International Conference on Trends in Engineering, Applied Sciences & Management

St. John College of Engineering & Management

IC-TEAM

IEEE BOMBAY SECTION

CONFERENCE PROCEEDINGS

2022

In Association with -

SAMRIDDHI

A Journal of Physical Sciences, Engineering and Technology

Journal of Engineering, Project, and Production Management (EPPM-Journal)

EPPM

Journal of Algebraic Statistics

Jalg Jstat

CONFERENCE BOOK OF ABSTRACT PROCEEDINGS

Organized By-

ST. JOHN COLLEGE OF ENGINEERING AND MANAGEMENT

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Book of Abstracts Proceedings

2022 International Conference on Trends in Engineering, Applied Sciences and Management

SJCEM, Palghar
Maharashtra, India.
08th- 09th April 2022

Website: https://www.ic-team.co.in
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2022 International Conference on Trends in Engineering, Applied Sciences and Management

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2022 International Conference on Trends in Engineering, Applied Sciences and Management

Venue:

St. John College of Engineering and Management, Palghar, Maharashtra, India

Conference Theme:

Trends in Engineering, Applied Sciences and Management

Scope & Objectives:

- To promote and unite leading academicians, industrialists, researchers and research scholars to trade and share their research results and expertise about recent developments and trends of all aspects of Engineering, Technology, Applied Sciences and Management.

- To promote interdisciplinary discussion between Plenary Speakers, Keynote Speakers, Lecturers and Industrial Personnel to weave through most recent research results, ideas, advancements and applications in emerging trends.

Call for Papers:

IC-TEAM-2022 has the goal of a broad technical program. Relevant topics for the conference include, but are not limited to, the following tracks:

Track 1: ICT (Information and Communication Technology)

Cloud Computing, Internet of Things (IOT), Machine Learning, Computer Networks, Soft Computing, Machine Learning Algorithms, Digital Image Processing, Advance Databases, Data Mining and Big Data, Software Engineering and Quality, Cyber Security, Sentiment Analysis, AR/VR/MR, Cryptography, GIS, Computer Vision, Artificial Intelligence.

Track 2: CE (Civil Engineering)

Intelligent Transport systems, Sustainable Development in Environmental Engineering, Ground improvement techniques, Sustainable construction materials, Construction technology and management, Water resource engineering, Geoinformatics applications, Retrofitting and valuation, Quality and Safety Management in Civil Engineering, Structural Engineering Analysis, Bio-inspired engineering materials, Structural optimization by using advanced tools, Architect design and planning, Application of 3D printing in Civil Engineering.

Track 3: E & EC (Electrical, Electronics & Communication)

VLSI and Embedded System, Wireless Communication and Networking, Signal Process and Applications, RF Circuit Design, Sensor Technology, Artificial Intelligence and Robotics, IOT and Automation, Computational Control System, Recent Trends in Electronics and Communication

Core Organizing Committee:

Dr. Eknath Patil
(Registration Chair)
Assistant Professor - Humanities & Applied Sciences (SJCEM)

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(Review Chair)
HOD - ExTC Engineering
(SJCEM)

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Assistant Professor - Mechanical Engineering
(SJCEM)

Mr. Vivian Lobo
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(SJCEM)

Track 4: ME (Mechanical)

Design Engineering, Thermal Engineering, Manufacturing Engineering, Material Science and Nanomaterials, Mathematical Formulation and Modelling, Computer Aided Modelling, Experimental Analysis, Finite Element Analysis, Applied Mechanics, Automotive Engineering, Computer Aided Manufacturing, Composite and Smart Materials, Thermal Engineering, Heat and Mass Transfer, Industrial and Systems Engineering, Machinery and Machine Design, Manufacturing and Production Processes, Material Science and Processing, Composite Materials, Robotic Automation and Control, Solid Mechanics, System Dynamics and Simulation, Mechanical Power Engineering, Computational Fluid Dynamics, Fluid Mechanics and Machinery, Additive Manufacturing, Supply Chain Management, Functionally Graded Materials, Mechanics of Biological Materials, Nanomaterials and Alloys, Nano and Microscale Engineering, Nanocomposites, Smart Materials

Track 5 : AHSE (Applied Sciences, Humanities, Social Sciences and Education)

Physics, Chemistry, Mathematics, Applied Mathematics, Pure Mathematics, Sociology, Psychology, Political Science, Religion & Philosophy, Language & Literature, Law, Justice & Human Rights, History, Art, Music & Design, Communication & Media, Education, E-Learning, Special Education, Emerging trends in Education, Remote Sensing in Geography, Innovations in Mathematics & Statistics

Track 6: BMA
(Business, Management & Accounting)

Operations Management, Project Management, Economics, Business Models for Economic Growth, Management & Leadership, Forensic & Financial Accounting, Knowledge Economy, Marketing & Digital Marketing, Actuarial Science, Human Resource Management, Transport & Logistics, Travel & Tourism.

Vice Chancellors Message

It gives me immense pleasure to welcome you all for IC-TEAM 2022. Research is a never-ending process, which makes us think and rethink about updating skills, products, services, and technology. It allows contributing to the developmental change in society. The research and development department of every organization is a symbol of progress and sustainable development. Hence, IC-TEAM 2022 provides an incomparable platform for intellectual exchanges and mobilizing the planning, execution, and monitoring of scientific inquiry and action in the fields of Engineering and Management. Every enlightening Institute desires to implement an effective Teaching-Learning program.

At SJCEM, there is deep integration of social responsibilities with the need of understanding highly developed technologies and encourage ethical reasoning into learning agenda in a holistic manner. Better understanding of students especially about their motivation which kindles their interest, aptitude, engineering principles, concepts, values, and knowledge to build student centric education, process and approaches for enhanced understanding are our great objectives to bring out great minds. I congratulate all the participants and delegates and assure SJCEM will provide the best academic ambiance, hospitality, and state-of-the-art infrastructural facilities. I wish your deliberations all success!

Dr. Suhas Pednekar
Vice Chancellor - University of Mumbai

Chairman's Message

Research, innovation and invention plays a crucial role to get a competitive edge for learners in the era of rapid technical and scientific advancement. In recent times there has been a surge in the usage of the internet and the demand for high-speed access to video and data. St. John College of Engineering and Management (SJCEM) is a premier Technical Institute that imparts quality technical education in all major disciplines of Engineering and Management. The Institute has associations with various national organizations and integrated National Education Policy in its curriculum to provide holistic multidisciplinary education with an emphasis on extra-curricular activities for all round development of students.

The world-class infrastructure and equipment combined with a galaxy of competent, talented and dedicated faculties contribute to an impactful learning experience that is at par with global standards. The Institute strives to cultivate a field in which new ideas, research and scholarship flourish leading to the emergence of creators, innovators, leaders, and entrepreneurs. SJCEM has a tradition of organising many events like seminars, conferences, workshops and symposiums for intellectual pursuit. One of the intellectual feasts is IC-TEAM 2022. It is the platform to deliberate and discuss the recent trends in Science and Technology to critique the problems and solutions in these spheres. Keeping this perspective in mind, the International Conference is a colossal platform for the dissemination of knowledge, innovations, unique concepts and collaboration. I believe young researchers deserve such opportunities in their respective fields. I wish everyone a successful, safe, and fruitful conference ahead.

Mr. Albert W. D'Souza,
Chairman - Aldel Education Trust

Principal's Message

At the outset, I wish to Congratulate the team of SJCEM for organizing the conference IC-TEAM 2022. The wide spectrum of topics taken up for the Conference tracks under the domains of Engineering and Management as well as Technical Education has generated a remarkable response providing a complete 360-degree view of Research in the emerging areas. The insightful sessions and deliberations witnessed by the participants shall be an enrichment that shall continue to nourish the minds, towards culture of Innovation and Research.

Dr. G. V. Mulgund
Principal
SJCEM, Palghar

Conference Organizing Chair's Message

A very warm welcome to all the participants at IC-TEAM 2022. St. John College of Engineering and Management, a premier Technical Institute has been always proactive to impart holistic education to its budding engineers with multidisciplinary curriculum emphasising extra-curricular and co-curricular activities. Excellence in any work can be achieved with utmost dedication, hard work, and perseverance for lifelong learning. We, at SJCEM, have made this dictum our motto and our way of life in every single activity in the campus contributes to nurture the young minds. The holistic multidisciplinary education of SJCEM is aptly aligned with the National Education Policy 2020 objective of research and development which emphasises research and innovation through start-up incubation centres, technology development centres, greater industry academic linkages and inter-disciplinary research including humanities and social science.

The platform initiated by SJCEM in the form of IC-TEAM 2022 will provide an opportunity for long-term research planning for a sustainable future and better investment in research and education to speed the transformation from a resource-based to a knowledge-based society. I congratulate all the participants and delegates and assure you that SJCEM will provide the best academic ambiance in the form exchange of ideas, points of view, inventions, and innovations through this virtual conference.

Dr. Nilesh Deotale
HoD - Computer Engineering
SJCEM - Palghar.

It is my pleasure to welcome you all to IC-TEAM 2022 conducted by SJCEM Palghar. Research is a never-ending process, which makes us think and rethink about the updating skills, product, services, and technology. It gives us an opportunity to contribute to the developmental change in society. The research and development department of every organization is a symbol of progress and sustainable development. SJCEM provides an incomparable platform for intellectual exchanges and mobilizing the planning, execution, and monitoring of scientific inquiry and action in the fields of Engineering and Management. This program fascinates many academic and industrial people to discuss and share their ideas on various topics that cover well-established research agendas as well as emerging issues in the technology at large. I congratulate all the participants and delegates and assure you that SJCEM will provide the best academic ambiance to deliberate on research in the first of its virtual conferences. I hope that the researchers and authors will contribute their valuable views and research work.

Dr. Kishor Rambhad
HoD - Mechanical Engineering
SJCEM - Palghar.

Message from Committee Members for International Advisory Body of IC-TEAM-2022

The technology used in various fields of science and engineering is advancing at a tremendous pace every passing day. There has been a surge in the usage of internet and the speed of technology transfer is at its fastest we have witnessed. Keeping this perspective in mind, the International Conference being organized by St. John College of Engineering and Management is a colossal platform for dissemination of knowledge, innovations, unique concepts and collaboration. I opine those young researchers deserve such opportunities in the related field and we trust that you can make it happen.

Best wishes.
Dr. Mehmet Serkan Kırgız
Professor
Istanbul Sabahattin Zaim University - Turkey

Greetings,

I feel honored to be a part of this conference as a member of the Committee. The International Conference being organized by St. John College of Engineering and Management is a great initiative which will offer great opportunities for young researchers. The goal is to bring together, a multi-disciplinary group of academicians from all over the world to present and exchange break-through ideas relating to their respective fields. It promotes top level research and globalizes the quality research in general. I wish you all the best for your endeavours.

Thanks.
Dr. Valentina Emilia Balas
Director of Department of International Relations
University of Arad - Romania

Hello,

The world of research and development is booming in these times of advanced technology. I believe it is due to this sharing and imparting of the knowledge that has brought the world to globalization of the established knowledge. Hence, we should encourage programs and conferences such as this to contribute towards science and technology, and society as a whole. It is my pleasure to invite all the great scientists, academicians, young researchers, and students from all over the world to attend the International Conference to be held by St. John College of Engineering and Management. The Conference program will be both exciting and ground-breaking in its wide ranging and multidisciplinary content.

Best wishes.
Ms. Jennifer S. Rumao
Assistant Vice President,
Credit Suisse Business Analytics,
India.

Greetings,

The "International Conference on Trends in Engineering, Applied Sciences and Management (IC-TEAM 2022)" is an excellent initiative undertaken by St. John College of Engineering and Management to lead on the culture of new discoveries and designs that will bring innovative changes throughout the world. I certainly believe that the conference would help the participants to assimilate the latest industry trends, appreciate and understand their relevance in today's world and thus, position them to bring forth new ideas fueling growth at the international level.
With best wishes to all the team members and participants of the conference!

Ms. Aruna Kumari,
General Manager,
Reliance Industries Ltd.
India.

Greetings,

The conference is an international platform for sharing and reviewing new perspectives in the areas of Science and Technology with transforming context. It gives me immense pleasure to know that St. John College of Engineering and Management is organizing International Conference on "Trends in Engineering, Applied Sciences and Management (IC-TEAM 2022)". I believe IC-TEAM 2022 is going to be the conference to provide opportunities for professionals, researchers and students around the globe to share and express their views on the recent scientific and technological developments. I am sure that the interaction among participants and internationally renowned counterparts will go a long way in knowledge sharing to help industry, society to grow and compete globally.
My best wishes to all the team members and participants of the conference.

Mr. Amit Arora
CEO - Sharekhan by BNP PARIBAS.
India.

Greetings,

The current trend is of digitization has led to the creation of new roles, varied types of organizations, and modern sectors of the present economy. I firmly believe that the "International Conference on Trends in Engineering, Applied Sciences and Management" IC-TEAM 2022 is going to be the conference to provide opportunities for professionals, researchers and students across the world to share and express their views on the current trends. By reasonable assumption, I opine that St. John College of Engineering and Management will surely be one of those academic institutes committed to building a better research-oriented world for all. The conference "IC-TEAM-2022" will work as a catalyst for the same.
I wish all the best to the organizing team and their sincere endeavours!

Mr. Gopalrao Amudalapally,
Head - Risk & Commercial Claims,
Reliance General Insurance Co Ltd., - India.

Dear All,

It is my pleasure to interact with great scientists, academicians, young researchers, business delegates and students across the world to attend the International Conference on Trends in Engineering, Applied Sciences and Management (IC-TEAM). IC-TEAM conference shares an insight into the recent research and cutting-edge technologies which gains immense interest with the colossal and exuberant presence of adepts, young and brilliant researchers, business delegates, students, and galaxy of intellectuals. The pivotal objective of the present IC-TEAM conference is to bring together, a multi-disciplinary group of scientists from all over the world to present and exchange path-breaking ideas related to research. It promotes top level research and to globalize the quality research in general. Thus, it makes discussions, presentations more internationally competitive and focuses the attention on the recent outstanding achievements in the field of Engineering, Applied Sciences and Management. I look forward to an excellent meeting with great scientists from different countries around the world and sharing new and exciting research.
With best wishes!

Mr. Vinod Gautam,
Senior Technology Architect,
Cognizant Technology Solutions - India.

Greetings,

It is an honour for me to be a part of the 1st International Conference on Trends in Engineering, Applied Sciences, and Management; which will be hosted at SJCEM - Palghar. The present international conference to be organized by SJCEM is a great initiative which offers several opportunities to young minds, students, budding researchers, scholars, scientists and academicians for professional development. I express gratitude to the organizing team for their sincere efforts. I wish all the best for a grand success of the said conference.
With best regards!

Dr. Pratap Sonavane
Dy. Director
Walchand College of Engineering - India

Greetings,

I feel honoured to be a part of this conference as a member of the International Advisory Committee. The International Conference organized by St. John College of Engineering and Management is a great initiative which offers great opportunities for young researchers, professionals, students and all participants. The prime objective of the IC-TEAM conference is to bring together, budding researchers, academicians, across the world to present and interact break-through ideas relating to the research areas. I hope it will lead to top level research and quality research in general. Thus, it will enhance discussions, presentations globally competitive and focus the attention on the recent outstanding achievements in the sphere of Engineering, Applied Sciences and Management. I wish you all the best for your endeavours.

Mr. Yogesh Pansambal
Sr. Manager,
Reliance Industries Ltd.,
India.

Warm greetings to everyone!

I am very delighted to congratulate and appreciate the St. John College of Engineering and Management Palghar Maharashtra in organizing the International Conference on Trends in Engineering, Applied Sciences and Management (IC-TEAM) on April 08th-09th, 2022. I hope this conference will be informative, memorable, and productive for participants and look forward for some constructive technological innovations that result from your networking and discussions. I also opine that this conference would certainly induce innovative ideas among the participants paving ways for new inventions and new technologies in the Engineering sectors.
I wish all the delegates and participants a great time at SJCEM Palghar.

Dr. S. Michael
Dean of Academics,
DMI-St. John the Baptist University,
Malawi.

Greetings!

The international conference organized by St. John College of Engineering and Management is a platform for the presentation of recent advancements and research works in the field of technology. The conference will bring together leading researchers, engineers, academicians, professionals, students, and scientists in the domain of interest across the nation. The theme of the conference will contribute to wider conclusions on emerging trends in technology. I thank the organizing committee, technical committee and referees who have put great efforts to make this conference successful. My sincere thanks to all the participants of this conference, whose keen interest will help in building a powerful future through technological innovations.
With best wishes,

Dr. Satish Tanavade
Assistant Professor,
College of Engineering,
National University Science and Technology
Oman.

Greetings,

It gives me immense pleasure to know that St. John College of Engineering and Management is organizing an International Conference on Trends in Engineering, Applied Sciences and Management (IC-TEAM) in association with Forum for Interdisciplinary Research in Science and Technology (FIRST) on April 08th-09th 2022 at Palghar, Maharashtra. The applications of any advanced science and engineering is to facilitate the nation for its scientific and technological developments. The present conference is aimed at serving as a premier venue for the dissemination of leading-edge research in Trends in Engineering, Applied Sciences and Management. All the best to the organizing team, the participants for their sincere endeavours.

Dr. R. V. Palanivel
Associate Professor & Head of Department,
Sharda University,
Uzbekistan.

Hello!

I am very happy to note that SJCEM is organising an International Conference on Trends in Engineering, Applied Sciences, and Management. The recent researches made by Professors/Scholars of technical universities would be a virtual feast for novel views in the respective domains. It will hopefully offer fresh and incisive vision and add a new stimulus to the process of production in the country and abroad. New chapter of knowledge would set promising trend to the ongoing researches in the field of academia on such broad canvas and vast scales.

I thank the organizing team for all the sincere efforts and wish it a grand success.

Dr Santosh Walke
Assistant Professor
National University of Science and Technology - Oman.

Greetings,

The world of technology is advancing at a fast pace. The International Conference to be organized by St. John College of Engineering and Management is a great initiative which will offer great opportunities for young researchers. The diverse disciplines to which the conference caters has made a beeline of researchers to the conference. The conference will provide an excellent platform for developing new ideas and technologies. I am confident that every delegate will gain knowledge of something new and take back with him/her an inspiration to excel in their professional development. I express gratitude to the organizing team for all the efforts and wish it all the success.

Ms. Sneha Desai,
Software Engineer,
Norways Labor and Welfare Directorate - Norway.

Dear Colleagues,

It is an honour for me to be a part of the 1st International Conference on Trends in Engineering, Applied Sciences, and Management, which will be hosted in Palghar. This conference has a wide selection of highly interactive sessions with researchers, addresses by professionals sharing their most recent knowledge and experience, and presentations from editors of prestigious journals. A well-chosen international faculty has put together a comprehensive interdisciplinary curriculum that will be presented. I am confident that for ambitious professionals, this beautiful event will be full of inspiration and the establishment of new relationships that will lead to long-term and beneficial co-operation for the benefit of society.
Best wishes!

Ms. Puneeta Verma
Project Manager,
Accure AI Pvt Ltd - India.

Greetings,

I am extremely happy to be a part of this innovative conference conducted by St. John College of Engineering and Management (SJCEM). The international conference organized by SJCEM is a great initiative which will bring together all the academicians, research scholars, industrialists, professionals and students from different locations. Such conferences bring to the front a wealth of knowledge and expertise, and enhance skills and latent knowledge of the researchers. I wish you all the best for your endeavors.

Dr. Gulsun Kurubacak
Professor,
Anadolu University - Turkey.

Hello all,

In this fast-paced world of ever-changing technology it is mandatory for the academic institutions to be closely aligned with research and development. Hence, such conferences are of huge importance. It gives me immense pleasure to be associated with this esteemed conference on Trends in Engineering, Applied Sciences, and Management. The conference enhances keynote, research papers and presentations with both the academic and industrial scientific sessions. I eagerly anticipate an excellent meeting with brilliant researchers from different walks around the world and sharing new and exciting results in the said fields.
With Best wishes!

Prof. Dr. Alex Khang,
Professor of Information Technology,
AI Specialist and Data Scientist,
VUST. SEFIX. EDXOPS. GRITEX, Vietnam & USA.

Dear Readers,

The world of science and technology is changing and advancing at the fastest pace. It has changed the very face of all spheres of life. The International Conference to be organized by SJCEM is a great initiative which offers myriad opportunities to young minds, students, budding researchers, scholars, scientists and academicians for career and professional development. It will pave the way to an excellent platform for developing new ideas and technologies. I am sure that every delegate will gain knowledge of something new and take back with him/her an inspiration to excel in their fields. I express my deep sense of gratitude to the organizing team for taking sincere efforts. I wish all the best for a grand success of the said conference.
With best regards!

Mr. Akhilesh Sharma,
Delivery Project Executive,
IBM - USA.

Agricultural Supply System with Permissioned Networks through Hyperledger Framework

Bhagyashree Rao, Nikhil Sabe, Sharan Murli, Kalyani Pampattiwar

Abstract: Every successful farmer needs to be familiar with the delicate balance between production and distribution. The information that the agricultural network offers is turned into profitable decisions only when efficiently managed and monitored. Current advances in data management are making Smart Farming grow exponentially as data has become the key element in modern agriculture to help producers with critical decision-making. The current agricultural supply chain is a centralized system that has many issues related to integrity, tracking and organizing the transactions. There is lack of trust and transparency in the supply chain which leads to irregularities in the implementation of schemes. The consumers doubt the quality of the food supplied to them and the farmers, wholesalers are affected by the payment frauds by the middlemen. As we know that both Bitcoin and Ethereum are public blockchain networks that every peer has to go through every transaction which takes place in the network, in such cases the confidentiality of the deal can become void, and every single ledger on the network gets updated about the two party deal and can get the insights of the transaction completed. In order to avoid these irregularities and issues we have come up with a compact system which will create a secure supply chain. This Application will provide information on agricultural products, allow the stakeholders to connect privately over the network and facilitate them to conduct direct transactions with each other.

Keywords: Blockchain, Hyperledger fabric, Agricultural Supply chain, Consensus, Permissioned Network.

VOCAMAIL - Voice Based Email System

Pankaj Kuneker, Ritesh Pokarne, Mahalakshmi Phaldesai, Tanushri Bhuruk and Tanmay Patil

Abstract: Developing a voice-based email system primarily to help people with reading problems so they can access email in a seamless way. Along with providing easy and efficient use of mail services, the system will also reduce the function of the psychological element The graphical person interface of this technique has been tested and in comparison, with the historically reachable mail system interface. The illiterate will aid from such interface. An important factor to be considered in developing this process is that users of this program do not have the basic knowledge about the keyboard shortcuts used and where the keys are used. All the functions that will be used in this process should be simple mouse click functions that make the system very useful. This site proposes a webpage, designed specifically for dyslexic or people with reading difficulties. This application provides a voice messaging service primarily that allows them to browse and send emails themselves, without any supervision. Users should use specific keywords that can perform specific actions e.g. Read, Send, Write Email, Address Book etc. This Email program can used by illiterate people to access emails easily and effectively.

Keywords: Voice-Based, Email-System, API, Illiteracy, Dyslexia.

Website Analyser

Vineet Iyer, Abhishek Joshi, Vishak Kodethur, Kalyani Pampattiwar

Abstract: The best marketing strategy for your business is to observe your website traffic. Website traffic is important for many reasons. The more people visit your site, the better will be the arrival rate of potential customers. More website traffic can grow your business, expand your product line, open more locations, and develop more services and products. Web analytics is analysing the behaviour of visitors to a website. Analytics platforms measure activity and behaviour on a website, for example: how many users visit, how long they stay, how many pages they visit, which pages they visit, and whether they arrive by following a link or not. Businesses use web analytics platforms to measure and benchmark site performance and to look at Key Performance Indicators that drive their business, such as purchase conversion rate. The application provides users with a range of such features. The application provides the developers with analytical tools such as SEO suggestions, email automation, console error recording, sitemap checker, CSP violation recorder, etc. with detailed reports which include graphs and figures about the length of time spent per visit, number of pages per visit, etc. to visualize and help improve the target website.

Keywords: Pingers, SEO (Search Engine Optimization), CSP (Content Security Policy), Analytics.

Sign Language Translator

Mihir Hatankar, Harsh Jain, Rithin Menezes, Soham Halarnkar, Shamsuddin Khan

Abstract: A Survey done by the World Health Organization (WHO) shows that above 450 million people across the world have hearing loss (that adds up to over 5% of the world's population), of whom 34 million are children. There are only about 250 certified sign language interpreters in India for a deaf population of around 7 million. With these staggering proportions, the need for a technology to facilitate communication between abled and speech/hearing impaired people is critical. The motive of the work is to design and implement a real time Sign Language translator system. Our system promises to keep secure communication, and it uses Machine Learning and Deep Learning models to transform sign language to speech and text. This technique eliminates the requirement for an interpreter, and it also eliminates the necessity for traditional pen and paper methods. This application automates communication and alleviates the difficulties faced by deaf people or those who are hard of hearing. The proposed system uses Convolutional Neural Network, Mobile net and KNN algorithms to identify and learn the gestures . The optimized model, when tested over a memory-efficient web browser, provides an accuracy of 94.8% of accurate recognition which will help reduce the communication gap and take down the barricades of communication.

Keywords: Transfer learning, Mobile Net, KNN classifier, Neural networks, Tensorflow.js, Real-time translator

Tennis Game Controlled Using Gesture Recognition

Dipti Kulkarni, Mahithasree Sakthikumar, Vignesh Mudaliar, Masooda Modak

Abstract: Human Computer Interaction (HCI) is the study which focuses on the use of computer technology and interfaces in natural interaction between humans and computers. This new and emerging field of HCI has found its way in our daily life, helping us in automating our basic activities. HCI also includes various fields like HRI (Human Robot Interaction) and HMI (Human Machine Interaction). This paper attempts to combine the capabilities of HCI and gesture recognition in the field of PC (personal computer) gaming. This paper attempts to explore the capabilities of HCI and gesture recognition in the field of gaming. Gesture recognition as an input mechanic has been explored practically and theoretically in a variety of approaches depending on the use case and the domain in which it is being applied. With this project, we wish to explore the capabilities of HCI in the field of gesture-controlled gaming. HCI in the field of PC gaming helps gamers experience gesture control without the use of any additional hardware other than a standard webcam. This project proposes a 3D Tennis game which will be controlled using gesture recognition.

Keywords: Game Development, Computer Vision, Gesture Recognition, Image Processing

SpinTopAR: Multiplayer Augmented Reality Game for Smartphones

Zeppelin Abbas, Rishee Chaudhary, Abhay Dwivedi, Aditi Raut

Abstract: Multiplayer Augmented Reality (AR) games allow players to place objects in the real world with virtual objects. Allowing players to play together in a real-world environment with interactive virtual objects. This paper presents a multiplayer game called Spin Top AR which can be played at any scale. All players will be able to select any character and battle together from any part of the globe. This paper, will show the overview of Spin Top AR, its functionalities, and design the technology used behind it. All the functionalities, designs and the technologies used in developing Spin Top AR will be explained in detail.

Keywords: Multiplayer, Augmented Reality, Synchronous

Accident Detection and Alerting System using Convolutional Neural Network

Diwakar Shah, Siddhi Kadam, Chirag Sharma, Hemant Singh Rautela and Tanvi Patil

Abstract: It's been long enough that road accidents have been a great threat to developed and Under developed countries. Road accidents have been a major concern for the world, and nobody has been able to control or detect them beforehand for years. Road congestion and rash driving takes place in every part of the world which affects many pedestrians too. With no fault, they become victims. Road accidents can happen due to numerous factors like human wrongdoings, atmospheric changes, etc. Injuries caused during road accidents can be major and undetectable, which in longer run can affect health adversely. This study aims to detect road accidents and alert the required facilities using Convolution Neural Networks and Machine Learning.

Keywords: Road Accident, Atmospheric Changes, Convolution Neural Networks, Machine Learning.

Algorithmic Trading System

Yash Changare, Shubhangi Vaikole

Abstract: Financial markets are regarded as one of the most popular investment options since they offer high returns in a short period of time. However, because of its highly volatile and unpredictable character, it is considered a dangerous investment option. As per popular estimates, up to 90% of those who engage in the stock market lose money, including both rookie and experienced traders. The reasons behind this can include a lack of information, a lack of trading discipline, and decision-making based on emotion. As a result, the Algorithmic Trading System is an attempt to make the lives of investors easier through study and the development of profitable trading techniques by examining and evaluating market conditions. Trading with algorithms may be able to generate fair trades and more profitable chances with financial instruments. In this paper we have discussed various applications of Algorithmic Trading System.

Keywords: Algo Trading , Trading Discipline, Natural Language Processing

Kids Activity Monitoring System using IoT

Sharmistha Sawant, Sayali Mhatre, Supriya Thombare, Jessica Dias

Abstract: Technology has been making our lives easier since the advent of smartphones. Smartphones are a remarkable feat of engineering, which when combined with small sensor devices provide a good opportunity to utilize the potential for real-time applications. Children can be quite difficult for parents to handle especially while in public places like festive occasions, fairs, parks, shopping malls, etc. To overcome this challenge the proposed system will use a device consisting of a combination of Arduino UNO, Bluetooth module, GPS and GSM module that will be carried by the child. This device is supported by an Android app which will be available to use by the parent. This app has tracking of the child and will alert the parent if child goes out of the safe zones.

Keywords: Kid Monitoring, Child Safety, Live tracking, GSM and GPS.

Depression Detection System using ML

Namrata Jiten Patel, Kalyani Pampattiwar and Masooda Modak

Abstract: Mental illness is the biggest cause of disability worldwide. Nearly 300 million people are likely to suffer from depression (World Health Organization, 2001). Unfortunately, there has been no reliable laboratory test for diagnosing most forms of mental illness. Typically, the diagnosis is based on the patient's self-reported experiences, behaviour reported by relatives or friends, and a mental status examination. One of the major types of mental illness is Depression. It not only affects emotional behavior but also physical and psychological behaviour of the person. Also, it is described as a lack of positive emotions that can have a detrimental effect on the person. As soon as it is detected and addressed, the suffering individual can recover faster. Our major goal with this project is to create a tool that uses natural language processing and machine learning approaches to predict whether or not someone is experiencing Depression symptoms based on textual elements.

Keywords: Depression Detection, Mental illness, Machine Learning.

Speech Synthesis for Marathi Language using Syllabic Approach

Dr. Soumitra Das, Dr. Abhijit Banubakode

Abstract: A new syllabic methodology for synthesizing speech is described in this work. The goal of a Marathi Language text to voice system is to translate a given text into a spoken waveform. Text to speech is made up of two main components: text processing and speech production. The syllabic technique involves separating a word into syllabic clusters for the benefit of simplicity and naturalness in speaking, as long as the splitting is flawless and precise. A syllable is a component of a word that is continuously pronounced. A group of syllables or letters appear together in a sentence. When we use the syllabic strategy to break down a word, we get the following information: how long to pronounce each letter, where to pause, and where to emphasize. The fundamental units of the Marathi language are aksharas, which are represented by the letters C for Consonant and V for Vowel. In Marathi, there are 37 Consonants and 14 Vowels, as well as unique characters such Anuswar, Rafar, and Visarg. To break the word down into syllabic clusters, we must first discover the correct structure of the word. Every word has two structures: CV (Consonants Vowel) and PH (Phonetic). CV and PH are extremely important in establishing whether or not a rule has been broken. This strategy produces positive outcomes in terms of accuracy and training duration.

Keywords: Synthesizing Speech, Text to Speech, Marathi, Syllabic Approach, Vowel, Phonetics

Analysis of Mental Health using Machine Learning Approach

Smaran Ummadishetty, Anushka Vaidya, Chaitanya Keerthi, Shubhangi Vaikole

Abstract: Mental health detection website that can artificially discover and detect mental disorders with the help of ML algorithms. A set of questionnaires with face and voice recognition will be used for the same. It will also contain a counseling section where manual counseling can be done which includes registration, payments, discounts and offers, chatbots, etc.

Keywords: Mental Health, Machine Learning, Speech Identification, Diagnosis, Analysis and Prediction.

Case Study on Graph Theory used in Uber Eats

Prof. Dr. Preeti Bailke, Akash Sivanandan, Khushi Jhanwar, Ameya Karpe, Prannay Khushalani, Tanishka Shetty

Abstract: The Uber Eats app connects users to multiple restaurant partners in locations across various countries. Through the Uber Eats app, consumers can discover and order from thousands of restaurants and establishments in various countries. They also provide recommendations based on their taste and location. To improve the efficiency of their search results, they developed various algorithms. Another example of their work is the use of graph learning to identify the most likely items to recommend. Producing this strategy enhances the quality along with the relevancy of the Uber Eats platforms food and restaurant suggestions.

Keywords: Uber Eats, Recommendation System, Graph Theory, User Experience.

TYPO- A TYPING TUTORIAL WEBSITE

Dr. Nilesh Deotale, Varun Kale, Hardik Bhoir, Ayush Patil, Ratansingh Parmar

Abstract: In modern times, everything is being digitalized at an increasing rate and many jobs require typing skills. This is especially true for IT jobs, if an individual has technical knowledge and excellent typing skills then it is extremely easy to qualify for any interview. As a result, our work is more durable, since we make fewer typing errors and it is completed faster. The objective of this paper is to determine how much typing speed and accuracy are improved through the use of computer based training. This will assist students and industry professionals in increasing their typing speed and perfecting their typing skills. TYPO is the name of the website that measures the users W.P.M(Words Per Minutes) through a combination of HTML, CSS and JavaScript programming languages.

Keywords: WPM, TYPO, Typing test, Accuracy test, HTML, JavaScript, CSS

Secure Data Broadcasting using Privacy Preservation Techniques in Distributed Environments

Rohit Ravindra Nikam, Dr. Reksha Shahapurkar

Abstract: Data security and privacy are essential things nowadays due to a large amount of sensitive data broadcasting on social media websites. Most of Internet of Things (IoT) and health care applications have quite a few challenges to achieve privacy preservation when a number of distributed resources are involved during data broadcasting. In this paper, we propose a distributed data analysis and privacy preservation framework. We also introduce numerous privacy preservation techniques during data distribution to achieve high privacy. Some traditional methods, data anonymization, generalization, random permutation, specialization, top-down and bottom-up data generalization, fingerprint insertion, are also evaluated on extensive data when distributing with multi parties: the proposed one-way hashing privacy, XOR operation for generating multiple secure copies. First, we develop a few dynamic policies for each copy using XOR operation and insert fingerprints in individual documents. The collaboration of XOR operation and custom policies archives higher security from internal as well as external attacks. On the other hand, the data recovery approach has been designed to extract a fingerprint from secure copies. In the extensive experimental analysis, we evaluate proposed results with numerous existing systems and show the effectiveness of proposed modules in a distributed environment.

Keywords: Data Security, Data Privacy, Distribution of Data, Data Leakage, Privacy Preservation, Fingerprint Insertion, Removal.

Audio Signal Based Stress Recognition System using AI and Machine Learning

Megha V. Gupta, Dr. Shubhangi Vaikole

Abstract: The detection of stress from speech signals has recently received a lot of interest. Individual speech is a verbal means for people to communicate with one another. Human speech reflects the speaker's mental state. To ensure that the person is in a healthy state of mind, proper classification of these speech signals into stress categories is essential. Speech is frequently used to detect whether a person is in a stressful or routine scenario. These can lead to the reliable classification of speech signals into separate stress types, showing that the individual is in a healthy state of mind. In this paper, stress identification and classification algorithms are built using Machine Learning (ML), Artificial Intelligence (AI), and Mel Frequency Cepstral Coefficient (MFCC) feature extraction methodologies. Because most current stress indicators are intrusive, requiring samples from patients' bodies, this study was done to identify methods to detect stress without introducing instruments into the body. This study illustrates how stress can be detected by using speech signal analysis approaches.

Keywords: AI, Stress, Speech, Emotion, Machine Learning, MFCC, RNN, LSTM.

A Computable Study on Tactics Towards Crime Prediction and Analysis

Robin Lobo, Sonali Joshi, Joel Syrus Fernandes, Prajakta Bhangale, Prajakta Dhamanskar

Abstract: Crime is an unsocial and objectionable deed that causes an intense peril to humankind. Civilized societies make every effort to reduce crime under the rule of their influence. Why should crimes be predicted? Though it avoids all the lawbreaking acts of the society and ensures better civilization through avoiding happening crimes such as murders, rapes, thefts, drug smugglers, etc. Alerting the crime hotspots beforehand is one of the finest approaches to cause crime occurrences to halt. Utilizing the resources and identifying hotspots of crimes and allocating vigilante resources such as policemen, police cars, weapons, etc. in locations where the appropriate degree of intelligence has not been maintained. Rescheduling patrols according to the vulnerability of a place would also result in the degradation of the crime rate of that particular location. Building such an operational system would help to identify where and when crimes are most likely to occur so that you can effectively allocate your resources and prevent these evil acts accordingly. Safety while traveling can be considered as the major need in an unknown country, as New York is regarded as the city where you can find people from varying backgrounds and with a good amount of population, this project will focus on predicting crime in New York. The goal of this research is to employ data science and machine learning techniques to forecast crime. This research proposes a model that works in synergy with various steps that include crime data collection, and then analysis on that data to predict the crime hotspots which are specifically targeted to help citizens to distinguish between safe and unsafe areas while traveling.

Keywords: XGBoost, KNN, SGD, LSTM, Naïve Bayes, Decision Tree, Random Forest, Data PreProcessing, Machine Learning, Crime Prediction System, Crime Analysis, NYPD.

Fire Detection In Visual Sequences Using Image Processing

Aaden Fernando, Kriti Kulshreshtha, Gargi Purandare, Bhavna Arora

Abstract: Fire causes lasting harm to delicate natural ecosystems and has a significant impact on many countries; socioeconomic systems, particularly in the tropics, where wildfires are more common. Early discovery of these fires might assist to mitigate their effects. For the WSN-based detection model to work, there must be a fire and a volume of smoke and fire. If simply visual attributes are employed, there is a risk of erroneous detection. Particles must hit the sensors to trigger them until an alarm is activated. As a result, they cant be used in open regions or huge enclosed places. Big theatres, corridors, archways, and other large spaces can benefit from video-based fire detection systems. The ability to operate broad and open places is made feasible by the power of video in fire detection. In addition, closed-circuit television (CCTV) surveillance systems are now in use in a range of alternative locations, monitoring both inside and outside. With the use of fire detection software that processes the results of CCTV cameras in live time, such systems may obtain an early fire detection capacity.

Keywords: Fire Detection, Image Processing, System Analysis, HSV, Motion detection, Smoke detection, OpenCV, RBG, Real-time detection

Osteoarthritis Detection With Its Severity Using KL Grading System and CNN

Anushree Chaudhari, Shakti Kinger

Abstract: 'Arthritis' is a term used to address any inflammation or disorder in the joints of a human body and joints are the area where two bones meet through the cartilage. Osteoarthritis is the most common form of arthritis among the different types of arthritis and it occurs mostly in the hand, legs, hip joints of the body. In the severe condition of osteoarthritis disorder the person can find it very difficult and challenging to perform day to day activities. To study the joint's condition doctors usually diagnose through X-ray images. Data set of around 7828 training X-Ray files and 1958 test X-Ray files of knee X-ray images have been studied for osteoarthritis detection. CNN (Convolution Neural Network) will be used to detect the Osteoarthritis. KL (Kallgren-Lawrence) grading is taken into consideration to study the severity of the condition. KL grading defines the severity of the osteoarthritis in terms of five grades, out of which grade 0 is the initial stage and grade 5 is the most severe stage. Further with respect to the severity detected an immediate medical instruction will be provided to the user.

Keywords: Osteoarthritis, Severity, KL grading, CNN.

A Virtual Yoga Instructor Using Augmented Reality

Dr. Nilesh Deotale, Nazareth Remedios, Anandhakrishnan Nagarajan Pillai, Tapankumar Behera

Abstract: Nowadays, due to hectic schedules, the average person has no time for exercise and meditation, and suffers from constant anxiety and stress. Not everyone knows how to perform accurate yoga asanas. People resort to YouTube videos and online instructors, many of whom are not qualified. There have been many instances of serious injuries occurring due to ignorance and negligence of people who practice yoga incorrectly. This project aims to study various methods and technologies for pose detection and classification, various methods of designing and producing augmented reality models, methods and technologies for voice assistants and technologies available to deploy an application to combine the mentioned technologies. A yoga instructor using Augmented Reality which can demonstrate, detect, instruct, and correct the yoga asanas of the users is the solution to many problems like time, unqualified instructors, and virtual world related technicalities like faulty internet connections, portability, and other environmental factors like inadequate lighting, and space for performing yoga. The proposed application will be able to break down an asana specified by the user into multiple finite steps. A three-dimensional augmented reality model will demonstrate the steps along with vocal instructions prompted by a virtual voice instructor. A trained and tested machine learning model will be able to detect, classify, and correct the asanas performed by the user. The user will also be provided with various features such as setting up goals, streak counter, customising settings; all of which will be saved in the application.

Keywords: App development, Augmented Reality, K Nearest Means (KNN), pose detection and correction, three-dimensional yoga models, voice instructor, Unity.

Sentiment Detection of User Instagram Captions using VADER and Flutter

Sannidhi Shetty, Aishwarya Bhangale, Celsia Nadar, Jisha Tinsu

Abstract: One of the most effective and well-known Natural Language Processing techniques - Sentiment analysis, is extremely useful in identifying the sentiment or opinion of the audience. It is a strong tool for assessing emotions and sentiments of people. Instagram, Twitter, Facebook, and a slew of other social media sites may help a business grow by using its marketing capabilities. Its primary purpose back then was to keep in touch with family and friends. Marketing post captions have a lot of power and they are a crucial approach to succeed in such an environment by understanding exactly what is driving the emotions of audience. Multiple studies have established a clear correlation between extensive social media use and mental health issues, with many postings and captions spreading negativity in the community. It raises the risk of depression, anxiety, and other mental illnesses. The sentiments of Instagram users; post captions may be analysed using a flutter application. Using VADER library, a sophisticated sentiment analysis tool for social media, it will assist in the study of both private and public accounts.

Keywords: Instagram, Sentiment Analysis, Flutter Application, VADER Library.

EYE DISEASE CLASSIFICATION USING DEEP NEURAL NETWORKS

Dr. Varsha Patil, Rahuul Rangaraj, Santhiya Udiyar, Shruti Mani

Abstract: The authors suggest a deep learning technique for detecting intelligible diabetic retinopathy (DR). A person with diabetes has high blood glucose levels. If ignored for a long period, these elevated blood glucose levels can lead to issues such as diabetic retinopathy, which affects the retina in the eyes. It also affects the kidneys and nerves in the bodys peripheral areas. The visual interpretability of the suggested approach is obtained by inserting the Regression Activation Map (RAM) after the global average pooling layer of Convolutional Neural Networks (CNN). The suggested model uses RAM to locate discriminative portions of a retinal image in order to present a particular region of importance in terms of severity degree. We think that this benefit of the suggested deep learning approach is much applicable for DR detection since, in convention, customers are interested not only in outstanding prediction performance, but also in comprehending the DR detection insights and why the learning model is chosen. In studies on a large amount of fundus image data file, the suggested CNN model may accomplish good results on DR detection compared to the highest development while achieving the benefits of providing RAM to focus on the significant sections of the input retinal image.

Keywords: Diabetic Retinopathy (DR), Regression Activation Map (RAM), Deep Neural Network, CNN.

AIR CANVAS AND VIRTUAL COMPUTER SYSTEM

Darshan Patel, Harshitha Moolya, Kriti Kakkar, Masooda Modak

Abstract: This paper explains how to draw and write English text in front of a camera using a real-time video-based pointing technique. To achieve this purpose, the proposed system combines color recognition and tracking to track the coloured finger tip in video frames. A mask is formed when a color marker is detected. It includes two stages of the morphological process. Erosion and Dilation are two procedures performed on the mask. Impurities are reduced through erosion present in the mask and dilation helps to repair the primary masks deteriorated condition.The user will even be able to select the colours that will be shown in the suggested system. The camera will be triggered when the programme is started, allowing the user to draw in the air just by waving at the tracker item. The artwork is also visible on the white window at the same time. Instructor can choose any color of his choice displayed in the system's color palette to draw and also can clear the screen when needed. We will be using he computer vision techniques of OpenCV and Python to build this application Also, the system includes a virtual keyboard and virtual mouse.The proposed framework for virtual keyboard is vision-based, and it makes use of AI technologies as well as input from a PC webcam. The Virtual Mouse detects finger movements to control the cursor using basic motions and hand control without the need for extra hardware. This is accomplished by combining webcam inputs with vision-based hand gesture detection. We intend to develop a full-fledged app which will include all these features.

Keywords: OpenCV, Color Recognition, Morphological Process, Virtual Computer System, Erosion, Dilation Tracking, Computer Vision

COVID 19 Tracker Using ReactJS

Divya Chaudhari, Kaushik Iyer, Abdul Moiz Kazi

Abstract: COVID-19, the novel coronavirus illness first appeared in the Chinese city of Wuhan in December 2019, quickly spread worldwide and became a pandemic. COVID-19 Tracker is one solution, which when used properly can solve problems for all the citizens. Whenever there is an emergency situation related to Covid at home, they have to open this application and pass the relevant search parameters, and reach the outcome, inside a few seconds.

The World Health Organization (WHO) has proclaimed COVID-19 as a pandemic. Coronaviruses are a group of infections that cause ailments like respiratory sicknesses or gastrointestinal illnesses. Respiratory illnesses can go from the normal cold to more extreme sicknesses. A pandemic is portrayed as occurring over a wide geographic locale and affecting an astoundingly serious degree of the general population.

The primary goal behind composing this paper is to introduce a thought that how information on an arising frontend innovation like React JS can prompt an awesome UI that can fill in as an information analyzer web programming for this dangerous pandemic. The paper rotates around an undertaking made with a lot of highlights of React JS from invigorating frontend parts with Material UI to composing CSS, JSX, and settling on API decisions to gather overall information connected with the Coronavirus [8]. The significant features of the venture entitled in this paper are no page reloads, Responsiveness, body-parsing, API calls for information assortment, JSX (HTML inside JS), arranging calculations, dynamic information portrayal, REDUX, information portrayal in powerful diagrams/pie outlines.

In this, an enormous number of npm bundles like to respond, respond dom, @material-ui, and so forth alongside React JS and CSS library like Material UI has been utilized to code the site to such an extent that it results in an alluring, responsive, and excellent undertaking with a solitary innovation that is JS. The web programming entitled in this paper is a finished bundle of elements of React JS incorporated with some other frontend advances like CSS and material UI going through which any client can take apart the data associated with COVID geologically as well as graphically.

Keywords: COVID, GUI-Graphical User Interface, ReactJS, Responsive Web Application, JavaScript Object Notation, API, Material UI, NPM.

Classification of Traffic Signs using Convolutional Neural Networks

Makarand Bhalerao, Parth Nimbalkar, Soham Moghe, Dr. Shubhangi Vaikole

Abstract: Advancements in the field of Artificial Intelligence have optimized nearly everything in almost every industry. Automated and precise reliable models have been efficient in either assisting the humans, reducing the error of margin or completely taking over the tasks, speeding up processes and making them more efficient. Self-driving vehicles have been one of them. The following paper presents an approach towards a Traffic Sign Classifier with the help of Convolutional Neural Networks and has been tested on the standard dataset named as German Traffic Sign Recognition Benchmark (GTSRB) consisting of a total of 51839 images. Adam optimizer has been used to decrease the overall loss and increase the accuracy of the neural network. Dropout regression has been employed to prevent overfitting.

Keywords: Traffic sign classification, deep learning, image processing, convolutional neural network.

Density-Based Traffic Signal System with Image Processing

Dr. Nilesh T. Deotale, Dr. Kishor S. Rambhad, Dr. Arun Saxena, Dr. Buddharatna Godboley, Dr. Pandharinath Ghonge

Abstract: As the population grows, the number of vehicles is increasing rapidly in Urban Areas and Metropolitan Cities. Efficiently handling such a large amount of traffic is time consuming. Traditional traffic light systems cannot adapt to changing traffic volumes. This document solves the problem by making traffic lights intelligent so that you can distinguish between lanes with different traffic densities. This publication uses a stored dataset of each track image and image processing using a microprocessor to calculate the output.

Keywords: Raspberry Pi, Canny Edge Detection, OpenCV, Image Processing, Python.

A Review on Energy-Efficient Task Scheduling in Cloud Environment

Shamita Phutane, Ankith Poojari, Saurabh Nyati, Bhavna Arora

Abstract: With the increasing number of users on the cloud, the development of data centers is also increasing which consumes more energy and has become a major concern financially and as well as environmentally. The total amount of energy consumption by the data centers of these cloud providers accounts for 1-2% of the total electricity production in the world. About 85% of the energy produced in the world is obtained from unsustainable resources and there is an urgent need to optimize energy consumption. By doing this, the utilisation of resources shouldn't be reduced. With less usage of energy, most resource utilization ought to be attainable. Green computing is an emerging technology that focuses on preserving the environment by reducing various kinds of pollution. In order to produce cost-efficient executions in cloud surroundings, an appropriate task programming strategy is critical.

This paper reviews existing programming rules for cloud data centers and tries to render task scheduling which is meant in such a way that it does not solely minimize computation value, it additionally reduces cooling.

Keywords: Energy Performance, Green Cloud, Multi Resource, Task scheduling, Energy Aware Systems.

Plastic Picking Robot

Dr. Varsha Patil, Sakshi Dumbre, Aishwarya Ganeshan

Abstract: Major dry and wet waste is generated by plastic. In India, generally, plastic waste is being dumped haphazardly, which shoots up the pollution levels of the environment. Plastic segregation is often done by humans manually, which is not a practical solution. Deep Learning and the Internet of Things (IoT) concepts are combined in the proposed approach. Deep Learning approach is used to detect plastic objects, while IoT is used to pick up detected plastics objects. To identify plastic garbage, real-time object detection plays an important role. Mask R-CNN and Resnet 101 is used as a feature extractor. Resnet 101 residual network uses the residual module to help the model converge, accelerates neural network training, and combines with the goal detection model Mask R-CNN. As plastic objects have different transparency, prediction confidence scores are used to set a suitable threshold to reduce false positives. For picking up detected plastic garbage, a robotic arm is used. Experimental results show that the proposed approach successfully tracked various types of plastics objects and picked them up with the help of Robot. The detection success rate is between 85 to 93%. Different types of hazardous objects can be detected and used for society and industrial purposes in the future.

Keywords: Plastic, IoT, Deep Neural Network, Mask R-CNN, Resnet 101, Arduino Uno R3.

Indian Sign Language Interpretation using Machine Learning Algorithm

Prof. Pooja Shetty, Fayzaan Qureshi, Pooja Prasad, Rohit Kundnani

Abstract: Human beings interact with one another either employing a tongue channel like words, writing, or by visual communication (gestures) e. g. hand gestures, head gestures, lip motion then on. As understanding words is vital, understanding gestures are equally vital. As these gestures are the basic communication method within hearing disabled people, people with hearing disabilities find it difficult to interact with other hearing people without a translator. For this purpose, the development of a system that recognizes sign language would have a great impact on deaf peoples social lives. In an attempt to bridge the same, we propose a real-time hand gesture recognition system. Generally, the processes involved in Sign Language recognition are suitably categorized into different stages: data acquisition, pre-processing, segmentation, feature extraction, and classification, where the various algorithms at each stage are elaborated and their merits compared. Further, attempts will also be made so as to overcome the challenges and limitations faced by pre-existing gesture recognition systems in general, as well as those exclusive to sign language recognition. Overall, its hoped that the study may provide readers with a comprehensive introduction into the sphere of automated gesture recognition, and further encourage future research efforts.

Keywords: Indian Sign Language, Sign Language Interpretation, Classification, Text-to-Speech.

Stock Market (Sectorial Index) Analysis and Prediction using Deep Learning

Siddhesh Sawant, Kiran Kasmale, Bhagyesh Shikarkhane, Rashmi Bhat

Abstract: Predicting stock prices is an uncertain task which is modelled using Machine Learning to predict the return on stocks. The task is to predict stock prices for a few days, which is a time series problem using candlestick chart. Candlestick patterns are used to predict the future direction of price movement. A candlestick is a way of displaying information about an asset's price movement. Candlestick charts are one of the most popular components of technical analysis, enabling traders to interpret price information quickly and from just a few price bars. The Long-Short Term Memory (LSTM) model is very popular in time-series forecasting, and this is the reason why this model is chosen in this task. System will fetch the historical data of stock automatically using python libraries and fit the LSTM model on this data to predict the future prices of the stock.

Keywords: Long-Short Term Memory, Predicting stock prices, Candlestick patterns.

Smart Eye for Blind using Assistive Technology

Vaibhav Patel, Tijo Thomas, Tintu Mathew, Aditi Raut

Abstract: The Paper is an innovative system for visually impaired people and can act as voice assistance for them. It has several navigational channels which correspond nicely with other technology that is useful to the user with visual impairments. The system consists of custom messenger, which has features like inbox and sent items and also call register and dial pad. All actions performed by the user, the system speaks out and helps the user to know his current position on the device. The system is a complete assistant that is smart and easy to use for the user. With the rapid development of artificial intelligence and mobile computing, modern technology has brought more convenience to blind and visually impaired people. Lately, an estimation of 253 million people with vision impairment was made. The group of visually impaired persons is undergoing an inconvenient daily life without assistance from their family or friends. The blind need an approach to get to know about the life outside their home and the desire to have access to the internet and mobile services like the rest of mankind. The main objective of the System is to make the lives of the user trouble-free and much more unconventional so that they don't always need to be dependent on others and create some normalcy in their lives.

Keywords: Voice Assistant, Object Detection, OCR, SOS, Text-To-Speech.

Query Optimization in Big Data using Hive Query Optimization Techniques

Dr. Abhijit Banubakode, Dr. Soumitra Das

Abstract: The ever-increasing size of data sets in this big data era has forced data analytics to be moved from traditional RDBMS systems to distributed technologies like Hadoop. Since data analysts are more familiar with SQL than the MapReduce programming paradigm, HiveQL was built on Hadoop's MapReduce framework. Traditional RDBMS query optimization techniques, used in the rule-based optimizer (RBO) of Hive, do not perform well in the MapReduce environment, hence the correlation optimizer (CRO) and cost-based optimizers (CBOs) were developed. These optimizers perform query optimizations taking the MapReduce execution framework into account [1], [2]. This paper evaluates the impact of data partitioning in Hive-based systems, testing different data organization strategies and verifying the efficiency of those strategies' inquiry performance. We have tested query performance in terms of execution time and a number of records extraction from the database. Our experimental study shows an improvement in the execution time after partitioned in comparison with non-partitioned. Looking at the success of query optimization in the relational model, our approach inspires itself with these optimization techniques and enriches them so that they can support the new concepts introduced by the big databases.

Keywords: Hive, query optimization, where clause, group-by clause, having clause, static partition, dynamic partition, execution time.

Classification Of Big Data In Cloud Environment Using Cataloging Outsized Data Analytics Framework

Mukesh Kumar, Dr. Sitesh Kumar Sinha

Abstract: In data classification, dimension reduction is a major problem in pre-processing. This problem affects the efficiency of classification algorithms and recognition of specific features. In our research work a novel algorithm has been proposed to solve this issue. Some of the existing learning methods perform well for small cloud data classification but they fail when applied to unstructured and massive big data. Due to failure, they remain inadequate to effectively handle and classify voluminous big data. Improved accuracy with better massive data classification - when clustering the big data on cloud computing has concentrated on either numerical or categorical data, rather than both types of attributes that have noisy data. Due to the noisy objects, existing techniques cannot obtain the desirable clustering results for the dataset. When existing techniques try to minimize the negative effects of noisy objects by assigning a small weight to each noisy object, it increases the high computational complexity. In this research work, an efficient clustering module has been proposed to reduce time complexity and computational complexity.

Keywords: Big Data, cloud, classification, cluster, CODA.

Segmentation Of Moving Object Captured Using Moving Camera

Shubhangi Vaikole, Samidha Kurle, Sachin Shinde Panchikattil Susheelkumar Sreedharan, Jayant Ramesh Nandwalkar

Abstract: Segmentation of video into objects is a must for retrieval of videos based on the contents or detection systems based on the concepts. A variety of video object segmentation algorithms, including semiautomatic and automatic, have been developed. Semiautomatic methods require involvement of humans and are therefore inappropriate for numerous applications. Although various applications needs segmentation to be performed automatically, there is still scope for refinement. The goal of the work proposed here is to identify the gaps in existing segmentation systems as well as to provide viable solutions for overcoming such problems in order to develop a accurate and efficient video segmentation method. In this paper the work that is proposed, addresses issues related to segmentation of video automatically, like background that is uncovered, interim poses, and background's global motion.

Keywords: Content Based Applications, Semiautomatic segmentation, Change Detection

Exploring The Use Of Electroencephalogram Signals For Medical diagnosis

Ms. Pranjali Deepak Nikam, Dr. Prashantha G. R., Ms. Sonali Mahendra Sonavane

Abstract: A vast grouping of EEG portrayal models is put forth by research scholars all through the long haul, and everyone vary identical to congruity, exactness, survey, accuracy and concede execution. For instance, work in [2, 3, 4] looks at plan of lessened direction set (RISC)- V Convolutional Neural Network (CNN) Coprocessor, KNN (k Nearest Neighbor), blend of direct discriminant examination (LDA), ANN (counterfeit brain organization) and support vector machine (SVM) with ordinary spatial model (CSP), and Transfer TSK Fuzzy Classifier (TTFC) for achieving better portrayal results. These models have extraordinary precision, yet need terms of exactness execution in light of their application-unequivocal portrayal characteristics. Developments to this model are discussed in [5, 6], wherein LIFUS (low-force trotted ultrasound energy) and NNM (Neuroglial Network Model) are used for multidomain EEG groupings. They have extraordinary exactness, yet can't be scaled for a long while in light of high computational unpredictability. To vanquish the above issues, next region proposes wavelet pressure based quadratic model for EEG request utilizing multivariate examination that helps high-capability and high flexibility EEG portrayal for various clinical circumstances.

Keywords: Electroencephalogram (EEG), Convolutional Neural Network (CNN), Support Vector Machine (SVM), Neuroglial Network Model (NNM).

Blockchain Based Model for Security

Ms. Sonali Mahendra Sonavane, Dr. Prashantha G.R.,Ms. Pranjali Deepak Nikam

Abstract: It is seen that restricted exploration has been done in the space of consortium blockchains for upgrading cloud security. It is likewise seen that as of late proposed models have high intricacy, which restricts their QoS execution. In view of these perceptions, next areas talk about plans of the proposed consortium blockchain-based particular possession and access control model with weakness opposition utilizing cross breed choice motor. The proposed model is tried on a wide assortment of cloud situations, and parametric assessment concerning exactness of assault location, and speed of access is broken down in outcomes area, and contrasted and different cutting-edge models. Here we have applied proposed model for Medical data and studied Accuracy for Authorization Attack Detection (ADAA), Delay of Authorization Check (DAC), Delay of Access Control Detection (DACD) and Accuracy of Access Control Detection (AACD) for different models.

Keywords: Blockchain, Accuracy for authorization attack detection (ADAA), Delay of authorization check (DAC), Accuracy of access control detection (AACD)

A Secure Method for File Sharing Using Cloud Storage With Hybrid Cryptography Techniques

Ashish Prajapati, Linda John, Kamal Odela and Deepak Jaiswal

Abstract: An example of cloud computing is using shared resources instead of personal devices or local servers. However, in the cloud, sharing resources across multiple users is a difficult task. Data can be securely stored and shared in the cloud using the suggested approach. By using gather marking and encryption innovations, any cloud client may proficiently transmit their information in an untrusted cloud. Without unveiling their recognition to others, the Information Proprietor can spare the record to the cloud. The user's benefits are ended without overhauling the private keys of the remaining clients. The Information Proprietor or Bunch Director has the capacity to erase a record that has been spared within the cloud. This innovation permits recently selected clients to decrypt records spared within the cloud by other bunch individuals utilizing their claimed private key without having to contact the information file's proprietor. It diminishes the computational complexity vital to scramble information records whereas keeping up a settled figure content measure in any case of the number of repudiating clients.

Keywords: Secure Data, Cloud storage, Data Encryption, Data Decryption, Algorithm, Secure System

Secure Data Broadcasting using Privacy Preservation Techniques in Distributed Environments

Rohit Ravindra Nikam, Dr. Rekha Shahapurkar

Abstract: This Data security and privacy are essential things nowadays due to a large amount of sensitive databroadcasting on social media websites. Most of Internet of Things (IoT) and health care applications having quite challenges to achieve privacy preservation when number of distributed resources has involved during the data broadcasting. In this paper, we proposed a distributed data analysis and privacy preservation framework. In this paper, we introduced numerous privacy preservation techniques during data distribution to achieve high privacy. Some traditional methods, data anonymization, generalization, random permutation, specialization, top-down and bottom-up data generalization, fingerprint insertion etc., are also evaluated on extensive data when distributing with multi parties: the proposed one-way hashing privacy, XOR operation for generating multiple secure copies. First, we develop a few dynamic policies for each copy using XOR operation and insert fingerprints in individual documents. The collaboration of XOR operation and custom policies archives higher security from internal as well as external attacks. On the other hand, the data recovery approach has been designed to extract a fingerprint from secure copies. In the extensive experimental analysis, we evaluate proposed results with numerous existing systems and show the effectiveness of proposed modules in a distributed environment.

Keywords: Data security, data privacy, distribution of data, data leakage, privacy preservation, fingerprint insertion, removal

Total Fitness: Online Advisor For Diet And Home Workout

Dr. Nilesh Deotale, Siddesh Jaiswal, Smruti Chaudhari, Zeal Tailor, Abanna Jose

Abstract: Exercise is one of the noticeable increases in priority among the youth, one's own health and fitness was regarded as a secondary priority in the past. This study was done to put this theory to the test and see if it was correct. Because there are few studies on this topic that target this specific group of people, this study was conducted to better understand the physical activity habits and attitudes of university students. The study looked at the key ways that regular physical exercise and fitness contribute to optimal health and wellness, particularly in the area of illness prevention and control. The respondents were asked about their views, motivations, demotivation, food consumption patterns, and health and fitness perceptions. When the levels of physical activity of males and females were compared, it was shown that females engaged in less physical activity. The BMI was calculated as well, in order to identify which weight category each person belongs to.

Keywords: Exercise, Physicial Activity, Health and Fitness, Diet Plan.

Air Scribble – Character Recognition Using Pen Tip

Fernando Edwin Hipson, Sibin Babu George, Radley Roy, Kavita, Shelke

Abstract: Because of the Covid-19 induced lockdown, everything has gone online. The schools, colleges, and companies are using several online platforms to continue with their work. The traditional pen & paper or board & chalk method is not preferred now. In many applications such as handwriting and drawing, using the computer mouse as an interface may be inconvenient or even time-consuming, and a graphics tablet would be desired. However, graphics tablets may be expensive for some users, and requiring them to own one is not reasonable. Converting handwritten documents into digital documents involves a common problem i.e. handwriting recognition. Instead of directly considering the handwritten document, we can focus on the movement of the hand or the pen while writing. Thus, the project focuses on detecting or predicting what is written by observing the pen movement. In this project we follow the process of writing in the air, which can be considered as writing in 3D space by using hand gestures. In other words, it is like writing on a touchless system. The system will try to predict the characters by tracing and analyzing the movement of the pen. This does not involve any sensors; the user will perform the writing action in front of the camera.

Keywords: Lockdown, Air Writing, 3D space, Character Recognition.

Study on approaches for Geospatial Data Security

Prajakta Bhangale, Prof. Dr.Subhangi Vaikole, Prof. Dr. Sachin Shinde

Abstract: Geospatial data is very sensitive data. The GIS data model should make sensitive datasets available to authorized users only and preserve the access for insensitive data from the same database to general users. To secure sensitive data from any unauthorized modifications and maintain its confidentiality, a strong encryption method with limited resources should be developed. Available encryption techniques for GIS data security are dealing with encryption technologies for GIS data based on watermarking, symmetric key cryptography techniques, and chaotic maps etc. which are useful for copyright protections. Geospatial data is used widely for many data sensitive applications like defence management, power grids, business decision making, tracking of events and activities using IoT devices etc. These systems are all vulnerable to various cyber attacks, intrusions. It leads to incorrect information and affects business decisions.

Keywords: Cryptography, Security, Geospatial data, Vector data, Raster data, Lightweight Cryptography

Earthquake Magnitude Prediction using Neural Networks

Varad Patil, Dhrumil Shah, Yash Sankpal, Prof. Prajakta Dhamanskar, Prof. Prajakta Bhangale

Abstract: The earthquake is one of the most devastating natural disasters that mankind has ever faced; it strikes without warning and causes massive devastation. These earthquakes have a huge impact on millions of people and a lot of property. It is clear that some efforts must be performed in order to be adequately prepared for these earthquakes. For a long time, people have used odd animal behaviour to predict when an earthquake would occur. Many people believe that animals have the ability to detect when an earthquake or tragedy is about to occur, however, this is not a reliable approach to anticipate earthquakes. There are technologies such as neural networks that assist humans to be more productive in this technological age. We have taken a step in our work to draw attention to this crucial issue of discussion by predicting earthquake magnitude and depth utilising modern deep learning and machine learning algorithms. We proposed our final model using a combination of LSTM and RNN model, which has the highest accuracy score of 93.8% and provided a comparative analysis of how it performs in comparison to other Machine Learning Algorithms to predict Magnitude and Depth.

Keywords: Earthquake Prediction, Neural Networks, Magnitude, Depth, Time Series Data, LSTM, RNN

A Review On Detection Of Brain Tumor And Alzheimers Disease From MRI Images Using Deep Learning Framework

Aditee Patil and Dr. Bhavana Tiple

Abstract: Image processing plays a significant part in clinical field research. Image analysis techniques developed with advancement in the field of clinical disease diagnosis. An expert consumes large chunk of the day to analyse even a single MRI Image. Image processing as well as Deep Learning techniques and algorithms help to quicken the procedure, therefore these ways save time and effort. The aim of this paper is to showcase some of the studies which are previously done by researchers for detection of Brain Tumor and Alzheimer's Disease (AD). This paper also discusses about an intelligent system using Deep Learning techniques for the detection model of brain pathology. The unique proposed system will have five classes Glioma Tumor, Malignant Tumor, Pituitary Tumor, Alzheimer's Disease (AD), and No Tumor (Healthy Brain). The proposed method encompasses four stages: Magnetic Resonance Imaging (MRI) Image Acquisition - this is data collection, Pre-Processing of acquired data - this is data preparation, Feature Extraction and Classification, and last stage, detection of disease and system evaluation. This system will help patients for diagnosis of brain diseases.

Keywords: Image Processing, Deep Learning, Brain Tumor, Alzheimer's Disease (AD), Magnetic Resonance Imaging (MRI).

Fire And Smoke Detection System

Kranti Bade, Parikshit Urs Sridhar Hariharan Ramesh Laxman Dr. Varsha Patil

Abstract: Fire disasters typically result in a lot of loss to life and property. It is therefore imperative that precise, fast, and possibly portable solutions to detect fire be made readily available to the masses at reasonable prices. There have been several research attempts to design effective and appropriately priced fire detection systems with varying degrees of success. However, most of them demonstrate a trade-off between performance and model size (which decides the model's ability to be installed on portable devices). Our work presented on fire and smoke detection system, is an attempt to deal with both the performance and mobility issues in one design. Convolution Neural Network (CNN) is used along with the Resnet50 model. Edge detection, motion detection, area covered by flames, existence of smoke, growth of fire and background. Performance evaluations on a standard dataset, as well as our own newly introduced custom-compiled fire dataset, are extremely encouraging. Proposed fire and smoke detection system is installed for mobile, in the form of a cross platform app using flutter.

Keywords: Fire and Smoke detection, fire-store database, fire and smoke parameters, live detection model, ResNet50.

Track 2 : Civil Engineering

CSI-SAFE Software Based Investigation of Effect on Deflection and Moment for Flat Slab with Different Opening Shapes and Position

Jaicky Gurnani, Dr. Prabhakar Charpe

Abstract: The flat slab system has numerous benefits, and it is commonly used in many different types of buildings, such as shopping malls, hospitals, and offices. Buildings consisting of flat slabs must satisfy the requirements for connection to utilities, such as air conditioning or gas pipes lines. An opening in a structure causes an interruption in the natural load path. As a result, an imbalanced shear force and deflection will occur. When the opening is introduced, it will increase the effect of critical forces such as punching shears, deflections, and moments. This research carried out represents the numerical analysis and it was checked whether different shapes of openings and varying opening locations have an impact on the deflection and bending moment behaviour of flat slabs. The numerical analysis in this paper includes Group A and Group B and is further divided into three sections: models without opening, square opening, and circular opening. Openings are placed parallel to a column's face. The size of openings considered in this study are 0.50 m x 0.50 m for a square opening, and 0.5642 m diameter for a circular opening. In order to conduct comprehensive parametric study, finite element analysis has been performed by using CSI-SAFE v16 based on IS 456:2000. The purpose of this investigation is to understand the behaviour of flat slabs with different opening shapes and with different opening positions from the column face. Based on the analysis, the study proposes various conclusions and recommendations.

Keywords: Flat slab system, Model, Opening in slab, punching shear, moment, deflection, SAFE.

Design of Water Distribution Network for Tilgaon Village using EPANet and Google Earth Pro

Aniket Warghat, Yash Bangera, Pratiksha Khedaskar, David Arvinth Kumar, Mr. Sonu Tiwari

Abstract: This study presents the use of EPANET software in the design of the water distribution network for Tilgaon village in Wada taluka. The major purpose of providing a good distribution network is to provide sufficient pressure at each point with less loss. A water distribution network consists of pipes, tanks etc. EPANET software is simulation tool which is used for efficient distribution of water supply. For the analysis of existing water distribution system various data are required like, Main water source, Population of the area, Demand for water, Requirement of the pumps, Distribution Network, and water tanks. The Google Earth Image of Tilgaon village is downloaded and the elevation of a node, length of pipe was recorded for nearly 34 junctions and 47 pipes. These data were used in EPANET software for analysis of Pressure, Head loss, and Elevation. This analysis resulted in pressure and elevation at various nodes and head loss at various pipes.

Keywords: EPANET, Water Supply Network, Nodes, Pipes, Elevation.

Seismic Analysis and Design of Infilled RC Frames

G. V. Mulgund, Shreeshail Heggond, B. J. Godboley

Abstract: Present IS codes do not have detailed guidance for treating effect of infill walls in RC frames. Infill walls with or without opening and walls with varying percentage of opening behave differently in RC frames. This paper addresses seismic response of infill's (Brick) frame structures which are very common. Results interns of various parameters are presented which will be useful in the seismic design of frame structures. the results indicated that the arrangement of the infill panels in the frame remarkably influenced the performance of structures.

Keywords: Masonry infill, RC frames, Seismic response

Analysis, Design and Estimation of Shopping Mall for Palghar City Using Etabs Software

Shreeshail Heggond, Kartiki Gharat, Priyank Khandare, Akshata Patil, Chinmay Patil

Abstract: Structural analysis is a discipline of engineering that includes determining the behaviour of structures in order to forecast the reactions of real-world structures such as buildings, bridges and trusses, while maintaining the structures economy, elegance, serviceability, and durability. Structural engineers are faced with the task of achieving the most efficient and cost-effective design while ensuring that the buildings final design is serviceable for its intended use during its design lifetime. For the G+3 Commercial Structure, analysis, planning, and estimate of a multi-story building were undertaken, with the arrangement of beams and column placements established depending on the appropriateness of the plan. Dead loads are estimated using material characteristics, while live loads are taken into account using the IS875-Part 2 code, and footings are planned using the soils safe bearing capability. To determine the moments acted upon by columns and beams, limit state analysis is used. The kind of slab (one way or two way), end conditions and loads are all taken into consideration while constructing a slab. The loads are transferred from the slabs to the beams, then the loads from the beams are taken up by the columns, and finally the section is checked for components manually and using ETABS 16.0.0 software for post-analysis of structure, maximum shear force, bending moment, and maximum bending moment. Detailing of reinforcement by using Staad RCDC Software This analysis takes into account severe seismic zones, and behaviour is evaluated using Type-II soil conditions. In our project we estimate and costing of the G+3 shopping mall with step-by-step procedure and calculations in Excel.

Keywords: AutoCAD, shopping mall, Limit State Method, NBC, ETABS, Isolated Footing, Open Newel Quarter Turn Staircase, Staad RCDC, Design, Analysis, Estimation.

Artificial Neural Network (ANN) Modelling for Removal of Arsenite from Groundwater by Impregnated Binary Oxide Adsorbent (IBOA).

Dr. Rajesh M. Dhoblea, Prasad Kane, Vaishali P. Kesalkarc, Sadhana S. Rayalud

Abstract: In many developing and developed countries, presence of arsenite [As(III)] more than 10 ppb in groundwater is reported. Many people use the arsenic contaminated groundwater for drinking purposes, which is hazardous to human health. Hence need to be removed below the permissible level before use for drinking purpose. In this batch study, IBOA was used as an adsorbent to remove As(III) from water. From experimental data, optimal values for the dose of IBOA, time of contact and pH were found to be 1.0g/L, 24 hrs and 7.0, respectively. In this paper, ANN was applied to the various parameters and found that the results are satisfied in time study. Best fitting was found in dose study and initial concentration study where as in pH study, the ANN results and experimental results are in good agreement. In effect of coexisting ions study, ANN could not map in all cases and not show satisfactory results. From experimental data, it is proved that IBOA has good potential for removal of As(III) from groundwater.

Keywords: Arsenite, Batch adsorption, ANN

Design of Water Distribution Network of Murbe Village Using EPANET 2.2

Sonu Tiwari, Nandini Singh, Yash Shukla, Badal Sharma, Pawan Mourya

Abstract: EPANET is a software of water distribution system of MURBE village. According to our research in Murbe village total number of houses is 2,615. In households, Tap connections are available in 2,088 houses and the other 527 house are not using tap water. According to Jal Jeevan Mission 55 litres of water reach to each person. 8414 people will be living in the village in 2023 as per population forecasting. To ensure that a sufficient quantity of high-quality water is available to all segments of the community in accordance with demand. For the effective design of complicated pipe networks, EPANET has grown in popularity and use. This study focuses solely on the use of the EPANET tool to create and distribute a pipe network. EPANET is a software that simulates hydraulic or water-quality behavior over long periods of time in pressurized pipe networks. It is intended to be a study tool that advances our understanding of the movement and fate of drinking water within distribution systems. A network consists of Pipes, Junctions, & ESR. EPANET gives pressure at every junction and flow and head loss velocity at pipe. In this Paper we conduct a study of water distribution network of Murbe Village. The Results included pressure at each junction and flow velocity at all pipes.

Keywords: EPANET, Junction, Nodes, Elevation.

Development of Web Application to Locate Feasibility of Soil Parameters between Thane and Palghar Districts

Dr. Buddharatna J Godboley, Binson Mathew, Chidhambari Raut, Kabir Yadav, Rohan Shah

Abstract: To build any structure, it is necessary to understand the qualities of the material on which it will be built, which could be sand or soil. Many different varieties of soil surround the Earth, including black soil, red soil, laterite soil, loam, sea soil, and so on. Every soil has its unique set of fundamental as well as engineering features, such as index and strength. In the design of foundations, there are two fundamental conditions that must be met: a) Providing a suitable factor of safety against foundation material failure. Failure of the foundation material can result in the foundation failing, as well as the complete structure failing b) Adequate protection against structural damage induced by foundation settlement, either complete or differential. To meet these standards, a detailed research of the foundation materials, as well as an investigation of their qualities through laboratory or field testing, is required. In our study we have gathered soil samples from the talukas of Palghar and Thane districts and tested them in the lab.

Keywords: Soil, SBC, Foundation, Failure, Settlement

Water Distribution System for Six Villages in Jawhar City by Jaltantra Software

Pascoal Ferrao, Aakanksha Karbat, Harshit Shrimakar, Himanshu Thakur, Ronny D'souza

Abstract: In India, rural water systems that serve a single village are becoming more widespread. Multi-village water delivery schemes have the potential to exploit economies of scale and permit more significant levels of service, and they appear to be a viable and long-term solution to India's acute water scarcity. The obstacles to providing long-term access to rural water services in developing countries are generally more complex than the technology itself. The Jawhar water delivery network serves six communities. The main goal of this program is to use "Jaltantra Software" to create a cost-effective water distribution network. Many visits were made in order to evaluate the strategy. The scheme's conclusions include basic network topology, a preliminary operational schedule, and Sump tank filling activities. We examined current assets' capacity to meet current and future demand. This plan has the potential to be used in the future if assets are replaced on time and the scheme is operated and maintained correctly.

Keywords: MBR (Mass Balancing Reservoir), Sump tank, Water Distribution Network, Jaltantra Software

Analysis and Compilation of Humidity and Temperature Data With the Help of IoT: A Case Study on Go Green Concept

Dr. B. J. Godboley, P. M. Choubey, A. D. Sane, S. B. Pimple, A. P. Bhoir

Abstract: With the overall temperature rise across the globe and the sweltering heat these summers, one can safely assume that households will see a furious shoot-up in their electricity bills this year. While the urban population resorts to air-conditioning to escape the heat wave, the poor clamour for shade in varied confinements. About 300 million people in India live without access to power. The perfect solution for the poor to the problem of rising temperatures is the 'Eco-Cooler', a cooling device that can run without electricity by introducing 'Venting Skylights'. The process involves creating grids made from repurposed plastic bottles cut in half and installed on windows as per size. Based on the direction of the wind and the pressure created by airflow, the Eco-Cooler decreases the temperature by five degrees Celsius at optimal conditions. Venting skylights can be opened or closed, allowing fresh air to circulate in home, boosting ventilation beautifully. They can also be opened to release heat build-up or moisture.

Keywords: Eco-coolers, Venting skylight, Energy efficiency, Zero energy consumption, Temperature drop

Performance Evaluation of Hybrid Reactor (HUASB) for Treating Blended Industrial Wastewater as Substrate

Rajani Saranadagoudar, Dr. B.B. Kori, Dr. Shashikant. R. Mise

Abstract: In data classicification dimension reduction is a major problem in pre-processing. This problem affects the efficiency of the classification algorithms and recognition of specific features. In our research work a novel algorithm has been proposed to solve this issue Some of the existing learning methods perform well for small cloud data classification but it fails when they are being applied to unstructured and massive big data. Due to the fail, they remain inadequate to effectively handle and classify voluminous big data Improved accuracy with better massive data classification-When clustering the big data on cloud computing has concentrated on either numerical or categorical data, rather than both types of attributes that have noisy data. Due to the noisy objects, existing techniques cannot obtain the desirable clustering results for the dataset. When existing techniques try to minimize the negative effects of noisy objects by assigning the small weight to each noisy object which increases the high computational complexity. So in this research work efficient clustering module has proposed to reduce time complexity and computational complexity.

Keywords: Big Data, Cloud, classification, cluster, CODA.

Track 3: E & EC (Electrical, Electronics & Communication)

Real-time Water Quality Management using IoT

Dr. Varsha Patil, Namrata Patel, Kranti Bade

Abstract: Water quality management is carried out with the help of manual testing and continuous checking of water samples. This is not a recommended and reliable technique as it does not give alerts about water quality in advance. With the advancement of Internet of Things (IoT) machines can communicate and act smartly. Proposed IoT application is developed for monitoring and investigating water samples to manage its quality. This IoT application for measuring water quality composed of various sensor nodes and microcontroller can be employed at water quality management unit for continuous monitoring. This water quality monitoring system using IoT implements modules for assessing different physical and chemical parameters of the water by using sensors situated a water level. pH level, temperature and turbidity sensors and a Wi-Fi module are used for water quality detection. Using wirelessly connected module system can exchange the gathered information with the server. Advantages of the proposed approach is low cost solution and accurate detection of water quality.

Keywords: Arduino Uno microcontroller, pH, temperature, turbidity sensors, Wi-Fi module, IoT.

AI Based Driver Assistance System using Open CV

Aakash Rohila, Navin Bairi, Chinmay Tare, Nrupal Chaudhari, Dr. Pandharinath Ghonge

Abstract: According to National Crime Record Bureau, "Traffic Collisions are a major source of death, injuries and property damage every year in India". In modern days with an increase in Automobile vehicles each year, the risk factor associated with accidents also increases dramatically. But with an increase in computational power and research based on Artificial Intelligence, we could incorporate these findings for better use, such as preventing or avoiding road accidents in India and around the world. The main objective of this paper is to showcase the power of AI on a low specification device and in different areas of driving situations such as Lane Detection and Departure Warning, Collision Detection, and Driver Drowsiness Detection. Lane detection is implemented, by applying different image processing techniques and determining off-center for lane departure warning, YOLOv4-tiny was used to detect objects instead of YOLOv4, which provides a comparatively faster result, which is used for predicting front collision, for driver drowsiness detection facial features were determined using Dlib algorithm. This technique can be used to create a low-cost Driver Assistance System that would make driving more enjoyable and safer.

Keywords: DAS, Dlib, OpenCV, YOLOv4-tiny

IoT based Intelligent Security System for A Forest

Khemraj Bhole, Rahul Budhwar, Saurabh Chavan, Jayant R Nandwalkar, Dnyandeo Pete

Abstract: After air and water, forests are the next most significant natural resources on earth. They basically aid existence on this planet with the aid of soaking up carbon dioxide and liberating oxygen, thereby preserving equilibrium within the gaseous environment and additionally causing the success of the hydrological cycle creating rainfall. Forests provide food, medicine, timber, and many other essential products. They play protective roles against soil erosion, drought, floods, strong radiation, etc. The four major operations that are crucial in monitoring the forest are anticipated in this paper, namely tree cutting detection (to recognize the tendency of tree when it is being cut), fire detection, location detection, and temperature using tilt sensor, fire sensor, GSM module, temperature sensor respectively. The proposed IoT based intelligent security system for a forest works in two parts, first to gather sensors data from tree sites (In our projected system Raspberry pi is integrated with sensors). Secondly, a Python-based system where receive, process, analyze, sends SMS and Location of the affected site to concerned security persons or forest officers. This system will enhance E Governance in the forestry sector.

Keywords: IOT, Raspberry Pi, GSM Module, Temperature Sensor, Tilt Sensor, Conservation of Forest, Forest security, wildlife.

Spatial Clustering with Dynamic Hops for Data routing in WSN for Enhanced QoS Metrics

Susheelkumar Panchikattil, Jayant Nandwalkar, Dnyandeo Pete, Shubhangi Vaikole, Sachin Shinde

Abstract: Space and time correlation is more pronounced in data centric wireless sensor networks. One of the approaches towards energy sustenance in wireless sensor network is to identify the nodes with similar readings and maintain the orderly collection of data from such nodes in a time dispersed manner so as to enhance the network lifetime. We try to take advantage of this spatial correlation and apply the same in cluster formation process. Here in this paper, we have proposed an algorithm towards Spatial correlation based clustering and an election of cluster head determined by the position of cluster members with reference to the sink or Base Station location, the residual-energy of the nodes, the summative distance of propagation from each cluster member to the cluster head. Also the routing algorithm adopts a dynamic two hop or three hop route to reach the sink, thereby contributing to the energy efficiency and improved lifetime of wireless sensor network in comparison to that in standard algorithms like Low Energy Adaptive Clustering Hierarchy (LEACH), Stable Election Protocol (SEP) and Distributed Energy Efficient Clustering (DEEC) Protocol.

Keywords: Two-hop, Three-hop, Spatial-Correlation, Throughput, Network Lifetime

Dwindling Power Loss by Reducing the Decrement Rate of Refractive Index in Optical Fiber Communication

Jayant Ramesh Nandwalkar, Panchikattil Susheelkumar Sreedharan, Dnyandeo Pete, Shubhangi Vaikole, Sachine Shinde

Abstract: Refractive Index is very important parameter of photo material; also it has great importance in both engineering and research. Refractive index of fiber is significantly affected due to heat treatment to fiber. Light scattering results due to variation in Refractive Index, to avoid this, one should understand the interrelations between other parameters and refractive index of fiber. Only precise measurement of refractive index is not sufficient to reduce the effects of RI on power loss, but concern of RI with another parameter is quite important. The refractive index varies due to local molecular density and hence it passes information, for example, the micro structured biological tissues. This paper describes the interrelationship among the temperature applied to optical fiber, power loss and refractive index of SMF. After many more investigational set ups we proved that there is increment in loss due to heat application and RI is reduced simultaneously.

Keywords: Refractive Index, power loss, SMF, microstructure.

Data Logging in UAV Assisted IoT Network

Amar Barik, Saumyakanta Khatua, Abhishek Rana, Dr. Gajanan R Patil

Abstract: The world is moving towards connectivity with everything. A lot of devices have already been connected to the internet and are transferring information between them. But still providing internet to every device is a challenge especially in remote areas where the network connectivity is poor. It is also difficult for human beings to reach remote locations to collect data. Hence the edge devices need some source to transfer their data to the internet. UAVs (Unmanned Aerial Vehicles) are the perfect solution for this scenario as they can reach adverse locations with less resource utilization. UAVs can provide connectivity & collect data from these devices. After collection of data its processing is the next challenge where most of the pre- existing network do it on the edge device itself, which induces extra load on them, and this may lead to skipping of data reading cycle hence data loss.

In this paper various issues related to data logging in UAV assisted IoT networks are discussed. The issues such as placement of sensor nodes, connectivity to the nodes, UAV platform architecture, Tools for design & development of UAV assisted IoT network are presented.

Keywords: Wireless Sensor Network, UAV, Data Logging

Development of Rainfall Measurement System using Digital Image Processing Based Multi-Sensor Approach

Dr. Pandharinath A. Ghonge, Dr. Kushal R Tuckley

Abstract: Rainfall is a natural phenomenon and its observations are often required as part of the flood warning process. The main measurement techniques which are used are rain gauges, weather radar and satellite precipitation estimation; each has its own advantages with limitations and the methods are complementary to some extent, providing information at different spatial and temporal scales. In this article, a new approach is developed to estimate rainfall from droplet image data using proposed signal processing algorithm. This proposed method uses multi-sensor image data captured by two orthogonal placed cameras. After selection of appropriate data image, it is enhanced for noise free and smooth edges then. Fusion of multi sensor image data gets more a informative image followed by segmentation for rainfall parameter analysis. Finally, drop size distribution, rainfall rate and direction of precipitation with its intensity are computed using the proposed algorithm. The real time image data in the form of images / videos were collected at Indian Meterology Centre, Colaba Mumbai, during the day time from 24th July to 6th August 2016 and experiment results of the method are compared with rain gauge observation techniques at the same place. We found that mathematical computations are only involved in this method and most convenient alternative by portable (cellular) device over conventional tedious and laborious methods. It would be more helpful to the disaster management teams in the city, water dam management authorities, travelers, fishermen and farmers to know rainfall situation in advance.

Keywords: Rainfall measurement, fusion, Drop size distribution, Tri-class thresholding, multi sensor approach.

Outdoor Node Localization in WSN for Industry Applications

Gaurav Sharma, Humaira Nishat

Abstract: Information of accurate node location is one of the crucial and imperative elements of monitoring data in wireless sensor networks (WSNs). DV-Hop (Distance-Vector Hop) localization algorithm, as a commonly used range- free localization scheme for outdoor industry application, is of practical importance to improve its localization performance. To achieve global optimization, a DV-Hop algorithm based on cyclotomic method together with weighted normalization, also known as CMWN-DV-Hop, is proposed in this paper for any industry application. Hence, the segmentation and weighting factor are introduced and normalized. The effects of various factors on this algorithm are tested, and the data showed that CMWN-DV-Hop has significantly superior performance in various aspects than DV-Hop, CS-DV-Hop, NSGA-II-DV Hop, and BFO-GSO-DV-Hop. Simultaneously, CMWN-DV-Hop is reliable, practical, and stable.

Keywords: Wireless Sensor Networks (WSN), Cyclotomic Method, Node Localization, DV-Hop Algorithm

An Innovative Smart Cart using RFID Technology and QR Code

Linda John, Abhee Waghela, Bhupesh Jha, Subhangi Sati, Pratiksha Atkari

Abstract: A variety of goods are available from stores like grocery stores, clothing stores, malls, and markets. There are barcodes on the products that identify them, but the billing process is lengthy, and customers wait in lineuntil their turn finally comes. As a solution to this problem, we are introducing a smart shopping cart that utilizes RFID technology. RFID (RADIO FREQUENCY IDENTIFICATION) tags are automatically read by the RFID reader connected to the cart when the cart is filled with products and the bills are automatically generated. An electronic QR code is present in the shopping cart, which when scanned directs the cashier or customer to the server, where a proper bill is generated and payment options are displayed, which must be made at the billing counter or online. By doing this, customers can avoid standing in line.

Keywords: RFID, Node Mcu-Esp8266, QR code, RFID reader

IoT based Logistics Management System

Aditya Kadam, Aditi Bakshi, Raaj Kotian, Aditya Kini, Sushma Kore

Abstract: Logistics is an organizational support function and means having the right things in the right place, at the right time, Planning Management involves planning, organizing, leading, co-ordinating and managing organizational planning activities. In military science the maintenance of human supply lines while disrupting that of the enemy is an important aspect of military strategy, as an unarmed force cannot protect itself. Logistics manages the movement of goods and services between the place of origin and the place of use in order to meet the needs of the customers. Transportation includes information integration, transportation, inventory, inventory management and periodic packaging and security. Logistics is a supply chain channel that adds value to time and space.

Keywords: Inventory, IoT

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Track 4: Mechanical

Surface Roughness and Hole Size in BTA Drilling Using an Artificial Neural Network

Keshav H. Jathkar, Janak Suthar, Gopal Mulgund

Abstract: In this paper, an attempt has been made to analyze BTA machining using a neural network, which has not been done so far. Boring Trepanning Association (BTA) machining can drill holes with a large length to diameter ratio in a single pass. The present work deals with surface roughness and hole size of BTA machined stress-proof steel components using a back propagation neural network (BPNN). Levenberg–Marquardt algorithm is used to speed up the convergence of back propagation. Experiments have been carried out on production equipment over a wide range of cutting conditions, and the effect of various process parameters like spindle speed, feed rate and length of hole surface roughness and hole size has been studied. The data thus collected from the experiment has been used to train a BPNN for surface roughness and hole size. The performance of the trained network has been tested with the experimental data and is satisfactory.

Keywords: Artificial neural network, BTA machining, surface roughness, hole size.

Design and Analysis of Lifting Tackle for Heavy Loads

Mr. Mangesh Jadhav, Dr. Kuldip Rade

Abstract: The material handling system is used for the movement, protection, storage and control throughout manufacturing, warehousing and disposal. The lifting tackle is the type of material handling system that is used to lift and lower the load or material. In this paper the research work is carried on special purpose of lifting tackle which is used for heavy duty application like Train Boggie. Tackle design and 3D model is generated by the use of CATIA V5 R21 software. The structural strength is analyzed by using ANSYS Workbench 19.2 version software. For this work two boundary conditions are considered, the design is as per the boundary conditions and it is validated by finite element analysis method. Results will be concluded on the basis of factor of safety.

Keywords: Material Handling system, Lifting Tackle, Finite Element Analysis, ANSYS Workbench

Electrospun PAN Nanofiber with Optimized Diameter

Yuvraj V Thorat, Dr Sachin S Chavan, Dadaso D Mohite

Abstract: The recent trends in nanotechnology have led to an improvement in the manufacturing quality of smaller mechanical, electronics, and optical products and devices; all the attention is focused on producing compact, portable, and lightweight equipment and devices to reduce the overall energy consumption. Nanofibers are increasingly being used in a variety of applications. As a result, the researcher focuses on the development of nanofibers. They can be produced by various techniques, but the electrospinning method is the most commonly used in the industry. Polymer solutions can be used to create fibers with diameters, which has a high rate of production and requires a relatively low cost. In this work, an effort is made to produce nanofibers of polyacrylonitrile (PAN) insolvent dimethyl formamide (DMF) that have a minimum diameter. Four important controllable parameters are considered, which can affect the electrospinning process and resultant PAN nanofibers: flow rate, applied voltage, concentration, and distance between the collectors drum and syringe tip. The Taguchi design approach has been used to find the optimized electrospinning parameters that result in the minimum PAN nanofiber diameter. The diameter and surface morphology of PAN nanofibers were analyzed using a scanning electron microscope (SEM). The results were used to find the variance (ANOVA) analysis, which explains the significance of the parameters on the diameter of PAN nanofiber and predicts that flow rate is the most dominating parameter for PAN nanofiber diameter. The optimized set of produces minimum fiber diameter of 58.467 nm.

Keywords: Nanomaterials, Electrospinning, Carbon Nanofibers, optimization, Taguchi Method, and ANNOVA.

Experimental Investigation on Speed and Torque Analysis of Epicyclic Gear Train

Dadaso D Mohite, Neel R Patil, Siddhikesh B Shinde, Dr. Kuldip A Rade

Abstract: A gear is a rotating circular toothed element which transmits the torque and speed to another toothed element, when it is meshed with each other. Gear trains are widely designed to transmit torque and angular velocity between different shafts when there is a significant space reduction within a restricted area. The needed speed ratio and the location of the shaft axes suggest the type of gear train employed. In this research paper, efforts are taken for speed and torque analysis of epicyclic gear train. The average gear ratio 5.72 is obtained for various input speed of motor. Also, input torque, output torque and holding torque are determined by experimentation by employing rope brake dynamometer. Further, the analytical and experimental torque findings were compared, which showed the error less than 15%, as a result of certain mechanical and frictional losses.

Keywords: Epicyclic Gear Train, Holding Torque, Input Torque, Output Torque, Rope Brake Dynamometer.

Optimization of Heat Transfer Rate in Fins used for Cylinder Compressor Head

Sachin M. Shinde, Shubhangi Vaikole, Panchikattil Susheelkumar Sreedharan, Jayant Nandwalkar, Girish Babaji Gidaye

Abstract: This paper focuses on providing optimized heat transfer rate produced in fins that are provided on the cylinder head present on the compressor. Three different cross sections are taken into consideration, which are straight (rectangular), trapezoidal and parabolic cross section. The parabolic cross section stands to be the optimized cross section at level one. Then further, rectangular and triangular profiles are analyzed at the tip periphery and the base of the parabolic fin. Investigation results declare that the rectangular profile cut at the base of the parabolic fin provides the most optimized heat transfer rate. The last stage optimization is done by providing circular holes at the tip and at the base of the fin geometry. The final results that are laid in the paper depicts that parabolic fin body with rectangular slots and cylindrical slots is the most optimized geometry.

Keywords: Straight Fin, Trapezoidal Fin, Parabolic Fin

Improvement of Heat Transfer Through Use Of Twisted Tape Inserts: A Review

Shrikant Arunrao Thote, Prof. (Dr.) Netra Pal Singh

Abstract: Heat exchangers can be found in many applications ranging from engineering devices to household consumer appliances [35] (Vijaypal et al. 2016). For heat exchangers, they must offer a good heat transfer performance apart from saving energy [14] (Li et al. 2015). Heat transfer enhancement techniques help to save energy and cool hot components in the design of electronic and mechanical circuits [33] (S W Chang et al. 2016).

However, enhancement in heat transfer takes place at the cost of a bearable increase in friction losses and pressure drop [36] (Vashistha C. 2016). Therefore, miniature heat exchanger systems and the cost of energy, motivate industries to use energy-saving methods in their design [34] (V.Singh et al.2016). With aging, the most common problem in heat exchangers is the reduction in heat transfer rate. Numerous studies have proved that placing a disturbance occurs in the fluid flow path can help to increase the heat transfer rate in the case of worn-out heat exchangers. For decades, researchers are numerically investigating the effects of various kinds of inserts tape to improve the heat transfer operation in the heat exchangers. Through the large number of papers reviewed by us, we came across several designs of twisted tape inserts where earlier researchers have performed experiments by using tape inserts of different materials, varying twist ratios, different angles of attack, varying pitch ratio, varying cuts, etc and have successfully achieved an improvement in heat transfer rate. As heat exchangers form the backbone of many industrial processes, the idea of saving energy with the design of a cost-effective tape insert motivated us to work on this area of research. This research aims to review the findings of earlier researchers in this area and to utilize the knowledge for improving the heat transfer rate of conventional tubes in our future work.

Keywords: Heat transfer, twisted tape inserts, wings and cuts, laminar flow, flow regimes

Performance Investigation and Comparison of Single Cylinder Four Stroke Diesel Engines With Super, Turbo, and Tri-charger

Rajesh Bisane and Rajesh Kale

Abstract: The current study focuses on the influence of various boosting technologies as well as a comparative examination of single-cylinder four-stroke diesel engines. The experiment was conducted out on a single-cylinder 4-S VCR diesel engine with a crank-driven supercharger, turbocharger, and Tri-charged, which combines the turbocharger, crank-driven supercharger, and electric-driven supercharger system. Because the crank-driven supercharger uses engine power and the turbocharger has turbo-lag, the tri-charged system is used. The trials were carried out at a constant speed of 1500 rpm and a varied loading capacity of 0 kg to 12 kg at 2 kg intervals. The results increased the volumetric efficiency (VE) of the tri-charger from 81.17 to 122.35 percent. It is also raised in super and turbo running modes. Tri-charging lowered the BSFC from 0.36 Kg/Kwh to 0.31 Kg/Kwh, while thermal brake efficiency rose from 31.34 percent to 32.97 percent when compared to a traditional engine. The tri-charged method also helps to reduce pollution. The CO level dropped from 0.12 percent to 0.07 percent. NOx rises from 1015 ppm to 1210 ppm due to the supercharger, 1268 ppm due to the turbocharger, and further lowered to 1128 ppm owing to super and turbocharger, although higher than conventional. This rise in NOx is caused by the increase in combustion temperature caused by the boost charger. Thus, the findings show that a tri-charged system is optimum for single cylinder diesel engines in terms of performance enhancement and fulfilling rigorous emissions standards with emission reduction.

Keywords: Conventional, Supercharged, Turbocharged, Tri-Charged Engine, Emission Analysis

Generation of Polyfuel for Future

B. J. Godboley, T. H. Sankhe, K. K. Kini, I. Z. Farooqui, S. Joy

Abstract: Due to Rapid urbanization and excessive human population growth, changes in human lifestyle etc. the meteoric use of plastic is seen over these days. It is increasing at alarming rate, giving us an urge to find solutions over multiplication of plastic waste. Pyrolysis is a tertiary recycling technique through which organic polymers decompose at high temperatures into components of lower molecular weight in the form of synthetic gases, oils and solid residue under absence of Oxygen (O2). This experimental work is an attempt to recycle plastic waste into fuel. The word "Polyfuel" here is a fuel which is made of a plastic. In this study, we have performed the experiment for conversion of waste plastic like HDPE to liquid fuel like diesel. This is done by catalytic cracking of these waste plastics by means of thermal energy in the temperature range of 400-4500C. We used Balloon flask of 3-liter capacity as a reactor, beaker for collection of liquid fuel for this experiment. The glass condenser is used for condensing the generated vapors during the process. We found 430 ml of fuel from 800 grams of waste plastics at a reaction temperature of 400-450C. This collected fuel was tested in a laboratory for obtaining its characteristics properties. The Polyfuel matches its characteristics properties to Diesel. Analysis shows that the Density @15 degree Celsius is 0.7825 gm/ml, Moisture is 200 mg/kg (ppm), Flash point is less than 10°C. [2]

Keywords: Polyfuel, Pyrolysis of waste plastic, Diesel, Flash Point

An Overview of the Optimization of Balepress Machine

Ms. Bhagyashri Kandalkar, Mr. Vinod Bhaiswar, Mr. V.M. Khond

Abstract: The separation of cotton from cottonseed is process of Ginning. In Ginning industry, ginning and pressing operations are done. The lint cotton is converted into a standard bale. Day to day increasing capacity of ginning plant is such that the cotton bale handled by their press system gives increase to large forces. Frame structure of the machine should have to withstand the increasing forces without any damage. In these paper, it is explained the FEA implementation for analysis and optimization of frame of balepress machine. CATIA, SOLIDWORK are used to complete the model of frame of machine. This paper throws light on the optimisation of the frame of a balepress machine. This optimisation helps to save the cost of material. The recent research in manufacturing industry is focused on optimisation of weight of the machine and modifying the structure with help of ANSYS software which reduces the cost of product and meets the design. Many researchers explained the weight optimisation of top beam, bottom beam of balepress machine, hydraulic press of various tons, c-type frame with the help of ANSYS software.

Keywords: Optimisation, failure analysis, structure, FEA, ANSYS.

Performance Improvement of Vapour Compression Refrigeration System using Phase Change Material and Thermoelectric Generator

Yogesh N. Nandanwar, Vednath P. Kalbande, A. S. Chaudhari, Man Mohan, Kishor Rambhad, Pramod V. Walke, Vijay Kalbande, Buddharatna Godboley, G.V. Mulgund and Keshav Jatakar

Abstract: In the present study, improvement in the coefficient of performance (COP) of vapour compression refrigeration system is studied by utilizing phase change material (PCM) and thermoelectric generator (TEG) in the system. The subcooled refrigerant was achieved through extracting heat via PCM in a separate PCM chamber installed in between the condenser and expansion valve. Heat stored in the PCM was supplied at the hot side of TEG, while the aluminium container, in which the condensed water yield accumulated from the evaporator coils, served as a cold side. Due to the temperature difference on both sides of TEG, electric power was generated. The Overall effect of using PCM and TEG in vapour compression refrigeration system was increment in the refrigeration effect and COP as well as reduction in the net amount of work required. The percent reduction in the net amount of work required and percent improvement in the COP of refrigeration system was 4 percent and 7 percent respectively.

Keywords: Phase Change Materials, Vapour Compression refrigeration, Condenser, TEG

Performance Investigation of Automotive Radiator Using Blends of Al2O3/water+EG Nanofluid

Vednath P. Kalbande, Yogesh N. Nandanwar, Man Mohan, Kishor Rambhad, Pramod V. Walke, Vijay Kalbande, Buddharatna Godboley, G.V. Mulgund, Keshav Jatakar and Nilesh Deotale

Abstract: Efficient cooling is an important requirement for automobiles. The operating temperatures in car radiators are kept in control through proper coolant air circulation. These investigations are studies performed on radiators (compact heat exchanger) by means of a detailed overall heat transfer coefficient in an Al2O3/water + EG nanofluid mixture circulating through the circular tubes of an automobile radiator. This nano fluid mixture has been experimentally studied to evaluate their superiority over the base fluid. And the distance between fan and radiator is optimized by experimentation. The air side thermal resistance is more dominant in the automotive radiator so detailed investigation of air side heat transfer is needed to improve current design of fan and radiator and position of radiator. This work gives a general conduct report of vehicle radiators working at common scope of working conditions, while huge information-based plan ends have likewise been accounted. The results show the performance investigation of radiator for automotive uses as a selection of coolant and air flow through the core is affected by distance change in between fan and radiator which results on the heat transfer performance of radiator.

Keywords: Radiator, heat exchanger, heat transfer, nanofluid, distance between fan and radiator, ethylene glycol.

Application of Response Surface Methodology in Additive Manufacturing Process Optimization

Janak Suthar, Abhishek Kumar, S.N. Teli, G.V. Mulgund, Keshav Jatkar

Abstract: In today's growing market, parts have good mechanical properties, and surface roughness satisfies and attracts customers. Additive Manufacturing (AM) cannot utilise full-scale manufacturing because of low mechanical strength and high surface roughness. So mainly, AM is used in prototyping and job shop production. Fused Deposition Modelling (FDM) processes a plastic or wax material is extruded through a nozzle in the semi-molten state on a bed or platform precisely layer by layer manner from bottom up as per required cross-sectional geometry. Recently, industries need high-quality parts at a low cost and shorter time. Because of this, it is necessary to optimize the process parameter of the machine. However, attaining optimum values anytime by even a talented operator is hard. Hence, this paper optimises process variables to improve the FDM product's surface roughness. Response surface methodology (RSM) determines the optimum FDM machining conditions. The experimental plan and analysis are based on the design of the experiment methodology, which takes layer thickness, printing temperature, and printing velocity. The optimum combination for the parameters is layer thickness of 0.20 mm, printing temperature of 205.01 degrees, printing velocity of 50 mm/s and the optimum surface roughness of 0.0510 micrometres. According to the optimum parameters, a conformation test showed good agreement with the predictive result of the surface roughness.
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.**Keywords:** Rapid prototyping, Fused deposition modelling (FDM), Response surface methodology (RSM), Surface roughness.

Design and Analysis of Cleaning Mechanism for Explosive Fine Dust or Powder

Ashley Wade, Manas More, Nandini Singh, Danish Ahmed Khan, Rajesh Bisane, Keshav H. Jatakar

Abstract: In todays world, as the number of industries, construction sites, and mining areas grow, so does the amount of air and soil/land pollution, which has an impact on both human health and the ecology. Fine dust and powder, as well as smoke, are present in the air around and in the above-mentioned places. Some of these powders and dusts are explosive and fine in nature, causing ailments that are difficult to treat. Devices have been developed that trap these particles and give a clean surface. Vacuum cleaners using various types of dust collection, such as filter bag, cyclonic, and moist dust collection, are employed for this purpose. For this purpose, the filter bag approach is more widely utilized. It consists of a filter bag that captures fine particles and must be updated on a regular basis. Coal ash, which is found in mining areas and thermal power plants, is one sort of explosive dust. The following are some of the methods for automatically controlling dust in mining areas: Airborne dust suppression entails spraying a dust cloud and causing the particles to collide, agglomerate and fall out of the air. With the use of a cleaning equipment for explosive fine dust and powder, the goal is to restrict worker exposure to respirable dust in order to prevent illness development. This novel cleaning gadget can be employed in a power plants, coal conveying system as well as other areas.

Keywords: Explosive dust disposal reuse control.

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Track 5 : AHSE (Applied Sciences, Humanities, Social Sciences & Education)

A Study on the Sexual Harassment Faced by the Women at their Work Place

Neha Varma, Pallavi Srivastava

Abstract: Sexual harassment is a violation of one's personal freedom and dignity. Sexual harassment comprises unwanted sexually motivated behavior like as physical contact and approaches, sexually colored remarks, the display of pornography, and sexual demands, whether through words or deeds. Men and women were made in the same image so that they might participate equally in society. Women gradually became a commodity alone, despite all the opportunities for creation. In recent years, sexual harassment has become a big social issue in all workplaces. Physical, verbal, nonverbal, and visual sexual harassment are all examples of sexual harassment.

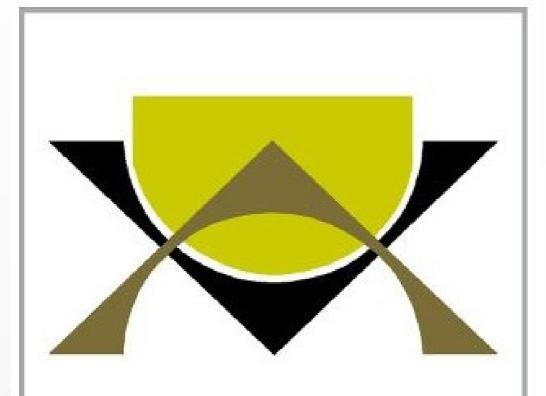**Keywords**: Sexual Harassment, Gender, Age, Crime, Awareness

COVID-19 in India - A Meta Analysis and Vaccination Framework

Dr. Jyoti More, Dr. Jyoti Deshmukh, Deeplaxmi V. Niture

Abstract: India, being a developing nation, the impact of Coronavirus - 19 has advanced as a huge crisis on the prosperity, economy, guidance, organization and for the most part of progressing region. Being the second most elevated country with Coronavirus tainted populace on the planet, there is a critical requirement for the nation to plan the systems to deal with the circumstance productively. This paper deals with the investigation of current effect of pandemic over the populace and how Machine Learning modeling can be utilized to contemplate the effect and plan the further technique to deal with the pandemic circumstance. This paper additionally expects to introduce an intelligible and exhaustive perspective on vaccination model and its effect on the Coronavirus pandemic. It examines the difficulties and proposes a hypothetical system for immunization dispersion across the populace.

Keywords: covid, epidomology, pandemic, vaccination model, herd immunity.

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Track 6: BMA (Business, Management & Accounting)

A study on Individual Awareness and Perception towards Algorithmic Trading in India

Gunwant Awasthi, Anjali Pandey, Shubham Singh, Apurva Thakur

Abstract: Stock exchanges are an integral element of not only the Indian economy, but also of the world economy. The importance of stock markets is felt by global economies at various stages, ranging from the 1929 stock market crisis in the United States of America to the Harshad Mehta Scam in Indian stock markets. Large institutional investors employ a variety of trading methods in order to maximise their returns from the markets. Algorithmic trading, often known as Algo-trading, is presently one of the most popular trading methods among institutional investors in the Indian stock market. It is a type of trading in which computers are given pre-determined instructions to carry out transactions at a rate and frequency that human traders cannot match. There are several platforms for Algo-trading, and this article attempts to highlight the key benefits of Algo-trading as well as convey the reasons for the rise of Algo-trading not only in India but also globally. This study also highlights the most popular platform for Algo-trading as well as the obstacles that investors who use these methods face. Finally, this study comes to a relevant conclusion and leaves room for further research in this field.

Keywords: Algorithm Trading, Online Trading, Stock Market, Trading Strategies, Computer based trading and Institutional Investor.

A Critical Analysis of Impact of Covid-19 Pandemic on Indian Industries with Special reference to MSME Sector.

Dr. P. Balamurugan, Dr. O.M. Ashtankar, Dr. Kiran Kakade

Abstract: MSMEs are the pillar of the Indian economy. It is the largest job provider sector and contributes nearly 40% of national GDP. The Covid-19 Pandemic outbreak impact is very adverse on the economies of many countries across the world including India. Much like others, this pandemic has severely affected the Micro, Small & Medium Size Enterprises(MSME) in the country. The survey results indicate that the MSME sector is facing the challenge of survival and sustenance. Being a crucial sector of the economy, impact on MSME will have a proportionate impact on the national economy. Hence, quick and decisive intervention of the Govt. is expected to enable this sector to weather the storm. Towards this direction, it is essential to ascertain Covid-19 pandemic impact on Indian MSME sector so that effective policy measures may be designed by the government machinery. This paper is an attempt in that direction. This research work is an exploratory study wherein a comprehensive review of available online literature was conducted. Thereafter, to add empirical evidence a survey of 519 MSMEs across the country was conducted through online mode. At the end, this paper suggests some policy measures which may help this crucial sector to face this crisis.

Keywords: MSME, Covid-19, Pandemic, impact, crisis, GDP, IIP, knowledge-based SME.

Buying Progression of Shampoo for Men and Women across Tuticorin District

Dr. M. Sivasankari

Abstract: In the current environment, the thoughts, preferences, and expectations of the consumers keep changing. The producers also offer varieties of products to meet the demands of the customers and their demands according to their gender may vary, as each gender has an independent preference towards Shampoo. The purpose of this study is to analyse the buying behaviour of shampoo. The study is made to find out if gender has any difference in purchasing brand of shampoo and also to find out whether the persuasion towards purchasing of shampoo is same or different from the point of view of Male and Female. The data for the study has been collected through Questionnaires and Interviews scheduled from 1152 consumers across Thoothukudi District. The researcher intends to investigate, the differences in the opinion of consumers on the basis of Gender and their preferences on purchase of shampoo, in light of the factors relating to it.

Keywords: Shampoo, Consumers, Buying Behaviour, Attributes, Preferences.

An Investigation on Purchase Intention of Refurbished Mobiles among Generation Z.

Dr. P. Balamurugan, Dr. O.M. Ashtankar, Dr. Kiran Kakade

Abstract: People started to work and study from home unlike before and from here on majority will be in blended and few will be offline, this triggered the demand for electronic hardware. Given this situation, refurbished electronic goods can be considered to save a significant portion of the budget. Reduced incomes, long hours spent at home, and the constant upgradation of technology have led to a tremendous surge in the demand for refurbished items, across the board. People are buying used cars, which are more valuable and depreciable than the electronic devices - without any guarantee or warranty of the manufacturers or by the intermediaries. This triggered the researchers to understand the purchase intention among generation Z

Design/Methodology/Approach –
This study applies two concepts: perceived benefits and perceived risk to study the purchase intentions. Researchers adopted descriptive research design and adopted a convenience sampling method to collect samples. The sample size of this research is 57. In addition, this research employs an empirical study by means of the questionnaire survey method to verify the hypotheses and to explore its managerial implications. Chi-Square is applied to decide upon hypothesis. Findings – It is found that, there is no difference in generation z in purchase intention of refurbished mobiles. Further, there is negative perception on refurbished mobiles are safe, that cannot be easily returned, refurbished mobiles will function like a new mobile and they are ready to accept refurbished mobiles with cosmetic repairs.

Keywords: Refurbished Mobiles, Perceived Benefits, Perceived Risk, Generation Z, Purchase Intention

Outfit Recommendation – Using Image Processing

Soham Nair, Krish Patil, Harsh Waghela, Dr. Suvarna Pansambal

Abstract: Recommendation systems are strategies for predicting an individual's evaluation of an item or social institution. Books, movies, restaurants, and other products on which people have differing opinions can be included. On e-commerce platforms with many options, an effective recommendation system is needed to sort, order, and efficiently communicate relevant product material or information to users. FRS's (image-based fashion recommendation systems) have gotten a lot of interest from fast fashion retailers since they give customers a more personalised buying experience. When going out in the real world, it is critical to dress appropriately. Wearing clothes that have some amount of flair and that comply to societal standards boosts a person's confidence and makes a favourable impression. In this paper we have proposed a fashion recommendation system which will revolutionize the e-commerce industry. This proposed system will make a type of outfit more accessible to the user by just uploading an image similar to which the individual wants recommendation for.

Keywords: Application of CNN Algorithm, Image Processing Application, Content-Based Filtering for Recommendation System, Feature Extraction using CNN Algorithm, Outfit Recommendation System, E-Commerce, Machine Learning Application.

An E-Commerce platform built on Service Quality Customer Care facility

Dr. Satish R. Billewar, Dr. D. Henry Babu

Abstract: Customer feedback and ratings are now incorporated into the decision-making processes of e-commerce platforms. Additionally, it enhances businesses' ability to resolve issues during the purchasing process and provide superior service to customers by assisting them in better understanding their products. Negative customer reviews significantly enhance a business's ability to improve the overall quality of its products and services. This implies that product development will require considerable effort. Almost always, a customer's dissatisfaction with a product stems from issues they encountered after receiving it. After the warranty period has expired, customers expect to be able to repair their products. Customers frequently assume that the repair facility, which may include a service engineer, will be nearby. The primary issue is that no single location can provide all product services. When operating an online business, it is necessary to consider the company's customers. SERVQUAL recommends several enhancements to Indian E-Commerce, including pre-purchase product comparisons, an after-warranty product repair facility, and a helpdesk with real-time chat capabilities for resolving service issues for any brands within the existing E-Commerce structure based solely on customer reviews and ratings.

Keywords: E-Commerce, customer reviews, online ratings, SERVQUAL, Service Quality

A STUDY ON IMPACT OF LABOUR WELFARE PRACTICES ON EMPLOYEE JOB SATISFACTION WITH REFERENCE TO MSMEs OF MUMBAI REGION

Dr. Kiran S. Kakade, Dr. O.M. Ashtankar, Dr. P. Balamurugan

Abstract: The outbreak of the Covid-19 pandemic impacted the global economy. India was not an exception, where majorly affected sectors due to COVID-19 outbreak are MSME sectors (Micro, Small & Medium Enterprises). MSMEs depend on their pool of able and willing human resources for effective functioning. Its human element alone has ability to feel, think and grow, feel satisfaction and dissatisfaction. The industrial progress of the country primarily depends on its committed and satisfied labor force. During Covid-19 pandemic, It was observed that labor welfare is generally an ignored aspect in MSME sectors. Hence, this research work aims at ascertaining whether the labor legislations and labor welfare practices have an impact on employee satisfaction especially in the context of MSMEs post the Covid-19 pandemic in Maharashtra. Descriptive study was conducted wherein data was collected from a sample of 100 MSME sector employees across Maharashtra. The result of the search shows that the most of the participating MSMEs have been seriously affected by Covid-19 pandemic and are facing various problems such as decrease in demand and supply, finance, labor cost supply chain disruption, decrease in profit etc. The outcome of the study is useful for increasing the job satisfaction and reforms in labor legislations which in turn will boost productivity of MSMEs.

Keywords: Covid-19, Pandemic, Micro, Small and medium-sized enterprises (MSME), Labour, Welfare, Law, Job Satisfaction.

Customer Perception Towards Food and Grocery Shopping During Covid-19 With Special Reference To DMart In Mumbai

Dr. Jyotinder Kaur Chaddah, Prof. Bins Maniyattu Mathew, Prof. Balvinder Singh Reel

Introduction: Established in the year 2002, the Indian food and grocery chain of DMart is run and managed by Avenue Supermarts Limited. Initially, it started as a single store in tony neighbourhood of Hiranandani, Powai, with the aim of providing the lowest-priced goods to consumers among its competitive peers. Since then, it went onto expand its footprint, providing its customers with an exceptional shopping experience, confident that they can rely on the quality of its offerings at such discounted prices. Promoted by Mr. Radhakishan Damani, the retail chain, has reported a standalone revenue of Rs 9,065 crore for the quarter ending December 2021 (Q3FY22) as against from Rs 7,432.69 crore reported in the same quarter last year. DMart, one of the largest retail chains in India has a total of 263 stores as on 31st December 2021. Avenue Supermarts Ltd, which owns and operates retail chain DMart reported a jump of 113.2% standalone net profit at Rs 448.90 crore for the quarter ended 30 September 2021. The pandemic amidst an economic slowdown impacted Indian retailers, most suffering a revenue hit by upto 75%. With most state governments directing shut down of all nonessential business activities, several retail stores either entirely closed or only operated grocery sections. India's retail sector which contributes to 40% of consumption took a US$30 billion hit due to COVID-19 over two weeks ending 1 April 2020, as per Confederation of All India Traders (CAIT). According to Retailers Association of India (RAI), by end of February 2020, business had dropped to 20-25%. Inspite of huge pile of stock and sufficient inventory, store operations and duration of operation per day remained inconsistent across cities due to strict lockdowns enforced by local authorities from time to time. Alongside, DMart grappled with speculation of food shortages, consumers overstocking their trolleys with food items and challenge of employees reaching stores. DMart came on top with reoiling its ecommerce set up. Further it gave a push to essentially multiple delivery centres or pick-up points in catchment areas, where it has stores so that customers could order online and pick up products from there. This research work was undertaken to study the customer perception and behaviour of consumers at DMart in Mumbai, during COVID-19.

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