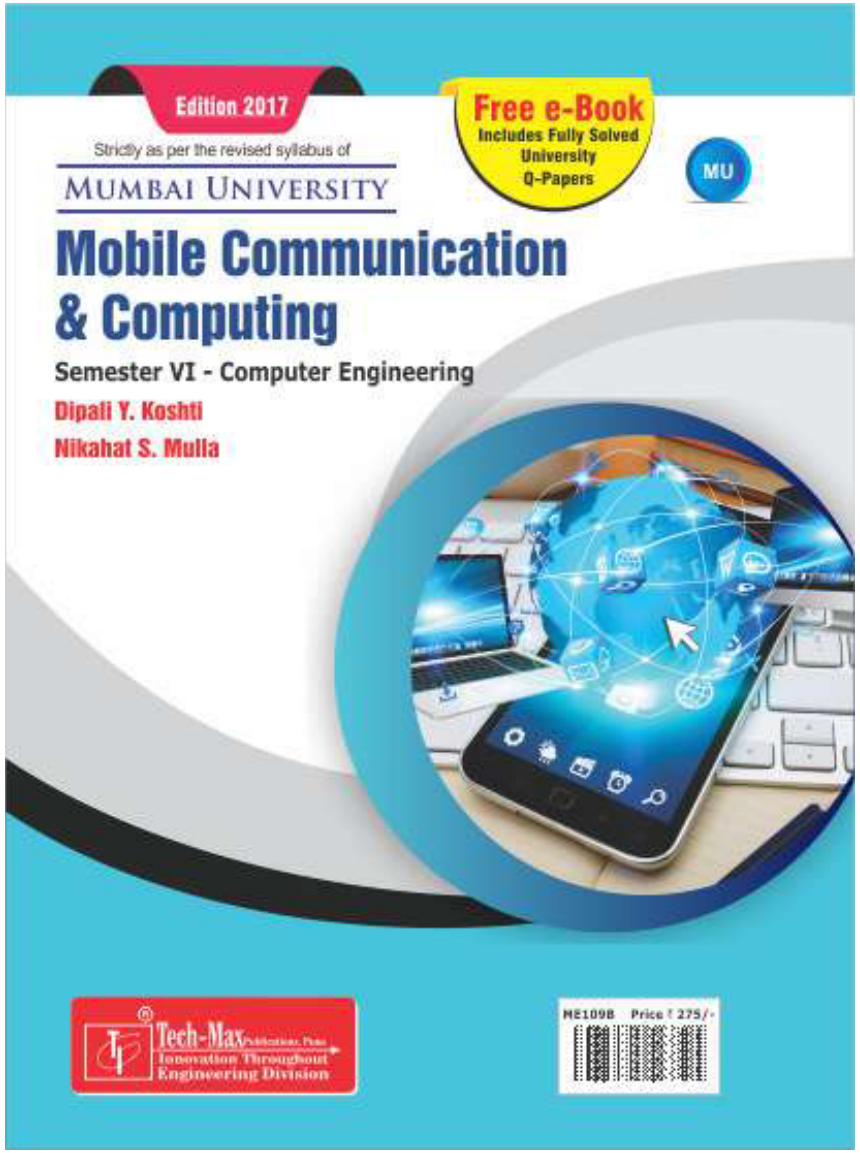
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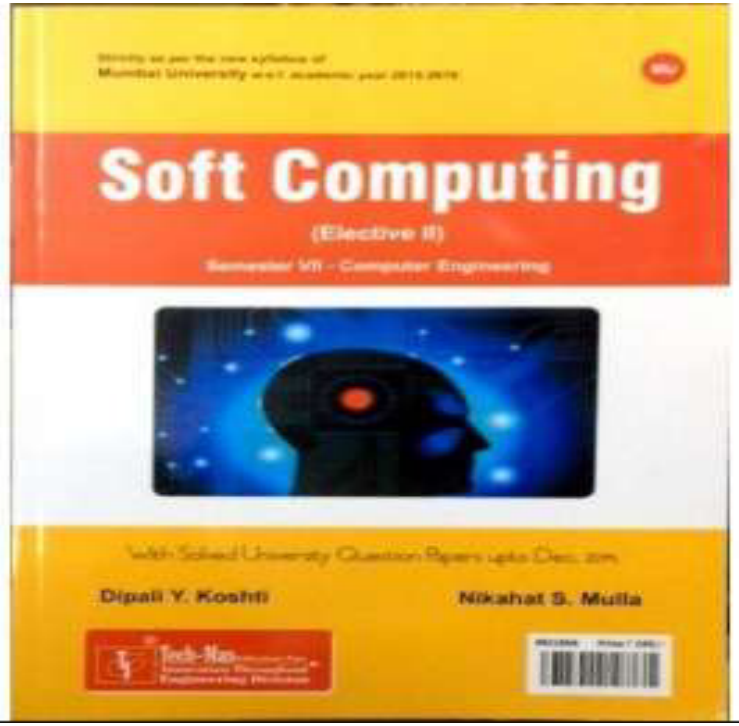
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Recent Advances in Mechanical Infrastructure pp 255–264

Finite Element Analysis of Conformal Cooling for Reduction of Cycle Time to Enhance Performance in Plastic Injection Molding Process

Deepika Singh Singraur, Bhushan T. Patil & Yogesh T. Rampariya

Conference paper | First Online: 19 October 2019

Part of the Lecture Notes in Intelligent Transportation and Infrastructure book series (LNITI)

Abstract

The use and improper placement of conventional cooling channels leads to uneven cooling of the mold surfaces, which results in defects like sink marks, warpage, and thermal residual stresses. The design variables considered for the cooling are mold and melt temperature, injection time, cooling time, cooling temperature, packing time, and packing pressure. Conformal cooling channels are used to improve the cooling system design and to reduce the defects. Temperature distribution along the mold cavity is studied in this paper. In the proposed design method, the cooling channel is produced by the design tool and the results have been compared with simulated results produced by ANSYS software. The transient thermal analysis in ANSYS workbench is performed to analyze the thermal response of rapid heating and cooling of mold to see the effects on mold heating and cooling efficiency and the cycle time of molding operation. The maximum temperature and minimum temperature were reduced by 18.78%. The analysis has been done for hot and cold runners.

Keywords

Injection molding **Temperature distribution** **Cooling efficiency** **Conformal cooling**

Recent Advances in Mechanical Infrastructure pp 25–31

Evaluation of Surface Roughness by Machine Vision Using Neural Networks Approach

Ketaki Joshi & Bhushan Patil

Conference paper | First Online: 19 October 2019

Part of the Lecture Notes in Intelligent Transportation and Infrastructure book series (LNITI)

Abstract

Surface quality of industrial components is critical from operational, ergonomics and esthetics point-of-view. Surface roughness measurement using traditional contact-type instruments may not be feasible in the industries insisting on 100% inspection and monitoring. Machine vision-based machine learning has a potential of facilitating automated inspection of manufactured components for their surface quality. The paper presents a machine vision-based machine learning approach that works on the principle of surface texture characterization by vision-based texture analysis techniques followed by supervised machine learning using multilayer feedforward artificial neural network with backpropagation for fitting the response (surface roughness) with the inputs (vision-based texture parameters). Performance of various texture analysis techniques based on the histogram, gray level co-occurrence matrix, Fourier and wavelet transform used for generating the training data and training algorithms used for training the networks are compared. The approach can be potentially used to estimate surface roughness of industrial components.

Keywords

Surface roughness **Machine vision** **Texture analysis** **Artificial neural networks**

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UNDERSTANDING SEMICONDUCTOR DEVICE GEOMETRY & CONSTRUCTION WITH 3-D MODELING

Swapnali Makdey[a], Jayen Modi[b], Dr. Deepak Bhoir[c]

[a,b]*Assistant Professor, Electronics Engineering Department, Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai - 400050, Maharashtra (Affiliated to University of Mumbai)*

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ABSTRACT

This paper introduces the teaching methodology of constructing 3-D based physical models for understanding the geometry of various semiconductor devices & its associated effects, along with its construction. By using ordinary coloured modeling clay, students constructed 3-D models of different types of semiconductor devices which primarily helped them in understanding the nuances of the device fabrication process for the subject of 'IC Technology'. They were also able to gauge & have a visual understanding of associated short-channel effects in field-effect devices. This exercise conducted during laboratory sessions helped students to understand the device constructional details.

INTRODUCTION

For subjects such as VLSI & IC Technology which are the core contents of an under-graduate electronic engineering course, the study of semiconductor devices is a must. It is imperative to fully understand the device or IC fabrication process, in which several layers are involved. The fabrication process in itself results in an extremely complex device geometry & construction, which is usually difficult for students to understand by simply looking at the plain images or figures in a reference book or on a webpage. 3-D modeling of a particular semiconductor devices helps students to understand how different types of layers are formed during the device fabrication process along with their placement in the structure [1]. Outcome achieved is a better understanding of the device construction & geometry, which in turn greatly influences knowing the device operation with a better understanding of its characteristics [2][3]. The 3-D modeling is also instrumental in understanding various short-channel effects taking place in field-effect devices since students are now in possession of a complete 360° view of the semiconductor device under consideration.

FIG 1: Students demonstrating their constructed model

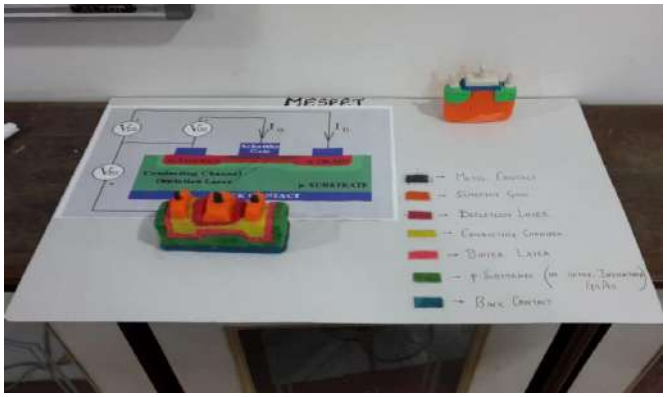

FIG 2: A 3-D model constructed of MESFET device

METHODOLOGY

The whole class was divided into several groups, with each group having minimum of 2 members & maximum of 4 members. The device models to be constructed were then made available to entire groups in open auction format, where each of them had to register for the same. Coloured modeling clay was provided to all the student groups. The group members approached the subject I/Cs for technical doubts. During the actual presentation, a reasonably good effort was seen from almost all the groups in term of creativity, team work, presentation, co-ordination & addressing questions. Rubrics for grading were based on construction, organization, addressing & presentation [3].

RESULTS & DISCUSSIONS

The outright result was a thorough understanding of the semiconductor device geometry & construction in terms of its complexity & characteristics. By using different coloured clay, students familiarized themselves with various colours used for different layers in the semiconductor fabrication process. Discussions carried out where mostly based on the device appearance after the 3-D model was constructed.

RESEARCH FINDINGS

Students were able to relate the semiconductor device shape, size & constructional characteristics with what they actually observed in the reference books. They were also able to understand processes like masking, etching, lithography etc. much better since they constructed the 3-D model in almost the same sequence [4]. Students were able to have an approximate measure about the density & doping levels of various individual p-type & n-type layers by simply observing their geometry. Other findings include improvement between students to work as a team, displaying professionalism, showing sense of responsibility & above all, sharpening their effective communication skills which all contributes to life-long learning.

CONCLUSIONS

Overall it could be concluded that the 3-D semiconductor device modeling activity for the subject of 'IC Technology' familiarized the students thoroughly with the entire layer-based fabrication process. Students also understood device geometry, construction & characteristics which was observed during the viva-voce examination. They were also able to explain some of the short-channel effects occurring in field-effect devices by simply observing 3-D nature of the device. Since it involved a fun-filled & direct participation by all the students, it was informally considered a better medium of instruction by them over the more conventional mode of assignments, quizzes & video lectures showing the IC fabrication process.

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Recent Advances in Mechanical Infrastructure pp 3–12

Experimental Performance Evaluation of Mist Cooling Using Biodegradable Coconut Oil in Turning of EN24 Steel in Minimization of Tool Wear, Surface Roughness, and Chip Thickness

Miriyala VeeraBhadraRao, Bhushan T. Patil, Vasim A. Shaikh & D. S. S. Sudhakar

Conference paper | First Online: 19 October 2019

Part of the Lecture Notes in Intelligent Transportation and Infrastructure book series (LNITI)

Abstract

Cooling and lubrication are essential factors for any machining process for reducing cutting tool tip temperatures, cutting tool forces, and increasing cutting tool life as well as work surface quality. Also, to reduce the machining coolants with better cooling and lubricity, minimum quantity lubrication is employed. Coconut oil being biodegradable is recommended in most machining processes as coolant. Comparative evaluations were drawn from data collected during turning experiments in dry, water flooding, and coconut oil mist using MQL method in view of tool wear and surface roughness of machined workpieces under study. It was found that the performance of edible biodegradable vegetable cutting fluids using coconut oil is better than dry and flood cooling. Mist method of cooling uses less quantity fluids and is comparatively safer and cleaner in applications. Through the design of experiments (DOE) and analysis of variance (ANOVA), tool wear, surface roughness, and chip thickness had a comparable reduction in values and are beneficial in machining.

Keywords

Turning **EN24 steel** **Coconut oil** **Mist cooling** **MQL**

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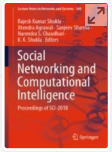

Social Networking and Computational Intelligence pp 441–453

Parametric and Nonparametric Classification for Minimizing Misclassification Errors

Sushma Nagdeote & Sujata Chiwande

Conference paper | First Online: 22 March 2020

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 100)

Abstract

Parametric classification fits the parametric model to the training data and interpolates to classify the test data, whereas nonparametric methods like regression tree and classification trees use different techniques to determine classification. The classification process can be of two types: supervised and unsupervised. In supervised classification, training data are used to design the classifier. Bayes's rule, nearest neighboring rule, and perceptron rules are few widely used supervised classification rules. For unlabeled data, the process of classification is called clustering or unsupervised classification. This paper proposes a wrapper-based approach for pattern classification to minimize the error factor. Techniques, such as Bayes's classification, *K*-NN classifier, and NN classifier, are used to classify the patterns using linearly separable, linearly nonseparable, and Gaussian sample dataset. These methods classify the data in two stages: training stage and prediction stage. In this paper, we will be using parametric and nonparametric decision-making algorithm as we know the statistical and geometric properties of the patterns under study.

Keywords

Parametric **Nonparametric** **Maximum margin hyperplane** **Soft margin** **Wrapper**

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Automatic Detection of Diabetic Retinopathy: A Review

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Abstract – Diabetic Retinopathy is an eye disease found in people having high blood sugar. It can lead to loss of vision, if it is not treated properly. There is an increase in number of patients in comparison to ophthalmologists. In this scenario there is a need for a system to aid the ophthalmologists for faster and easy diagnosis. In an automated detection of diabetic retinopathy, the images of retina obtained by fundus camera are processed to determine the features such as Microaneurysms, Haemorrhages Exudates and cotton wools. These are the signs of severity of Diabetic Retinopathy. The various stages in this process of detection include preprocessing, feature detection and classification. In this paper, various methods used by researchers for each of these steps are explored. Different fundus image databases available have been discussed. The different parameters used for evaluation of developed systems have been presented. The research work done in this field for last five years has been reviewed for this purpose.

Keywords –Retinopathy; Fundus image; Tracing algorithm; Exudates.

NOMENCLATURE

DR-Diabetic Retinopathy,

NPDR-Non Proliferative Diabetic Retinopathy,

PDR - Proliferative Diabetic Retinopathy,

CLAHE-Contrast Limited Adaptive Histogram Equilization,

BV-Blood Vessel,

OD- Optic Disc,

SVM- Support Vector Machine.

I. INTRODUCTION

Diabetes occurs when the body is either not capable of producing sufficient insulin, or has cells that cannot utilize properly the insulin which pancreas produces. First one is Type1 diabetes and the other is Type 2 diabetes. Factors responsible for the rise in diabetes are population growth, aging, obesity, urbanization, and reduced physical activity. According to the statistics from International Diabetic Federation (IDF), the number of people with diabetes over the world in 2015 was 415 million and by 2040 it will be 642 million. For South East Asia, it was 78.3 million in 2015 and will be 140.2 million in 2040. In India alone there are 69.18 million cases of diabetes [1].If proper care is not taken, diabetes will lead to complications in eye, kidney, skin, heart, foot etc. The complications in the eye can be Glaucoma, Cataracts and Diabetic Retinopathy (DR). Approximately 40% of diabetic people are affected by DR. About 10% of the DR patients have chances of completely losing the vision [2].

Retina is the light-sensitive tissue lying at the back of the eye. Diabetic Retinopathy affects the blood vessels in retina. It is the retina which converts the light it receives into signals which are sent to the brain through optic nerve. The inner side of the eye opposite to the lens forms the *fundus* of the eye. This contains Optic disc, Blood vessels, Macula and Fovea as shown in Figure 1.

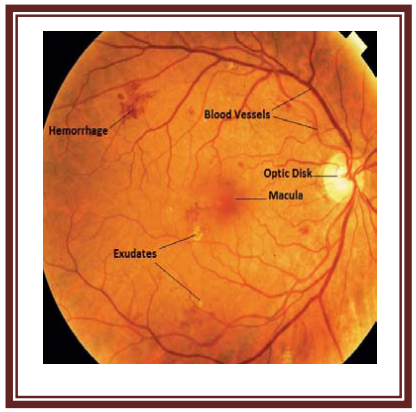

Fig.1 Fundus of eye [3]

DR occurs when the tiny blood vessels leak blood and other fluids, forming features such as microaneurysms, exudates, haemorrhages and cotton wools, distorting vision. Small bulges and tiny spots are Microaneurysms and

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Performance evaluation of different preprocessing techniques for blood vessel extraction in fundus images

Publisher: IEEE

Nandana Prabhu ; Deepak Bhoir ; Uma Rao All Authors

Abstract: Pre-processing of image deals with enhancement of the data images prior to computational processing. It helps in reducing the noise, bad contrast and uneven illumination ... **View more**

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Abstract:
Pre-processing of image deals with enhancement of the data images prior to computational processing. It helps in reducing the noise, bad contrast and uneven illumination thereby improving the quality of the image. It can thus significantly increase the reliability and efficiency of the processing techniques. Different applications need multiple pre-processing techniques. In this paper, an attempt has been made to determine the best sequence of pre-processing operations to be done for blood vessel extraction in Fundus images of retina for determination of diabetic retinopathy. The different combination of sequences is tested with a dataset of 60 images.

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Date of Conference: 01-02 December 2017

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Publisher: IEEE

Conference Location: Mumbai, India

Contents

I. Introduction

Retinal image is unique for every individual. It shows the structure of the back of the eye. A Fundus camera is focused through cornea, pupil, and lens to obtain the fundus image. The retinal photographs are used by Ophthalmologists to analyze, diagnose, and treat eye diseases.

Proceedings of the 12th INDIACom; INDIACom-2018; IEEE Conference ID: 42835
2018 5th International Conference on "Computing for Sustainable Global Development", 14th - 16th March, 2018
Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM), New Delhi (INDIA)

Template matching technique for Optic Disc localization in Fundus Image

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***Abstract*—Diabetic Retinopathy is a complication developed in the eye which can lead to serious consequences of blindness if not treated at an early stage. It is characterized by the presence of dark and bright lesions, changes in blood vessels and growth of new blood vessels. Some of these are similar in intensity to salient parts of retinal fundus image such as Optic disc, blood vessels and macula. Hence it is necessary to identify them in the image, before obtaining the indicators of the disease. In this paper, unique method with less computational cost is presented to identify the optic disc. The method is tested on images of two databases DRIVE and ROC and accuracy obtained is 93% and 94 % respectively.**

Keywords— Retinopathy, Fundus image, Microaneurysms, Exudates, Macula, Template matching, , Cross-correlation, Morphological Operations

I. INTRODUCTION

Diabetes has become prevalent in last few decades causing damage to different parts of the body such as eyes, kidneys, heart, nervous system etc. One of the effects of diabetes on eyes is Diabetic Retinopathy. The complications in the eye can be Glaucoma, Cataracts and Macula Edema. Approximately 40% of diabetic patients are affected by DR. About 10% of the DR patients have chances of completely losing the vision [1].

Retina is a very thin layer of cells present at the back of the eye and is responsible for converting light rays to electric signals which are sent to brain through optic nerve. Figure 1 shows the fundus image of retina[2]. It consists of Blood Vessels (BV), Macula, and Optic Disc (OD). The OD is the brightest region. It is a very important feature of fundus images. The macula is located at the centre of the retina and is dark in color.

DR is identified by changes in blood vessel structure, formations of new vessels, dark lesions and bright lesions. The bright lesions are Exudates and cotton wools and dark lesions are haemorrhages and Micro aneurysms. Their size, number and location are the deciding factors for severity of DR. There are mainly two types of DRs which are Non Proliferative Diabetic Retinopathy (NPDR) and Proliferative Diabetic Retinopathy (PDR). Based on the severity NPDR is further classified as mild, moderate and severe based on the severity. The common practice of diagnosing DR is by manual examination of the Fundus image of retina. The conventional

Fig.1 Fundus image of retina

method uses dilating of eye, which causes inconvenience to patient and is time consuming. Moreover it depends on expertise of the ophthalmologist. Fig1 shows the fundus image of retina with main features.

The detection of blood vessels, optic disc and macula automatically is still a challenging task in the field of biomedical image processing. Extensive research is going on for accurate detection.

OD Detection and localization: OD is circular in shape and is situated at the back of the eye. It is bright yellowish in color and 1.5mm to 2mm in diameter. There is a central depression of variable size called optic cup. OD is similar in intensity to bright lesions. The bright lesions include exudates and cotton wools. Hence it is necessary to detect and isolate OD in order to prevent false detection thereby leading to improvement in diagnosis of DR. OD is also used as a reference for detection

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Simulation of synchronous reference frame PLL for grid synchronization using Simulink

Publisher: IEEE

Furqan Shaikh ; Binsy Joseph All Authors

Abstract: The important problem in integration of grid and power converter is how to synchronize the inverter with the grid that is one is before connecting an inverter to the grid... **View more**

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Abstract:
The important problem in integration of grid and power converter is how to synchronize the inverter with the grid that is one is before connecting an inverter to the grid and other is during operation. The energy transfer between an inverter and grid is improved by proper design of synchronization techniques. The challenges associated with the design is how fast the voltage, phase angle and frequency are estimated and synchronized under ideal and non-ideal conditions. For effective estimation of above quantity, various synchronization methods have been proposed. In this paper, theory of single phase PLL is outlined and design and simulation of Synchronous Reference Frame Phase Locked Loop and the obtained simulation results for various non-ideal conditions like harmonics, voltage dip, phase jump and frequency variations are presented.

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Conference Location: Mumbai, India

Contents

I. Introduction

The raising concern of rapid depletion and increasing cost of fossil fuels, the government policies of developed and developing countries are more encouraging distributed generation (DG) systems to reducing greenhouse gas emission [3]. Especially, those DG's are considered which are based on renewable energy sources such as hydro, wind turbines and photo-voltaic (PV) plants. If grid-connected renewable systems are compared with off-grid configurations, grid-connected systems are more effective due to

Reduced power consumption in wireless sensor networks using queue based approach

Publisher: IEEE

Sanjeev Ghosh ; Srija Unnikrishnan All Authors

Abstract: Technological advancements in low power integrated circuits and wireless communications have made it possible to use efficient, low cost, low power small devices in remot... **View more**

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Abstract:
Technological advancements in low power integrated circuits and wireless communications have made it possible to use efficient, low cost, low power small devices in remote sensing applications. This has led to the feasibility of using a network of sensors to be used for the collection, processing, analysis and distribution of important information, collected in a wide variety of environments. Sensor nodes in a wireless sensor network transmit data in single or multi-hop to a central node called the base station. A very important issue in wireless sensor networks is the scarcity of power and hence optimal use of available power is of prime importance. It is seen that in any sensor node, switching from idle to busy state and vice versa takes up a major portion of the power. We study and analyze a technique that aims to reduce the number of these in order to reduce the consumption of power. In this technique the radio of the sensor node is switched on only when the number of packets in a queue exceed a certain threshold as opposed to the general tendency of transmitting a packet as soon as it is available for transmission. We analyze the performance of this system with respect to the power consumption. The simulations performed show that the simulation results are close to the theoretical results thus indicating the validity of the technique studied.

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A modified block code using controllability of linear system

Publisher: IEEE

Seema Talmale ; Srija Unnikrishnan ; B.K. Lande All Authors

Abstract: This article focuses on developing the connection between the solution of Discrete Time State Equation and error correcting codes. A modified block code is proposed from ... **View more**

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Abstract:
This article focuses on developing the connection between the solution of Discrete Time State Equation and error correcting codes. A modified block code is proposed from the solution of Discrete time state equation. We also established that for such a generated code, multiple errors can be corrected. The key idea behind generating such a code is dependent on the well-known theory that it is always possible to steer the initial state of the system to the origin at the nth instant of sampling.

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I. Introduction

Error correcting codes have been in vogue for several years and have found potential applications in many Communication scenarios, for example, Cellular, Satellite, Military etc. With severe fading and expectations of good error free reception, higher order codes are the need of the day. According to Shannon's hypothesis on coding theory, low error probability can be accomplished as long as the information transferred through the channel is at a rate less than the channel capacity, C. This theorem proved the significance of channel coding schemes.

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Model for vertical handover decision in vehicular networks

Publisher: IEEE

Siddharth Goutam ; Srija Unnikrishnan ; Aradhana Goutam All Authors

Abstract: With financial, business and personal transactions shifting to the mobile domain, Mobile Computing and Wireless Communication technologies are on focus. One of the major ... **View more**

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Abstract:
With financial, business and personal transactions shifting to the mobile domain, Mobile Computing and Wireless Communication technologies are on focus. One of the major challenge is to provide best connectivity across heterogeneous networks, in fast moving vehicles, without knowledge and disturbance to the user. An Intelligent system is required for seamless vertical handover, with less battery consumption and with best connectivity. The Vertical Handover process can be optimized for different criteria like cost, bandwidth, signal strength etc. This paper aims to develop a best solution framework for VHO in vehicular networks where OMNeT++ (Objective Modular Network Testbed in C++) can be used for evaluating and testing along with Veins (Vehicles in Network Simulation) software for the simulation of Inter-Vehicular Communication (IVC) framework, which is composed of an event-based network simulator and a road traffic micro simulation model.

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I. Introduction

Mobile Wireless technology is one of the most popular technologies in recent era. The evolution of fourth Generation i.e. 4G in telecommunication has changed the customer expectations and requirements. It requires higher data rate, high bandwidth, and low latency. Vertical handover is essential for smooth switching of communication between different types of technologies in 4G network.

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Modeling and simulation of MIMO-OFDM systems with classical and Bayesian channel estimation

Publisher: IEEE

Ami Munshi ; Srija Unnikrishnan All Authors

Abstract: In this paper, we have modeled, simulated, analyzed and compared the performance of variants of MIMO OFDM systems under Classical channel estimation scenario and Bayesian... **View more**

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Abstract:

In this paper, we have modeled, simulated, analyzed and compared the performance of variants of MIMO OFDM systems under Classical channel estimation scenario and Bayesian channel estimation scenario. We observe that performance of MIMO system under Bayesian channel estimation scenario is slightly better than the Classical channel estimation over a range of signal to noise ratio. However, we observe that the performance of SISO system is the same under both the channel estimation set up.

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Contents

I. Introduction

The requirement for high data rate, reduced delay time, less multipath propagation, reduced bit error rate, improved voice and picture quality is increasing exponentially. To cater such demands, multicarrier systems such as Orthogonal Frequency Division Multiplexing (OFDM), Multiple Input Multiple Output (MIMO), Code Division Multiple Access (CDMA), etc. have emerged. When the information signal from the transmitter reaches the receiver, it undergoes distortion due to influence of noise and the medium through which it travels. The information signal at the receiver can be detected more accurately if the channel characteristics are known. If the channel is unknown then it has to be estimated at the receiver before the detection process. Many channel estimation

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Silhouette based human fall detection using multimodal classifiers for content based video retrieval systems

Publisher: IEEE

B. S. Daga ; A. A. Ghatol ; V. M. Thakare All Authors

Abstract: Automatic human fall detections are proving the need of time in emergency situations for elderly persons falling on the floor injuring them, sometimes with bone fracture ... **View more**

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Abstract:
Automatic human fall detections are proving the need of time in emergency situations for elderly persons falling on the floor injuring them, sometimes with bone fracture or more severely at times being alone while performing their daily activities. Recent advancement in image processing and therein activity identification is seeing rising trend of research. Present paper aims at putting forward a fall detection system which uses human silhouettes, as processed from depth cue based on camera footages, to extract curvature scale space (CSS) features. Human actions thus finally rendered into CSS are classified with the help of standard machine learning classifier techniques such as support vector machine (SVM) and extreme learning machine (ELM). Moreover, the paper distinctively puts forward the benefit of augmented ELM classifier with help of sparse representation for image frame classification (SRC) technique. The system had been tested with standard dataset as established in literature for human action classification. The results presented in form of confusion matrix comprising of detecting semantic activities like walking, idle sitting, standing and falling demonstrate that the developed system has an edge in terms of higher accuracy compared to similar state of the art methods as reported in literature.

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Publisher: IEEE

Conference Location: Kerala, India

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An IOT Based Smart Cubicle System for Effective Power Usage and Employee Monitoring in Offices

Publisher: IEEE

Slavvy Coelho ; Ruchita Rozario ; Rohit Sharma ; Mahendra Mehra All Authors

Abstract: In today's world of rapid changes in technology and new inventions and updates being implemented every second, human beings while running for the bigger concerns are negl... **View more**

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Abstract:
In today's world of rapid changes in technology and new inventions and updates being implemented every second, human beings while running for the bigger concerns are neglecting the trivial aspects which may cause them a fortune if such profligate use is continued. One such example is the reckless usage of electricity. In this paper, we present a Smart Lighting System which aims at curbing this problem using IOT. Internet of Things has captured this era of computing technology. It is made up of advanced technology components that have the ability to transmit, analyze and interpret information and function in accordance to the human behavioral inputs. Here we propose an energy efficient system for lighting up a room based on the occupancy of the room and the intensity of the light using PIR sensors and other components such as LDR and Raspberry Pi. The lighting system of the room is based on a grid format and when a person is in the vicinity or the range of a particular bulb, only then will it be lit. The introduction of Raspberry Pi in the model will also allow monitoring of employee work-patterns. Our proposed system will eliminate the human errors such as leaving the buttons on due to negligence. The advent of such a system will conserve energy, enhance customer service and aid economic development.

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Modeling resource constrained solo applications using logistic growth model

Publisher: IEEE

Preeti. N. Jain ; Sunil. K. Surve All Authors

Abstract: In any system when the resources are limited they need to be utilized efficiently. In the present work the multi-core system is considered to be running solo applications... **View more**

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Abstract:
In any system when the resources are limited they need to be utilized efficiently. In the present work the multi-core system is considered to be running solo applications and uses limited resources. The analysis considers the impact of consumption of two resources viz LLC and main memory bandwidth on multi-core systems. A logistic model is presented and validated for characterizing various SPEC 2006CPU applications using sniper simulator on the basis of their resource utilization. We support the work with statistical approach to distinguish applications following such a logistic model. Under certain conditions, the multi-core model provides a good approximation to the analysis predicted by the logistic model.

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Conference Location: Mumbai, India

Contents

I. Introduction

Resources when limited need to be utilized efficiently between entities sharing them, failing to which leads to deterioration in performance. Contention due to sharing of limited resources is studied in various domains. Multi-core systems also use various limited resources like the last level cache (L2 or L3), the memory bus or interconnects, DRAM and pre-fetchers [1]–[4] which are also shared between various cores. Measuring the impact on performance due to the effect of different limited resources is challenging. Many researchers studied contention in multi-core systems and have also proposed different solutions like scheduling

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Using GRBL-Arduino-based controller to run a two-axis computerized numerical control machine

Publisher: IEEE

Sakib Shaukat Sarguroh ; Arun Bhiva Rane All Authors

Abstract: The proprietary control of CNC machines results in the inability to control and enhance inputs because the program codes cannot be modified owing to their distribution by... **View more**

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Abstract:
The proprietary control of CNC machines results in the inability to control and enhance inputs because the program codes cannot be modified owing to their distribution by vendors in the compiled form. In this paper, we present a method to utilize a GRBL-Arduino based controller to run a simple two-axis computerized numerical control (CNC) machine. We obtained drawing file by converting a JPG or PNG image of a hexagon or a circle into a drawing file using the software application Img2CAD. Two-dimensional manufacturing was carried out on the obtained drawing file to generate the G-code file by the CAD/CAM software application UG NX. The G-code file generated is given as input to the GRBL-Arduino based controller using the Java-based Windows application Universal GcodeSender (UGS). UGS is linked to the Arduino Uno and GRBL shield V5 hardware via a serial communication port. Before executing the G-code program, the circle or hexagon to be drawn can be visualized using G-code visualizer option in UGS. G-code program was executed through UGS to run two 2.6 kg-cm stepper motors for motion along x and y-axis direction via drivers incorporated on the GRBL-Arduino controller. These stepper motors were part of a simple two-axis CNC machine comprising aluminum angle brackets, chromed chords, linear motion bearings, a timing belt, and a timing pulley. Stepper motors cause motion of the mentioned mechanical components to draw desired image of circle or hexagon. This work can be extended to develop a three-axis CNC machine by utilizing the third inbuilt stepper driver of the GRBL shield V5; in this study, we used only two of the three inbuilt stepper drivers for the stepper motors. Using the third driver will facilitate the use of a third axis so that the machine can function as a milling machine. Hardware for the third axis must be developed to incorporate a z-axis motor.

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FPGA based RF Signal Generation for MRI Systems

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***Abstract*—RF signal generation is an essential part of magnetic resonance imaging (MRI) system. Many commercial MRI systems are now available. However, they are usually expensive and complex. This paper presents a digital RF transmitter which enables signal modulation in a Magnetic Resonance Imaging (MRI) system. Radio frequency (RF) pulse is generated with the High speed DAC. In this paper, RF generation is done using Zynq board XC7Z020 and further the ZC702 board is interfaced with DAC (Digital to Analog Converter) (AD9122) using SPI (Serial Peripheral Interface) protocol through ACE(Analysis Control Evaluation) software and analog signal is achieved at the output of the DAC board. Compared to the conventional design, by combining field programmable gate array (FPGA) and digital signal processing (DSP) technique the MRI system is built in a digital manner with high performance and accuracy. The system consists of comparatively low expensive and highly-integrated components which make it low-cost and compact. The RF transmitter has been successfully designed and demonstrated by the experimental result.**

Keywords—ACE (Analysis Control Evaluation), accuracy, compact, DAC (Digital to Analog Converter), DSP (Digital Signal Processing), FPGA (Field Programmable Gate Array), highly-integrated, high performance, low-cost, low expensive, MRI (Magnetic Resonance Imaging), pulse sequence decoding, RF (Radio Frequency), RF pulse, RF transmitter, signal modulation, SPI (Serial Peripheral Interface), Zynq

I. INTRODUCTION

Magnetic resonance imaging (MRI) is a biomedical technique that uses the body's natural magnetic properties to produce detailed images from any part of the body. For imaging purposes the hydrogen nucleus is mainly used as it is found in abundance in water and fat.[3] The hydrogen proton can be found in similar to the planet earth, which spins on its axis, with a direction in accordance to north-south pole. In this manner it behaves like a small bar magnet.[3] Under normal circumstances, these hydrogen protons spin in the human body with their axes randomly aligned. When the body is placed in a strong magnetic field, as in case of a MRI scanner, the hydrogen proton's axes align themselves in a straight line.[3] Thus a magnetic vector oriented along the axis of the MRI scanner is created by the uniform alignment of hydrogen protons. MRI scanners are available today in different field strengths, usually between 0.5 and 10 tesla. When additional energy (in the form of a radio frequency wave) is added to the magnetic field, the magnetic vector is deflected.[3] The radio wave frequency (RF) that is dependent on the element sought (hydrogen) and the strength of the magnetic field is the reason that causes the hydrogen nuclei to resonate. The strength of the magnetic field can be varied in an electronic manner starting from head to toe using a series of gradient electric radio frequency coils, and thus different slices of the body will resonate as different frequencies are applied by altering the local magnetic field by these small increments.[3] When the radiofrequency source is switched off the magnetic vector returns to its original rest state, and this causes a signal, in this case a radiofrequency wave to be emitted. It is this signal which is used to create the MR images.[1] Receiver coils are used to act as aerials around the body part to improve the detection of the emitted signal. Thus the cross sectional images are built up by plotting the intensity of the received signal on a grey scale plot.[2] Multiple transmitted radiofrequency pulses can be used in sequence to emphasise particular tissues or abnormalities present in the human body.[2] As different tissues relax at different rates when the transmitted radiofrequency pulse is switched off, different emphasis occurs. Thus time taken for the hydrogen protons to fully relax and attain its original state is measured in two ways. The first is the time taken for the magnetic vector to return to its resting state and the second is the time required for the axial spin of the proton to return to its resting state.[6] The first is called as the T1 relaxation time and the second is called as the T2

International Conference on ISMAC in Computational Vision and Bio-Engineering

ISMAC 2018: **Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)** pp 603–613

An ANN-Based Detection of Obstructive Sleep Apnea from Simultaneous ECG and SpO_2 Recordings

Meghna Punjabi & Sapna Prabhu

Conference paper | First Online: 02 January 2019

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

Abstract

Obstructive sleep apnea (OSA) is one of the most common sleep disorders characterized by a disruption of breathing during sleep. This disease, though common, goes undiagnosed in most cases because of the inconvenience, cost, and/or unavailability of opting for polysomnography (PSG) and a sleep analyst. Many researchers are working on devising an unsupervised, cost-effective, and convenient OSA detection methods which will aid the timely diagnosis of this sleep disorder. Commonly used signals to detect OSA are ECG, EEG, pulse oximetry (SpO_2), blood oxygen saturation (SaO_2), and heart rate variability (HRV). In this work, an attempt to detect the OSA using simultaneously acquired ECG and SpO_2 signals has been presented. Various features from the RR intervals of ECG, and a couple of features—namely, CT90 and delta index—from the SpO_2, were extracted as indicators of OSA. The features were then fed to a trained artificial neural network (ANN) which classified the signals as OSA positive or OSA negative. The proposed technique boasts a very high accuracy of 98.3%, which is superior to other competing techniques reported so far.

Keywords

Sleep apnea **ECG** **SpO_2** **Machine learning** **ANN**

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Analysis of S-4180 using computational fluid dynamics

Publisher: IEEE

Vidhiksha Patel ; Dipali Bhise ; Johney Xavier ; Bharat Kumavat ; Rakesh Lode ; Karthik Pavaskar ; Divya Ramachandran All Authors

Abstract: Computational fluid dynamics is Virtual method of scientific and engineering investigation, concerned with the development and application of a video-camera like tool — a... **View more**

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Abstract:
Computational fluid dynamics is Virtual method of scientific and engineering investigation, concerned with the development and application of a video-camera like tool — a software — which is used to analyze a fluid dynamics as well as heat and mass transfer problem in a unified way. Here, the software is like a virtual video-camera and result in movie where each picture gives a fluid dynamics information, i.e., flow properties. The main objective of this paper is to use Computational Fluid Dynamic method for the analysis of two dimensional characteristics of airfoil s-4180 of Seligg. The coefficient of lift (Cl) and drag (CD) of s-4180 airfoil were successfully measured at an angle of attack 00–30 using CFD.

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