3.4.4 Details of books and chapters in edited volumes / books per teacher during the year

Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
1	Yogesh S. Patil, Aniket T. Suryawanshi, Surajkumar G. Kumbhar and Shirish S. Mane			Implementation of a Team Game Tournament a Collaborative Learning Method and Study of its Impact on Learners' Development	Tenth International Conference on Transformations in Engineering Education (ICTIEE 2023)	International	07-01-2023	eISSN 2394-1707	Rajarambapu Institute of Technology, Rajaramnagar	IUCEE
2	Akash Hatiskar, K.P. Wani, P. S. Ghatage			A survey of voice of customer in Maharashtra state for the product of hybrid electric two wheeler	Third International conference on Intelligent Robotics, Mechatronics and Automation systems	International	04-05-2023	DOI:10.13140 / RG.2.2.14920.80642	Rajarambapu Institute of Technology, Rajaramnagar	IC-IRMAS
3	Aniket Suryawanshi, Yogesh Patil, Shirish Mane			Enriching Life-Long Learning Skills of Students by Poster Development and Presentation (PDP) Approach	Tenth International Conference on Transformations in Engineering Education (ICTIEE 2023)	International	07-01-2023	eISSN 2394-1707	Rajarambapu Institute of Technology, Rajaramnagar	IUCEE
4	Dr. Dhananjay Ganpati Thombare	Energy Science and Engineering	Marathi Language Translator				2023	978-81-959863-9-2	Rajarambapu Institute of Technology, Rajaramnagar	AICTE, New Delhi
5	Kamal Kishor Joshi, Vishesh Ranjan Kar, Pankaj S. Ghatage, Rama Kanta Layek	Advanced Composite Materials and Structures Modeling and Analysis	Multi-Directional Graded Composites An Introduction				2023	978-0-367-74631-5	Rajarambapu Institute of Technology, Rajaramnagar	Taylor and Francis CRC press
6	Pankaj S. Ghatage, Vishesh Ranjan Kar, Kamal Kishor Joshi, P. Edwin Sudhagar, Rahul Kalyankar	Advanced Composite Materials and Structures Modeling and Analysis	Free Vibration Characteristics of Bio-Directional Functionally Graded Composite Panels				2023	978-0-367-74631-5	Rajarambapu Institute of Technology, Rajaramnagar	Taylor and Francis CRC press

Implementation of a Team Game Tournament a Collaborative Learning Method and Study of its Impact on Learners' Development

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Abstract— **The paper showcases the encouraging results of the cooperative learning (CL) method Team Game Tournament (TGT). TGT helps students to improve and accelerate their learning. In TGT success of the team is dependent on the success of the individual [5]. A tournament is played between small academically balanced teams. Facilitators form such teams and note the performance of each team by visual monitoring, data from student questionnaires, and exam results. Exam results of Third Year Automobile course Machine Design (AE301) with and without TGT are compared. Students' performance in exams is improved, they show to be focused and participative, to develop their critical thinking. Because of TGT, deep discussions happened on topics by students in a group. They enjoy the new learning format. Social skills like teamwork and managing conflict are developed in students. Students' feedback and improvement of their performance in exams confirm the above perceptions.**

Keywords— **Cooperative learning, Team Game, Tournament (TGT), Student attitude.**

JEET Category—**Practice paper**

I. INTRODUCTION

In Cooperative learning (CL) students work in small groups to help each other learn. CL helps a student to learn the material better due to the facility to share their knowledge and discuss it with the team. It also improves the social and cooperative behavior of learners. The subject AE301 is a traditionally difficult subject. Students suffer to understand, remember and apply the number of design processes discussed in the subject. Many work on selective topics to earn a passing percentage. Slow learners find it difficult to pass the course on the first attempt. Few advanced learners only achieve excellence in it. Therefore, the new learning method needs to provide the student with an ability to efficiently work as part of a team in addition to facilitating an early and thorough grasp of concepts. In Cooperative Learning (CL) students attain their learning outcomes through team activities. The success of CL depends upon the following elements [1, 2].

i   *Accountability of individual in group success*: the success of a group is dependent on the performance of each member of the group.

ii *Group Accountability*: The contribution of each member is accountable so members help each other.

iii *Encouragement to each other*: Group members encourage each other to achieve goals.

iv *Social Skills*: Skills like leadership, communication, managing conflict, and building trust are getting developed in students.

v   *Group Processing*: Group members prepare a plan to study material and to find out all possible questions and answers.

vi *Group structure*: Heterogeneous mix of students in a group conforms to fair competition.

vii *Equal Opportunities for Success*: Every group and student gets an equal opportunity to score because of the TGT structure.

The students participate in TGT more actively because:

i   they get an award when the group wins,

ii they get recognition in school/class,

iii interaction with peer help them to understand the concepts.

iv by explaining to others they understand better.

v   even after an initial loss, they get a chance to excel.

Here TGT is chosen to be implemented in AE301.

II. TGT PROCESS

In the early '70s, DeVries & Edwards developed TGT [6-8]. In TGT teams are formed as per the ranking of the students. Competition between similar ranking students of different teams takes place [9]. The facilitator prepares questions and answers in card format. He puts cards on each table. In each table, one of the students reads the question, and the other students can "pass" or "challenge" the question. If the challenger gives the correct answer, then he/she and his/her team get a score. For every question role of the student changes. The current nature of TGT is not suitable for AE301 because of its nature. In AE301 calculations are required so some modifications are made to a traditional method.

A Survey of voice of customer for development of Hybrid Electric Two-Wheeler in Maharashtra state

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Abstract. As a customer, use of EVs has some difficulties to utilize in our habitual life. The anxiety to go with the EVs is not only the cost but also the charging time & charging station. In this study the survey of Hybrid Electric two-wheeler is conducted to examine people's mindset and necessity of Hybrid Two-Wheeler in the today's market. This survey is conducted in the Maharashtra State. It tries to find the expectation of people about this hybrid technology in two-wheeler. These expectations are from people who live in rural area as well as in urban area for short or long range for the travelling. Two variants can be implemented in the hybrid technology on two-wheeler the first one can be retro fitment and other can be a brand-new bike. Based on the data collect of the survey it is observed that more than 60% peoples are interested in the brand-new hybrid bike rather than retro-fitment kit bike. The various reason of selection of new bike & unique approach of people towards the hybrid technology in two-wheeler is elaborated in this paper.

1. Introduction

In 18th Century Henri Pieper has developed world's first Hybrid Electric Vehicle. Automotive hybrid technology became widespread in the late 1990s. Currently hybrid vehicle is intermediate phase which is moving from Internal ICE to EV. There is no such infrastructure is built for Electric vehicle till now which is the main cause for electric vehicle to comes into the automobile market. In the ICE vehicle there not any changes over the period of time to reduce emission in minimum stage. Miner changer in ICE will definitely reduce emission but it's up to certain stage, so that's a huge concern about ICE vehicle. [1] [2] Hybrid Electric Vehicle which is the more significant way to overcome such concern about ICE vehicle. There are many options to accept the hybrid technology such as parallel hybrid, series hybrid, series-parallel hybrid vehicle etc. There is also concern about the hybrid technology which is it's very easy to install in car but it is very difficult to put in to two -wheeler as there is lack of space is the most common reason. [3] [4]

Parallel hybrid bike is very new & unique technology itself in the two-wheeler which will not only reduce the emission but also it improves the fuel economy. It has component like Brush Less DC Motor (BLDC) motor, motor gearbox for more torque, Battery & controller. For this parallel hybrid bike there is control strategies is necessary. Control strategies is nothing but the shifting of hybrid mode from EV to engine & vice versa. Also, parallel hybrid mode by enabling the motor & engine to propelled the vehicle. Although the control strategies required a separate microcontroller to set a data & send the command to actuator to operate accordingly. [5].

The construction of the parallel hybrid bike is somehow different from EV bike as it has plenty of mechanism but on the other hand series hybrid bike have some simple construction as it has less component than the parallel hybrid bike. Series hybrid technology have component like generator, battery, controller etc. So, as it does not have no. of linkage like parallel hybrid so overall weight of the bike is less. There is only one concern about the series hybrid technology that is not give high power

Enriching life-long learning Skills of Students by Poster Development and Presentation (PDP) Approach

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Abstract— **In recent years' students are very reluctant to read books for studying for any course. They are preferring only teachers' notes or PowerPoint slides and mobile apps for exam study. Any type of information or study material is easily available on various networking sites. This can lead to poor interest and less engagement of students in the classroom teaching learning process. Also, in class activities are not fulfilling the expected level of learning of students, especially in the conceptual courses. So students need an activity based learning approach in the classroom. Nowadays most of the teachers in engineering institutions face these challenges. Hence, to utilize the capabilities of students, make them aware of course related books and achieve expected level of learning of students, a poster presentation module was implemented. In this practice paper, implementation of poster development and presentation (PDP) to improve learning of course fluid mechanics and machineries is detailed. This PDP approach empowers the student in life-long learning skills.**

Keywords— **Poster development and presentation, assessment, book reading, life-long learning.**

JEET Category— **Research Paper**

Poster presentations are commonly used for assessment in the all disciplines of education, this is an innovative approach of assessment in disciplines such as business, law, and the humanities. Posters have the ability to demonstrate reflection in learning and are an excellent demonstration of experiential learning and assessing authentically.

An educational poster is a tool that enables visualization in the classroom to foster student learning. A great example is an educational poster in the format of an infographic. An infographic is a collection of imagery, charts, and minimal text that gives an easy-to-understand overview of a topic.

The main function of a poster is to capture a moving audience with a message. When designing a poster, plan its design carefully. Within a short amount of time posters will attract audience and hold attention.

The best advantage of poster making is that it facilitates team work and understanding along with facilitating creative thinking. It provides students with an opportunity to learn by doing, in turn strengthening the learning.

The basic purpose of this activity that students can synthesize information visually at a glance on one page. Poster should be self-demonstrated so anyone can understand the concept. The prepared poster can help student in the exam study. The poster will present the individual learning of students.

The purpose of these activities is to get students out of being passive audience and observers and to keep the student into the learning-teaching phenomenon in person. But it is not only to participate simply in the learning process for the learners but also to encourage them to use their mental abilities, to think themselves, to comment on learned topics, and to make relevant decisions in the learning process. The student is actively involved in the learning process, directs his / her own learning, uses high-thinking and decision-making skills, and engages in cooperation with friends.

Posters include original studies that the students perform on a specific topic with their friends in the classroom. Thus, an authentic learning environment is created in the classroom. In such an environment, students involve in their own activity and they are also in an active process. Therefore; the students learn the knowledge permanently by keeping their learning alive on their own. Thus, the students use library resources effectively, develop critical thinking, group work and presentation skills.

Individual presentations improve the validity of an assessment as it is easier to gauge the performance of students individually. As Dunn et al. point out "an assessment task is considered to be valid if it permits a student's performance, on what has actually been taught, to be measured: a task would be valid if it measures what the teacher intended it to measure." Individual assessments are necessary to evaluate the efficacy of a course as well as the progress of students enrolled in the course.

I. MOTIVATION OF ACTIVITY

In this paper, the authors have introduced an assessment method that motivates students, encourages them to relate Fluid Mechanics and Machineries course with other fields. This paper describes an innovative approach of the poster presentation to these challenges that involve a mixture of traditional and modern assessments. Creating and presenting

English Edition

ENERGY SCIENCE AND ENGINEERING

M. Rizwan
Majid Jamil

II Year Degree level book as per AICTE model curriculum
(Based upon Outcome Based Education as per National Education Policy 2020)
The book is reviewed by Prof. Santanu Bandyopadhyay

ऊर्जा विज्ञान आणि अभियांत्रिकी

लेखक

म. रिझवान

प्रोफेसर

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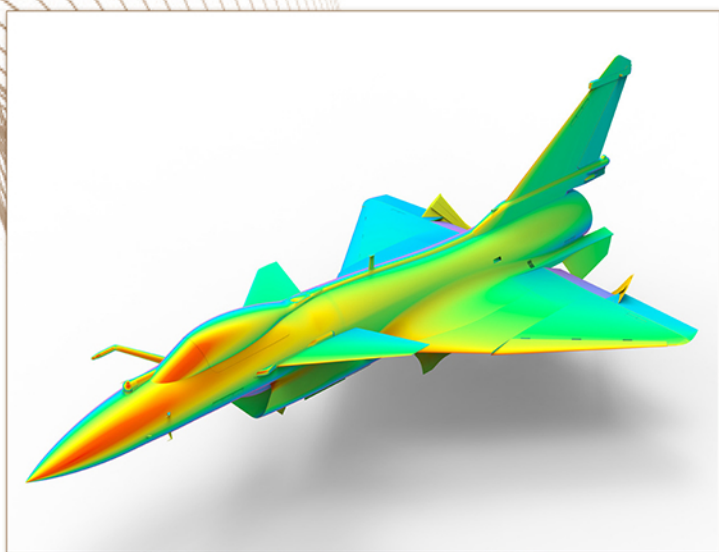
पुस्तकाच्या पुनरावलोकनकर्त्यांचा तपशील

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ADVANCED COMPOSITE MATERIALS AND STRUCTURES

Modeling and Analysis

EDITED BY

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KANDASWAMY JAYAKRISHNA

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1 Multi-Directional Graded Composites
An Introduction

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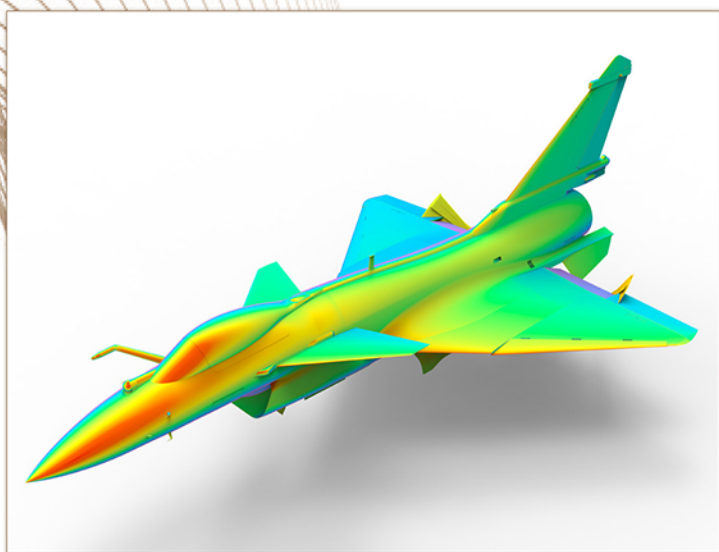
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2 Free Vibration Characteristics of Bi-Directional Functionally Graded Composite Panels

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3.4.4 Details of the books and chapter in edited volumes / books per teacher during the year 2022-2023

Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
1	Prof. Savita N. Patil	-	-	Optimization of depth of outrigger structural system for multistorey commercial building: A Review	Virtual International Conference on Multi-Disciplinary Research and Studies -2022	International	Sept. 2022	ISBN: 978-93-91535-19-3	Rajarambapu Institute of Technology, Rajaramnagar	Virtual International Conference on Multi-Disciplinary Research and Studies -2022
2	Prof. Jamadar Athar	-	-	Paramteric study of cellular beam with different size of opening in view of lateral distorstional buckling by using finite element analysis	National conference on innovation in civil engineering through sustainable technologies (NICEST'23)	National	Jun. 2023	ISBN: 978-93-95944-70-0	Rajarambapu Institute of Technology, Rajaramnagar	Inderscience

Head, Civil Engineering Department

Quantum UNIVERSITY

Optimization of depth of outrigger structural system for multistorey commercial building: A Review

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ABSTRACT

The outrigger system is one of the most efficient systems used for high rise structures to resist lateral forces.In high-rise buildings, lateral loads induced by earthquake are often resisted by a system of coupled shear walls. To make the building structure more ductile and to provide sufficient stiffness outrigger beams between the shear walls and external columns are used. In the present study the seismic analysis of 40 storied RCC high-rise building provided with central core as braces and outrigger system by varying the depth of outrigger. For the analysis, steel outrigger system with chevron shaped type braces is proposed to be used along with virtual outrigger system to compute the responses such as lateral displacement, storey drift, base shear.

Keywords – Outrigger structural system, seismic performance, lateral loads, ductility, stiffness, ETABS

I. INTRODUCTION

The mankind has always been attracted by the heights of buildings since historical times. From the construction of ancient pyramids to the present-day modern high-rise structures, the wealth and power of civilizations have found to be repeatedly got expressed through the spectacular and monumental structures. Today, high rise tall structures are considered as symbols of economic power and leadership. As the height of buildings increases, the wind and seismic forces introduce lateral displacement and storey drift in the structure, thus creating complexities in meeting serviceability demands while reducing the architectural effect of the structure. In order to address these problems or challenges, a number of techniques are available such as bracing, isolation, dampers, outriggers etc. which perform well to safeguard the structures against wind and seismic forces. For the analysis of buildings with heights more than 40 to 60 storey, techniques like momentresisting frame, shear wall, braced frame structures etc, may not give sufficient stiffness to counter lateral wind and earthquake loads. In such buildings, the outrigger structural systems are generally employed.The outrigger system is one of the

Parametric Study of Cellular Beam with Different Size of Opening in View of Lateral Distortional Buckling by Using Finite Element Analysis

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Abstract

Use of castellated beam is becoming very frequent in now a days, because of its structural benefits and aesthetics. In addition to this castellated beam with circular opening are also gaining rapid attention. These beams are subjected to various failure modes, of which lateral distortional buckling is more dominant because of increased web depth. In the past studies related to lateral distortional buckling more focus is given on study of castellated beam with hexagonal opening, very few studies are available on beam with circular opening also known as cellular beam. In this paper an attempt has been made to study behaviours of cellular beam in view of lateral distortional buckling by using numerical modelling done in finite element analysis software ABAQUS. A parametric study on cellular beam with various size of opening is done to investigate its effect on lateral distortional buckling failure mode. Different ratios of spacing of opening (S) to depth of opening (Do) and overall depth of cellular beam (D) to depth of opening (Do) are considered for parametric study. The ratio S/ Do is ranges from 1.1 to 1.7 and D/Do from 1.25 to 1.75 as per the guidelines given by Euro code. It is found that the failure mode of cellular beam is not affected by variation in S/Do ratio. Whereas, increase in D/Do ratio causes beam to fail in lateral distortional buckling mode.

Keywords: castellated beam, cellular beam, lateral distortional buckling, finite element modelling.

1. Introduction

In structural engineering, the first castellated steel beams (CSBs) with hexagonal or rectangular web openings, also known as the body beam, were developed in 1910 [1]. Subsequently, castellated beams with circular web apertures, also known as cellular beams, were also developed. Cellular beams can sustain more weight than CSBs with conventional hexagonal or rectangular web holes. Cellular beams require two cuts along the centerline of the web. It causes a rise in fabrication costs and steel waste. Because they help to lighten the structure without compromising its strength or maintenance needs, cellular beams have emerged as the preferred material for

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3+A1:J5.4.4 Details of books and chapters in edited volumes / books per teacher during the year

Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
1	Dr. Vinay Kumar Nassa			EXTRACTION AND RECOMMENDATION OF CURRENT FASHION TREND ANALYSIS THROUGH SOCIAL MEDIA INTERACTION WITH MULTIMODAL SEARCH ENGINE USING ARTIFICIAL INTELLIGENCE AND BLOCKCHAIN TECHNOLOGY	International Conference on Contemporary Challenges in Science and its Engineering Applications [IC3SEA 2023]	International	5 to 6 May-2023			
2	Dr. Vinay Kumar Nassa	A Real-Time Smart Sewage Cleaning UAV Assistance System Using IoT (Handbook of Research on Data-Driven Mathematical Modeling in Smart Cities)					Feb 2023	EISBN13: 9781668464106		IGIGLOBAL(https://www.igi-global.com/gateway/chapter/318812)
3	Dr. Vinay Kumar Nassa	Data Analytics With Python					Dec 2022	978-9355155658		Book Rivers (Available at Amazon/Flipkart)
4	Dr. Vinay Kumar Nassa	Secret Data Transmission Using Advanced Morphological Component Analysis and Steganography (Role of Data-Intensive Distributed Computing Systems in Designing Data Solutions)					Jan-23	978-3-031-15541-3		EAI/Springer Innovations in Communication and Computing book series (EAISICC)

3+A1:J5.4.4 Details of books and chapters in edited volumes / books per teacher during the year

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5	Dr. Vinay Kumar Nassa	Artificial Intelligence in HR Management (The Impact of Artificial Intelligence in the Talent Acquisition Lifecycle of an Organization)					Mar-2023	ISBN: 978-1-68576-417-3		Selfypage Developers Pvt Ltd.,
6	Ms. V. T. Lokare		Prediction of learning style from EEG data using Artificial Neural Network	8th ICCCS India Baba Farid College of Engineering and Technology, Bathinda, Punjab	International Conference on Computing, Communication and Security (ICCCS 2023)	International	March 2023			Springer
7	Ms. V. T. Lokare		Improving Academic Outcomes by determining a studen's prefered approach to studying	8th ICCCS India Baba Farid College of Engineering and Technology, Bathinda, Punjab	International Conference on Computing, Communication and Security (ICCCS 2023)	International	March 2023			Springer
8	Mr. Deepak J. Dattawadkar			5G Technology: Evolution and Challenges Ahead	International Conference on 6G and Wireless Network Technologies(3-5 April 2023)	International IEEE Xplore	3 to 5 April-2023			
9	Shweta S. Patil.			Performance Analysis of Image Caption Generation Using Deep Learning Techniques	Microelectronic Devices, Circuit & System	International	Aug-22			
10	Dr.Nagaraj V. Dharwadkar			A Medical Image Steganography Scheme with High Embedding Capacity to Solve Falling-Off Boundary Problem using Pixel Value Difference Method	International Conference on Neural Information Processing	International	Apr-23			
11	Dr.Nagaraj V. Dharwadkar			Sentiment analysis of Twitter data: A literature review	International Conference on Computer science and computational mathematics	International	Jul-22			
12	Mr. Taranpreet Singh			A Comparative Study of Various Learning Models for Object Detection in Contextual Scene Interpretation	2023 6th International Conference on Information Systems and Computer Networks (ISCON)	International	Mar-23			

3+A1:J5.4.4 Details of books and chapters in edited volumes / books per teacher during the year

Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
13	Mr. Taranpreet Singh			A Comparative Analysis of Weapons Detection Using Various Deep Learning Techniques	2023 7th International Conference on Trends in Electronics and Informatics (ICOEI)	International	Apil 2023			
14	Mr. Sandeep Mane			Image Sentiment Classification Using Deep Learning Approach	Proceedings of SARC International Conference, Madurai, India, 18 June , 2022	International	Jul-22			
15	Mrs.Vijayalaxmi Deshmukh			Web-based Cattle disease detection	13th International Conference on Computational Intelligence and information technology CIIT 2023	International	Apr-23			https://thegrenze.com/index.php?display=page&view=journaldetails&id=8
16	Mrs. Gaikwad N.P D, I, Ghadage			Data security and Privacy in Cloud Computing	Hinweis International Conference on Computer Science, Cyber Security and Information Technology (CCIT	International	22-Apr-23			
17	Mr. G.S.Vedpathak & Dr. Vinay Kumar Nassa			Visualisation Techniques - a comparative study in Data Science Workflows	International Conference on 6G and Wireless Network Technologies(3-5 April 2023)	International	3 to 5 April-2023			
18	Mr. G.S.Vedpathak Dr. Vinay Kumar Nassa			THRESHOLDING TECHNIQUES COMPARSION ON GRAYSCALE IMAGE SEGMENTATION	ANALYTICS GLOBAL CONFERENCE on April 28th & 29th, 2023.	International (Springer)	28 to 29 April-2023			
19	Dr. S S Patil			Underwater Image Restoration Using Color Distance and Image Formation Model	International Conference on Innovative Trends in Engineering and Technology [ICIET-2022	International	Jul-22			
20	Dr. Sachin S. Patil			AlmaHub: An Engaging, Supportive Alumni-Students Interaction Platform	8th International Conference for Convergence in Technology	International	Apr-23			

3+A1:J5.4.4 Details of books and chapters in edited volumes / books per teacher during the year

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21	Dr S. S. Patil,			Driving Style Classification Using an Deep Learning Techniques	6th International Conference on Intelligent Sustainable Systems [ICISS 2023].	International Springer-Scopus	Feb-23			
22	Prof. Ajit S. Mali			5G Technology: Evolution and Challenges Ahead	International Conference on 6G and Wireless Network Technologies(3-5 April 2023)	International IEEE Xplore	3 to 5 April-2023			
23	Prof. Vinmay S. Mokashi			5G Technology: Evolution and Challenges Ahead	International Conference on 6G and Wireless Network Technologies(3-5 April 2023)	International IEEE Xplore	3 to 5 April-2023			
24	Prof. Sudhir S. magdum			5G Technology: Evolution and Challenges Ahead	International Conference on 6G and Wireless Network Technologies(3-5 April 2023)	International IEEE Xplore	3 to 5 April-2023			
25	Dr. Sachin S. Patil			Qualitative Analysis of Drone Based Photos of Non Built-Up Plots	International Conference on Innovative Trends in Engineering and Technology [ICIET-2022	International	Jul-22			
26	Dr. Vinay Kumar Nassa			Evaluation of Block-chain Transaction Accuracy using Neural Network Model	2022 5th International Conference on Contemporary Computing and Informatics (IC3I)	International	01/07/2022			

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Sl. No.	Name of the Teacher	Title of the Book published	Title of the Chapter published	Title of the proceedings of the conference	Name of the conference	National / International	Year and month of publication	ISBN of the Book/Conference Proceeding	Affiliating Institute of the teacher at the time of publication	Name of the Publisher
27	Mr. Vinmay S Mokashi, Mr. Avinash Powar			Depression Detection using BiLSTAM and 1D CNN-Based Model	4th International Conference on Data Analytics & Management (ICDAM-2023)	International	23 to 24 Jun-2023			
28	Dr. Vinay Kumar Nassa			BLOCKCHAIN-ENABLED SECURE DATA SHARING SCHEME IN WIRELESS COMMUNICATION	11th International Conference on SMART-2022(System Modeling and advancement in Research Trends) 16-17 Dec	International	16 to 17 Dec-2023			

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Extraction and Recommendation Of Current Fashion Trend Analysis Through Social Media Interaction With Multimodal Search Engine Using Artificial Intelligence And Block chain Technology

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Abstract—The evolution of advanced technology paved way for various automations and innovations in the manufacturing and production sectors in clothing industry. The fashion is a form of expressing one expression in the form of color and designs. The interest of clothing for a particular models in a particular intervals of time are termed as fashion trend. They are formulated and evaluated through the sentiment analysis. This helps to extract the people's interest towards the particular design and theme. The innovation of fashion trend is increasing rapidly due to the advancement of digital environment. This helps to access the information from anywhere through online platform. This is implemented through augmented and virtual reality environments. They are implemented through artificial intelligence. The influence of clothing and its brand are enhanced through the social media interconnections. They helps to easily access one's interest through the search engine modalities. The entire functioning and transactions in the online platform are done through the block chain technology. This helps to obtain safe and secure transactions and storing of information without any external consequences.

Keywords—Fashion trend, automations, sentiment analysis, artificial intelligence, IoT, block chain technology
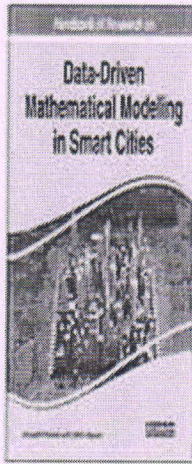
A Real-Time Smart Sewage Cleaning UAV Assistance System Using IoT

Iyyanar P., Anand R., Shanthi T., Vinay Kumar Nassa, Binay Kumar Pandey, A. Shaji George, Digvijay Pandey

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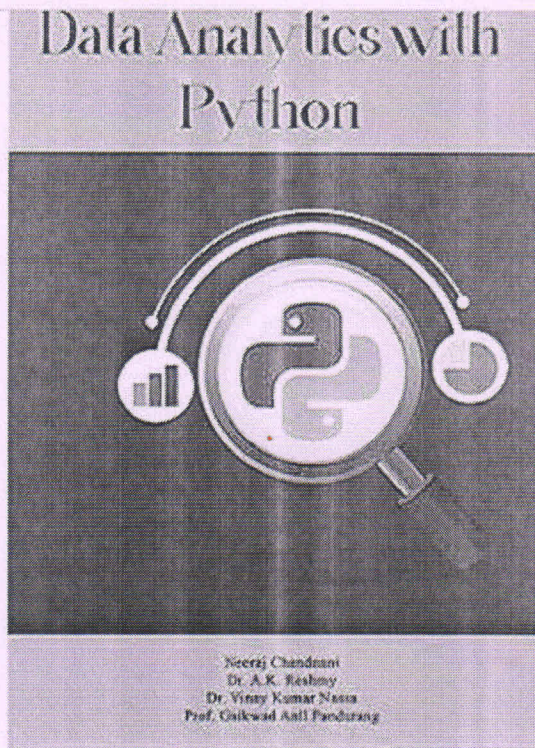
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Chapter 13

The Impact of Artificial Intelligence in the Talent Acquisition Lifecycle of an Organization

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Abstract

Artificial Intelligence (AI) seems to be the rule of the day; AI has invaded every aspect of existence, including institutional environments. While AI is establishing an influence in practically every role in a company, its impact on the Human Resources (HR) department must be carefully addressed, particularly because this is the highest 'human' of several verticals in a company. Human resource executives are using AI technology to perform a variety of human resource management duties, ranging from personnel planning to personnel leave. The procedure of finding, employing, activating, retaining, and growing personnel is unquestionably the foundation of a company's strong economic condition. In enterprises, AI technologies are widely employed for talent acquisition. AI-based platforms are presently assisting HR in automating a massive section of repeatable activities in mechanisms like talent tests, recruitment, participating, re-engaging, employee connections, onboarding, and so forth that were employed to intake numerous employment hours in the earlier days, allowing the HR unit to be quite effective and concentrate on developing compliant and legislative initiatives. Amongst the key domains of the HR operation that AI affects, Talent Acquisition is among those where AI has emerged as nothing less of a big draw - Talent Acquisition is situated at the tip of the talent administration lifecycle for organizations. This research investigates the impacts of Artificial Intelligence platforms on organizations' talent acquisition operations. It provides a greater comprehension of existing AI paradigms and their capacity to automate time-consuming TA operations, hence improving operational effectiveness and

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Performance Analysis of Image Caption Generation Using Deep Learning Techniques

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Abstract. In recent years, Artificial Intelligent (AI) is rapidly developed. The image caption is attracting the attention of many scientists. It is very interesting work. Automatically generating image caption into the natural language description according to the objects observed in the image. This is the part of scene understanding. Since, understanding is the combination of computer vision and natural language processing. The text is processed by using Recurrent Neural Network (RNN) with clubbed single dimensional feature obtained from Convolutional Neural Network (CNN) model. Given the data is given to trained model and last output is predicted. For the experiment of image captioning Flickr8k dataset is used.

Keywords: Convolutional neural network · Image captioning · Rectifier Linear Unit (ReLU) · Recurrent Neural Network (RNN) · Visual Geometry Group (VGG16)

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A Medical Image Steganography Scheme with High Embedding Capacity to Solve Falling-Off Boundary Problem Using Pixel Value Difference Method

Nagaraj V. Dharwadkar ✉, Mufti Mahmud ✉, Ashutosh A. Lonikar & David J. Brown

Conference paper │ First Online: 15 April 2023

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Abstract

Medical images have a vital role in the healthcare industry. The medical sector uses the internet to facilitate the distant sharing of medical information among hospitals and clinics and provide patients with e-health services. We must share a patient's report

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5232

A Comparative Study of Various Learning Models for Object Detection in Contextual Scene Interpretation

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Abstract— **Deep Learning approaches for solving the problem created a revolution in the field of research. An example like scene interpretation which includes the objects detection, classification, and recognition of objects. These deep learning techniques can handle large amounts of structured or unstructured data. This paper shows the comparative analysis of various model which are most preferable in deep learning for the object detection and classification purpose. The model like CNN, YOLO, RNN, RCNN, Fast RCNN, and Faster RCNN is used for object detection and classification purpose with various datasets like Imagenet, PASCAL, and SYSU. RNN model is also used to show the relation between the objects. This paper covers various models of deep learning techniques for detecting and classifying objects from the scene.**

Keywords—Convolution Neural Network, Recursive Neural Network, Deep Learning, Machine learning, Small Object, Salient object.

I. INTRODUCTION

Scene understanding is the important issue in applications including indoor positioning, Crime Scene investigation, Human rights violation etc. Scene may include imagery or motion clip. The various fields are used for scene explanation like machine learning, deep learning, and artificial intelligence, all these field have based on the Neural Network. Neural Networks are similar to the human brain which have many neurons. In neural network it contain multiple layers like input layer [2], Hidden layer and output layer. Artificial Intelligence is the subset of Neural Network, Machine learning is the subset of Artificial intelligence, and Deep learning is the subset of machine learning. It is inspired by the functionality of our brain cells called neurons which led to the concept of artificial neural network, it can solve the computation which have multidimensional data. The deep learning also solve the limitation of the machine learning like process the multidimensional data, perform computation without human intervention, performing image processing operation. The CNN and variation of CNN helps to detect the object from the scene, Discriminative feature Extraction [9]. The Recurrent Neural Network (RNN) is used for discovering the inter-object relation [1]. For motion detection in the scene the techniques OF, MHI, VGGNET are used widely. The natural language technique like BOW (Bag of words) describe the image in the form of sentences.

II. LITERATURE REVIEW

Liang et al. [1] uses approach of CNN for feature extraction from the enter scene and RsNN for outlining the category and relation among the object. They use the PASCALVOC2012 and SYSU datasets which have around 5000 scene images along with scene descriptions. They define the entire sentences and define the photo in phrases of nouns and verbs with the assist of natural processing [1]. They uses weakly-supervised training, they present an Expectation-Maximization method by using descriptive sentences which attached in training images.

Li et al. [3] use deep supervision methods by formulating the probabilistic framework to predict improved generalization. In this, authors will train disorder or partially visible scenes from synthetic CAD renderings in which weights are been calculated and used in the real images. They uses the two-dimension or three-dimension keypoints localization for image classification on datasets include KITTI, PASCALVOC, PASCAL3D+ etc.[2].They integrate the concept of CNNs with deeply supervising for multiple shape concepts such as object pose. They compare the results with various test set: fully visible cars and beds, partially visible cars and beds, high-resolution and low-resolution images. The accuracy for full images is 81.8% and occluded images is 59%.

Li and shin [4] detect the unexpected accident of cars in the tunnel under bad light of CCTV monitoring. They use Faster R-CNN for detecting the Objects and Tracking algorithm for surveillance the tunnels for the events, like driving direction, halting, fire, roaming person in the tunnel. Odts uses the keyframe from the video at some time interval and units the coordinate which they detected. All detected objects are assigned by some particular id and then guesses the next location of object using kalman filter and hungarian algorithm [3] for finding the next location of the objects. The faster R-CNN technique is used to train the images of the tunnel. Car Accident Detection Algorithm (CADA) is used to determining the stop and wrong manner drive of the automobile. The experiment end result shows the accident in 10 seconds.

G. Kalliatakis et al. [5] have developed the system for identifying child labor through imagery. They use the HRA (Human Rights Archive) database and CNN (convolutional neural Network) [1] [5] for human rights violation. They evaluate the features they found out from object-centric CNNs and scene-centric CNNs, they could use these general features in different visible identification tasks. The three famous object-centric CNN architectures vgg16 convolutional-layer CNN [5], VGG19 convolutional layer CNN [5], RESNET50 [5], after that they create baseline

CNN models. Imagenet dataset consist of pictures of man, woman or child.

Himanshu and hiren[6] shows the accuracy analysis of numerous scene type set of rules like SVM,CNN, SCSPM, RESFEAT, BOV[6] additionally some hybrid method like RESFEAT-CNN, RESFEAT-152 + PCA-SVM, RESFEAT-512+ SCNN and RESFEAT-50+ SCNN [6]. They uses the unique dataset like caltech-101, caltech-256, MLC, solar, mit-indoor67, scene-15[6]. The highest number of techniques applied to datasets is Caltech-101. The CNN based RESFEAT strategies provide superior effects than the rest of the technique.

Inad and duaa[7] degigned a approach to improve the monitoring generation of all object actions, wherein they came from, and where they went and when. They use vggnet, they will work with is mpeg-4.[4] It improve the overhead of video search interest as well as improve accuracy. The author concluded that vggnet shows good results in determining of object.

Zouhair et al. [8] reviewed the driver Behavior(db) inside the car. They identifies various technique for evaluating the driver behavior. The machine learning technique used widely and shows good results in calculating the behavior of driver while driving.The accuracy ranges from 70% to 90%[8].

Mehrdad et. al[9] focus on two aspects: first salient objects appear in various sizes and the Second is to employing multi-level features helps the model use both local and global context. They use Multi-scale Attention Guided (MAG) Module for selecting the salient object to extract multi-scale features effectively. They use Attention-based Multi-level Integrator(AMI)[9]. They use "DUTS"dataset which applied for salient object detection, Every images are converted to 352 × 352 pixels for training and testing. They finds the system plays favorably towards other strategies in all instances. Especially, it's miles evident that their dfnet-l performs better than all different techniques by using a fairly big margin.

Shichao et al[10]implement the system for recognizing the traffic signal which will help the ADAS[6] self reliant vehicles system. This recognition technique is nevertheless faced with demanding situations like lighting fixtures situations, viewpoints, and movement blur. They provide the solution of these recognition problems. Their framework have 2 tiers: clustering-orientated characteristic mapping for traffic signs and other for recognition purpose with 2 types of datasets (gtsrb) dataset and the (btsc) dataset. The gtsrb dataset covers 39209 training images. Btsc have 4591 pictures Within the experiments, all pictures are converted into specific dimension using interpolation method.

Sreenu and saleem[11] makes deep study in detecting the number of people who are in big crowd at various conditions. They include person identification, motion identification also the moves into categories like abnormal or regular. They surveyed various methods like svas[11] model which offer the automatically detection of such type of activity. BSTM[11] and Kalman filter[11][3] is used for object entity in crowd. Identifying every entity activity is difficult task. When crowd length is massive. Strategies analyzing crowd behaviors were mentioned.

Smriti et al [12] build the system for aged individuals who stay alone in their homes. It detects the fall of person especially old age person in the home. Video clips fall/not-fall are used as a dataset.Shi-Tomasi algorithm and Pyramidal Lucas-Kanade algorithm are used to detect the fall along with the value of theta, if theta value is greater than zero but less than one eighty degree then it comes in not fall otherwise it comes in fall category.

Brais et al [13] find the small object by using STDnet[13] with mechanism, known as region context community (rcn) for deciding the favourable regions, and removing the other region from the scene. The good resolution feature are used to detect the small object. They also present USC-GRAD-STDdb[13], a videos datasets having small objects detection.

Sachin and subrahmanyam[14]defines a motion recognition technique named as weber movement history image (wmhi)[14].The proposed set of rules is faster from of primarily based HAR structures.This law is consider only desired movement and neglect the unwanted motion. The performance with the datasets are 88. 91% with jhmdb dataset, 83.8% with MPII dataset, 90.48% with JHMDB dataset, UCF101 and HMDB51 datasets are 97. 1% and 84. 6 %.[14].

Hanen et al[15] targets to introduce an method for the identify the object in the motion. They use SIFT method with BOVW.The efficiency of the system depend on accurate hits. This method extract common things from the multiple images which displaying the item. They uses the BOVW and pyramid histogram of words (phow) approach is used

S. Saikia et al.[16]uses the faster-rcnn for detecting object in an indoor environment. They use the imagenet dataset containing 12 item instructions.The detection accuracy for all the 12 taken into consideration training, and they acquired an average accuracy of 74. 33%

Zhigang et al[17] recognize the human movement with the help of feature extraction CNN with a TS-NET[17].They work on frontline detection and the actions of actor are detected by the actively. They uses the jhmdb, hmdb51, ucf sports, and ucf101 datasets.

Chunwei et al. [18] proposed the network (ADNET), for denoising the scene. ADNET contain several blocks like the attention block denoise the image by extract the noise from the image. ADNET outperforms trendy denoising methods along with block-matching, 3-d filtering (bm3d), and DNCNN for quantitative and qualitative evaluation.

Qaisar et al. [19] contributed the action recognition in deep learning environment [19]. They overview about the CNN, RNN, DBN, DBM, SDA. [19][20] They also show where the deep learning techniques can apply like human action recognition, gesture and emotion recognition, etc.

Li Wang [20] reviewed DNN R-CNN for object detection using Pascal Visual Object Challenge (VOC) 2007 and 2012 datasets, Object tracking through CNN, Boltzmann machine for face recognition, RNN is for scene labelling in the analysis of smart city.

MUHAMMAD et al. [21] compares various model like VGG16, Inception-V3, Inception-ResnetV2, SSDMobile NetV1, Faster-RCNN, YOLOv3, and YOLOv4 for weapon detection using dataset No standard dataset (weapons

images from own camera, internet, extracted data from YouTube CCTV videos, through GitHub repositories)

Erssa et al.[22] detects the violent object like gun, pistol and sword from CCTV by using the efficient-net machine learning model and gets the accuracy of 98.12%, They uses the real time dataset for training and testing of model from local surveillance department.

III. COMPARISON WITH VARIOUS DATASET

TABLE I. SUMMARIZE THE VARIOUS DATASETS USED BY RESEARCHERS FOR IMAGE BASED SCENE INTERPRETATION:

Model	Dataset	Accuracy
CNN-RSNN with: i. Weakly-supervised learning[1] ii. Semi-supervised learning.[1]	i. PASCAL VOC 2012, 1464 images, ii. SYSU-Scenes, 5046 images	Mean Accuracy of weakly supervised learning with PASCAL VOC 2012 dataset is 58.1% Mean Accuracy of weakly supervised learning with SYSU-Scene dataset is 49.5% Mean Accuracy of Semi- supervised learning with PASCAL VOC 2012 dataset is 64.1% Mean Accuracy of Semi- supervised learning with SYSU-Scene dataset is 52.3%
CNN with Deep Supervision-(DISCO) Architecture[2]	KITTI-3D PASCALVOC PASCAL3D+	Accuracy with KITTI-3D dataset is 85% Accuracy with PASCAL VOC dataset is 93.4% Accuracy with PASCAL3D+ dataset is 71.2%
Information Maximizing Generative Adversarial Networks (InfoGAN) [4]	SHOE dataset	Average Precision (AP) is 84%
For Human Right Violation following model are used[5] : ResNet50 VGG 16 convolutional-layer CNN VGG 19 convolutional-layer CNN VGG 16+ VGG 19[5]	HRA(Human Rights Achieve) dataset	Accuracy with ResNet50 is 54% Accuracy with VGG16 is 43% Accuracy with VGG19 is 60% Accuracy with VGG16+ VGG19 is 44%
For salient objects detection[9] VGG 16 convolutional-layer CNN ResNet50 NASNet	DUTS having 10553 images ECSSD having 1000 images HKU having 4447 images PASCAL-S having 850 images DUT-OMRON having 5168 images	Average F-measure of VGG16 with DUTS dataset 82.4% Average F-measure of VGG16 with ECSSD dataset is 91.9% Average F-measure of VGG16 with HKU dataset is 90.6% Average F-measure of VGG16 with PASCAL-S dataset is 83.7% Average F-measure of VGG16 with DUT-OMRON dataset is 75.1%
RandGravNet[10] for traffic Sign Recognition	GTSRB BTSC	Accuracy with GSTRB dataset is 84.92% Accuracy with BTSC dataset is 78.07%
STDnet for small object detection[13]	MSCOCO	Average precision is 5.5
Yolo model for Automatic License plate [23]	ADLP dataset	Accuracy is 98.22%
DNN for Object detection and classification[25]	Multitemporal dataset	Accuracy is 93.22%
SSD, Faster RCNN[26]	COCO Dataset	Accuracy is 73.8% with SSD model Accuracy is 84.6% with Faster-RCNN model

TABLE II. SUMMARIZE THE VARIOUS DATASETS USED BY RESEARCHERS FOR VIDEO BASED SCENE INTERPRETATION:

Model	Dataset	Accuracy
Faster R-CNN[3]	Object detection & tracking system (ODTS) Dataset.	Average Precision (AP) is 82.4% with ODTS dataset.
VGGNET for Video content Analysis[7]	ImageNet Dataset	The accuracy is 94%
Shi-Thomas with Lucas- Kanade for fall detection [12]	UR fall dataset	The accuracy is 95%
Weber Motion History Image for Human Action Recognition[14]	JHMDB MPII	Average rate of recognition with JHMDB dataset is 88.91% Average rate of recognition with MPII dataset is 83.8%
Faster RCNN for object detection in crime scene [16]	Karina Dataset	An average accuracy is 74.33%,
Human-Related Multi-Stream CNN (HRMSCNN) for Human Action Recognition[17]	JHMDB	The Accuracy is 71.17% The Mean Avearge Precision is 74.65
SVM for human action Recognition	HMDB UCF Youtube Hollywood2 Olympic Sport	The Accuracy with HMDB is 74.8% The Accuracy with UCF is 73.6% The Accuracy with Hollywood2 is 75.9% The Accuracy with Olympic sport is 72.3%
CNN for Pedestrian Tracking[24]	CAVIAR KECK	The Accuracy with CAVIAR dataset is 97.43% The Accuracy with KECK dataset is 97.81%
3D CNN for Human Action Recognition	KTH dataset Weizmann dataset	The precision is 94.9, Recall is 94.9 and F-Measure is 94.9 with KTH dataset The precision is 97.2, Recall is 97.2 and F-Measure is 97.2 with Weizmann dataset

IV. CONCLUSION AND OPEN CHALLENGES FOR FUTURE RESEARCH

In this study, we compare the performance of various deep learning algorithms such as CNN, RCNN, YOLO, SSD, etc.on the basis of precision, Accuracy and F-measure with diverse datasets such as PASCALVOC, COCO, SYSU, etc. According to our study, the system's performance will suffer if the images are not in suitable dimensions, are not augmented, or are noisy when compared to the dataset that has been adequately preprocessed.

The model's accuracy is significantly impacted by the image quality, which is adversely affected by low resolution, blur, changing stances, and occlusion. The majority of the images in the dataset include noise and poor labelling. A video-based dataset will yield better results if it is suitably improved and annotated. Using many well-known models, including CNN, YOLO, RCNN, and Faster RCNN, we compared the performance of an imaging dataset with that of a video-based dataset. Also the performance of Yolo version model and Efficient-net model gives better results as compared with others models as shown in Table I.

The challenge for the upcoming research is to detect the objects like (person, Guns, Knife) from the scene and find the relations between these objects and predict the possibilities of happening the crime. Also create a reliable system that can recognize small, noticeable things in a scene, determine their relationships to one another, and construct sentences based on these objects.

REFERENCES

[1] Ruimao Zhang,Liang Lin,Guangrun Wang,Meng Wang,Wangmeng Zuo,"Hierarchical Scene Parsing by Weakly Supervised Learning with Image Description", IEEE transaction on pattern analysis and machine intelligence,Vol-41,No.3 March2019.

[2] Lateef__Zulaikha.(Aug 28,2019).What Is A Neural Network? Introduction To Artificial Neural Networks.eduraka. https://www.edureka.co/blog /whatis-a-neural-network/#What%20is%20 a%20Neural%20Network

[3] Chi Li,M. Zeeshan Zia Quoc-Huy Tran,Xiang Yu,Gregory D. Hager, Manmohan Chandraker, "Deep Supervision with Intermediate Concepts", IEEE Transactions On Pattern Analysis And Machine Intelligence,Vol.41,No.8, August 2019

[4] Kyu Beom Lee, Hyu Soung Shin," An application of a deep learning algorithm for automatic detection of unexpected accidents under bad CCTV monitoring conditions in tunnels", International Conference on Deep Learning and Machine Learning in Emerging Applications (Deep-ML) 978-1-7281-2914-3,2019.

[5] Grigorios Kalliatakis, Shoaib Ehsan, Ale. Leonardis, Maria Fasli,And Klaus D. Mcdonald-Maier, "Exploring Object-Centric and Scene-Centric CNN Features and Their Complementarity for Human Rights Violations Recognition in Images",IEEE Access 2019.2891745,2019.

[6] Himanshu Patel,Hiren Mewada,"Analysis of machine learning based scene classification algorithm and quantitative evaluation",International Journalof Applied Research ISSN 0973-4562,Volume 13-2018.

[7] Inad Aljarrah, Duaa Mohammad," Video Content Analysis using Convolutional Neural Networks", 9th International Conference on Information and Communication Systems (ICICS), 2018.

[8] Zouhair Elamrani Abou Elassad, Hajar Mousannif, Hassan Al Moatassime, Aimad Karkouch," The application of machine learning techniques for driving behavior analysis: A conceptual framework and a systematic literature review", Engineering Applications of Artificial Intelligence 87 (2020) 103312.

[9] Mehrdad Noori, Sina Mohammadi, Sina Ghofrani Majelan, Ali Bahri,Mohammad Havaei," DFNet: Discriminative feature extraction and integration network for salient object detection" Engineering Applications of Artificial Intelligence 89 (2020) 103419

[10] Shichao Zhou , Chenwei Deng , Zhengquan Piao , Baojun Zhao , "Few-shot trafficsign recognition with clustering inductive bias and random neural network", Pattern Recognition 2019.

[11] G. Sreenu and M. A. Saleem Durai," Intelligent video surveillance: a review through deep learning techniques for crowd analysis", Journal of Big Data, 2019

[12] Smriti Bhandari, Navnee Babar, Pranav Gupta, Nidhi Shah, Shreyas Pujari," A Novel Approach Fall Detection in Home Environment", IEEE 6th Global Conference on Consumer Electronics (GCCE 2017)-2017

[13] Brais Bosquet, Manuel Mucientes, Víctor M. Brea," STDnet: Exploiting high resolution feature maps for small object detection" Engineering Applications of Artificial Intelligence 91 (2020) 103615

[14] Sachin Chaudhary, Subrahmanyam Murala," Deep network for human action recognition using Weber motion", Neurocomputing 367 (2019) 207–216

[15] Hanen Jabnoun, Faouzi Bensarti,Hamid Amiri," Visual Scene Prediction for Blind People Based on Object Recognition"14th International Conference on Computer Graphics, Imaging and Visualization-2017

[16] Surajit Saikia, E.Fidalgo, Enrique Alegre, Laura Fernandez-Robles," Object Detection for Crime Scene Evidence Analysis Using Deep Learning", Springer International Publishing AG 2017

[17] Zhigang Tu,Wei Xie,Qianqing Qin, Ronald Poppe , Remco C.Veltkamp, Baoxin Li, Junsong Yuan,"Multi-stream CNN: Learning representations based on human-related regions for action recognition", Pattern Recognition 79 (2018) 32–43

[18] Chunwei Tian, Yong Xu, Zuoyong Li, Wangmeng Zuo, Lunke Fei,Hong Liu," Attention-guided CNN for image denoising", Neural Networks-2019 NN 4356

[19] Qaisar Abbas, Mostafa E.A.Ibrahi, M. Arfan Jaffar," Video scene analysis: an overview and challenges on deep learning algorithms", Springer Science+Business Media, LLC, part of Springer Nature 2017.

[20] Li Wang, Deep Learning Algorithms with Applications to Video Analytics for A Smart City: A Survey, arXiv: 1512.03131[cs.CV] 2015.

[21] Muhammad Tahir Bhatti, Muhammad Gufran Khan, Masood Aslam, Muhammad Junaid Fiaz, Weapon Detection in Real-Time CCTV Videos Using Deep Learning, IEEE Access-Digital Object Identifier 10.1109/ ACCESS.2021.3059170

[22] Erssa Arif, Syed Khuram Shahzad, Muhammad Waseem Iqbal, Muhammad Arfan Jaffar,Abdullah S. Alshahrani, Ahmed Alghamdi, Automatic Detection of Weapons in Surveillance Cameras Using Efficient-Net, Computers, Materials & Continua Tech Science Press DOI: 10.32604/cmc.2022.027571.

A Comparative Analysis of Weapons Detection Using Various Deep Learning Techniques

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Abstract— In crime scene analysis, object detection can be used to identify and track objects and people, which can help investigators to recreate the events and understand the sequence of actions that took place during a crime. The images are manually annotated, which is a process where a human expert goes through each image and marks the location and class of objects within the image. This process is important for training object detection algorithms as it provides the necessary ground truth data for the algorithm to learn from. In the case of crime scene analysis, high accuracy is crucial, as it can help ensure that no evidence is missed, but speed is also important, as time is often a critical factor in investigations. The proposed system in this study attempts to balance this trade-off by using algorithms like YOLOv5, SSD, and RCNN, which are known for their real-time performance while maintaining a high accuracy level.

Keywords: Deep Learning, You Only Look Once v5(YOLOv5), Region-based Convolutional Neural Network(RCNN), Single Shot Detector(SSD), Object Detection

I. INTRODUCTION

Assault is a serious crime that can have severe consequences for the perpetrator. It is important to take steps to prevent an assault from occurring, particularly in public places where it can be more difficult to escape or get help. It is certainly important to notify the police as soon as possible when a crime.

Weapon detection is an important issue for public safety and security. By using deep learning algorithms, it is possible to develop models that can accurately identify weapons in real-time. These algorithms can analyze large amounts of data and identify patterns or features that may not be immediately apparent to humans. It involves identifying the presence of weapons, such as guns or knives, in a given area or location. This can be done using an image or video analysis, where the algorithm is trained on a dataset of images or videos that include weapons and other objects.

The proposed system aims to assist the police in detecting and identifying weapons in a variety of settings, including outdoor scenes. By using machine learning algorithms to analyze visual information, the system can potentially help the police to more efficiently and accurately identify weapons. This could be a valuable tool for law enforcement, as it could help them to more quickly and effectively respond to situations involving weapons, and potentially prevent crimes from occurring.

II. RELATED WORKS

The work by Laurie et al. [1] covered a real-time object recognition system that employed deep learning to identify objects in an image. This article mainly focused on the use of convolutional neural networks for object detection, which is the core technology used in YOLO architecture. The model was able to recognize items in photos using this technique with maximum accuracy and little latency. The use of depth-separable convolutional layers in this paper increased object detection accuracy while lowering computational model expenses. The feature extraction layer, the bounding box prediction layer, and the classification layer are just a few of the elements that make up the YOLO architecture as well as the technique that it employs. However, if the training data is biased or limited, the model's performance may not be as accurate on new, unseen data.

The work by Redmon et al. [2] discussed the architecture of YOLO, a real-time object detection system capable of recognizing objects in an image with high accuracy and low latency. This study focused on various components of the YOLO architecture such as a feature extraction layer, a bounding box prediction layer, and a classification layer. The article also discussed the use of convolutional neural networks for object detection. The aim of the project was to investigate the use of Transfer Learning using Convolutional Neural Networks (CNN) to improve the accuracy of an object detection model and its application to new image datasets. The study did not discuss any potential ethical considerations related to the use of object detection models, such as privacy concerns or potential biases in the training data. Therefore, the ethical implications of the study were not fully explored.

The research article by Fan et al. [3] provided an enhanced pedestrian detection system based on the SSD model of object detection. As an extra layer to the SSD concept, this system featured the Squeeze-and-Excitation (SE) model. The SE model allowed the system to learn from its flaws and enhance the precision of small-scale pedestrian identification. The enhanced model's accuracy was tested using the INRIA dataset. This study served as a resource for comprehending the SSD concept and future applications.

Several works have shown that CNNs can also be used as feature extractors for various vision tasks.

Razavian et al. [4] proposed an approach to extract CNN features from an off-the-shelf network to perform object recognition. Similarly, Donahue et al. [5] used the activation of convolutional layers to improve object recognition accuracy. In another work, Oquab et al. [6] used pre-trained CNNs for image retrieval tasks.

In order to anticipate the hourly wind speed, Ling Chen and Xu Lai (2011) [7] compared the experimental results generated using an Artificial Neural Network (ANN) and Autoregressive Integrated Moving Average (ARIMA). Comparatively speaking, the ANN model outperforms the ARIMA model. However, in order to achieve better outcomes, integrated models or a numerical weather forecasting method are required when the variation is too big.

Shiju Sathyadevan, Devan M. S., et al. (2014) [8] identified places with a high possibility of experiencing crime and depicted crime-prone zones. The authors used the Naive Bayes classifiers algorithm, a supervised learning and statistical approach for classification that has a 90% accuracy rate, to classify the data. However, the study covers crime data only from the years 2000–2014 and therefore, the findings may not be applicable to more recent time periods.

Dr. N. Geetha, Akash Kumar. K. S, Akshita. B. P, Arjun. M (2021) [9] demonstrates a technique for automatically spotting firearms in the video, which is useful for monitoring and exercising control. The You Look Only Once (YOLOv3) algorithm was implemented to find weapons in real-time footage. In conclusion, the yolov3 algorithm outperforms the earlier CNN, R-CNN, and faster CNN algorithms in terms of speed.

Neil Shah, Nandish Bhagat, and Manan Shah (2021) [10] aimed to study how law enforcement agencies or authorities might employ a mix of ML and computer vision to detect, prevent, and solve crimes much more accurately and quickly. In conclusion, they have mentioned that Machine Learning and computer vision approaches can help law enforcement agencies advance.

III. METHODOLOGY

A) Dataset:
The dataset is used to train the model. Raw images often need to be pre-processed before they can be used for further analysis or model training. The YOLO v5, SSD, and R-CNN models were trained on a publicly available weapon image dataset provided by the University of Granada research group, with a specific split of 2208 training images, 660 testing images, and 174 validation images. The aim of the training was to detect pistols, rifles, and knives, and the number of training epochs was set to 100. This dataset is annotated using roboflow which is an online tool to handle annotation formats. Rectangular bounding boxes were used to annotate the images manually. The dataset was divided into 3 classes (i.e., weapon, knife, and person) and each class included an almost equal number of images.

B) Separation of the dataset into train and test data:
The dataset was divided into 3 classes (i.e., weapon, knife, and person) and each class included an almost equal number of images. It will generate a text file for each image which consists of coordinates used for markings. The label file will store the classes for which the images will be marked. You can then upload the zip file to a cloud storage service such as Google Drive and then you can split it utilizing the chosen split ratio, into two sets: a training set and a test set.
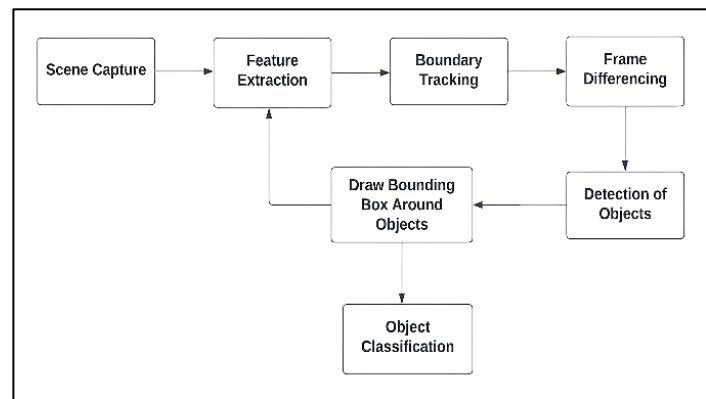
C) Workflow Diagram:

Fig.1 Explains the workflow of the system.

1. Scene Capture: This is the initial stage where it must capture a view of a real environment that is most probably a crime scene

2. Feature Extraction: Extraction of features is done from the initial dataset; these new features have this little redundant information in them and therefore features are often less intuitive to understand. Feature extraction is achieved by using a series of convolutional layers to identify features at different scales and resolutions.

3. Boundary Tracking: In object detection, boundary tracking refers to the process of identifying and locating objects in video sequences or images.

4. Frame Differencing: Frame differencing is a method for finding objects to detect changes in a video stream by subtracting the current frame from a previous frame.

5. Detection of Object: The model uses a combination of convolutional neural networks, region proposal algorithms, and classification and regression

models to accurately detect and classify objects within the input data.

6. **Draw a Bounding Box Around the Object:** Bounding Boxes act as the reference points for weapon detection and they are normally in rectangular shape. The rectangles should be drawn over images and then must identify X and Y coordinates for each image.

7. **Object Classification:** The dataset contains three different classes i.e., knife, person, and guns so will determine which object from these three classes is present in the given scene or image it refers to the model to find out which class is present.

D) Pre-processing and Augmentations:

Data augmentation can be a useful technique to enhance the performance of a deep learning model by increasing the size and diversity of the dataset, which can lead to better learning and generalization. Therefore, the size and diversity of the dataset can be increased by introducing variations into the data by implementing data augmentations.

From the information provided, it seems that the project explored several data augmentation techniques to improve the performance of the model. The techniques like noise addition, color shifting, rotation, flipping, cropping, etc. were commonly used for data augmentation methods in deep learning to increase the diversity of the training dataset and prevent overfitting. By applying these techniques to the training data, the model is exposed to more variations of the same object, which helps to make it more robust and better at generalizing to new, unseen data. Auto-Orient helps to orient the image correctly, Resize adjusts the size of the image, Grayscale converts the image to grayscale, Auto-Adjust Contrast improves the contrast of the image, and Outputs per training example refers to the number of bounding box predictions made per image. Rotation and Shear add rotational and shearing transformations to the image, respectively, which help to increase the diversity of the data even further.

IV. IMPLEMENTATION

A) Algorithms

1. In YOLOv5, these were the two unified blocks that turned into a single monolithic block.
   1. feature extraction
   2. object localization

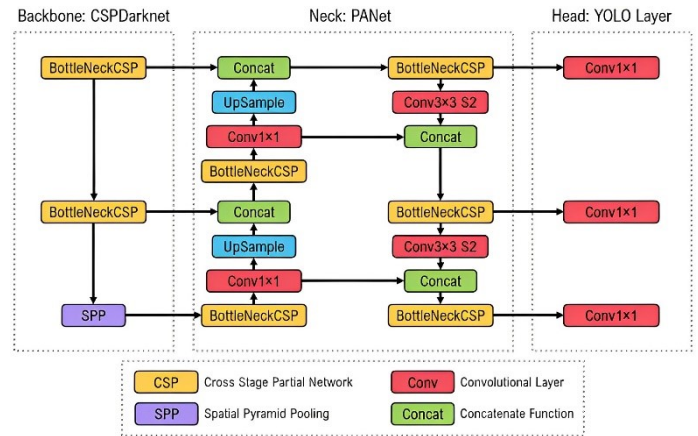YOLOv5 has three main components namely Backbone, Neck, and Head.

Fig.2. YOLOv5 Architecture [9]

YOLOv5 employs Cross Stage Partial Networks for the purpose of obtaining instructive information from the input image (CSP). The model neck creates feature pyramids (FP). Anchor boxes are used to apply feature class probabilities. In YOLOv5, hyperparameters are used to control the model's architecture, training process, and performance. For YOLOv5 the hyperparameters were 50 along with the Batch size and Learning rate as 16 and 0.001.

2. The object detection technique known as Region-based Convolutional Neural Network (RCNN) is based on the visual data of images.
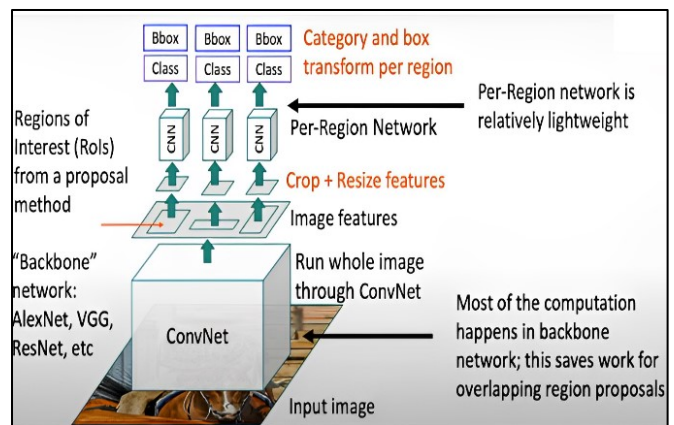

Fig.3 R-CNN Architecture [10]

Figure 3, shown above, describes the RCNN architecture. After determining the region where objects might be present, then extract the feature of the input image provided using a feature extractor. The hyperparameters for the R-CNN algorithm were 100 with a similar batch size and learning rate as the YOLOv5 algorithm.

The following steps are often used by R-CNN to classify objects.
   1. Take note of the n areas (Region Proposals) where the original image's

items will be located.

2. Use CNN to extract choices from regions that are 227x227 (AlexNet) or 224x224 (VGG16) in size.
3. The 4096-dimensional Ultimate Output Layer (UOL) forecasts class adjustments using SVMs and prediction boxes.

3. The SSD architecture is depicted in the picture and comprises additional layers that are built on top of a base CNN network, such as VGG or MobileNet.
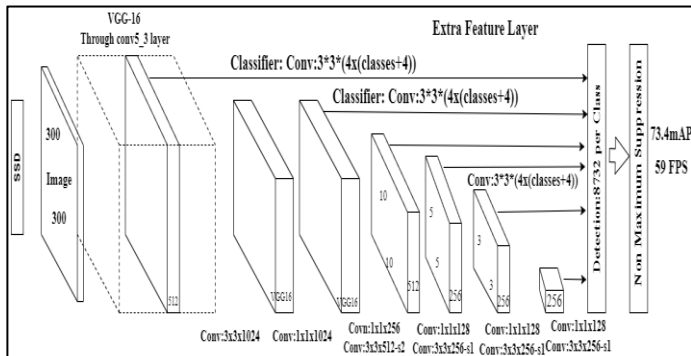

Fig.4. SSD VGG-16 Architecture [11]

The SSD technique extracts information from each grid cell using a sequence of convolutional and pooling layers. Each grid cell is then subjected to a classifier to forecast. The hyperparameters for the SSD algorithm were 150 with a similar batch size and learning rate as the YOLOv5 algorithm.

B) Performance Metrics

I. True Positive Results

This suggests that the model is performing well in recognizing small and blurry objects. The high accuracy on these objects indicates that the model has effectively learned the relevant features and patterns needed to correctly identify them.

Fig.5. Image for True Positive Result

II. False Positive Results

A false positive is a prediction made by the model that an object is present in an image when in reality it is not this can result in incorrect or misleading results and is a common challenge in object detection tasks a high number of false positives can negatively impact the Precision of the model and reduced its overall performance.

Fig.6. Image for False Positive Result

III. True Negative Results

True negative is a Precision made by a model that there is no object in an image when in reality there is not a high number of two negative indicates that the model is able to accurately identify when there is no object present in the image which is important for awarding false alarms and improving the precision of the model.

Fig.7. Image for True Negative Result

C) Evaluation Metrics

AP (Average Precision) is a commonly used metric in object detection to evaluate the performance of the model. It considers both precision and recall and calculates the average precision for a range of recall values. The higher the AP score, the better the model is at correctly identifying objects in an image.

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V. RESULT

Comparative Analysis Study of algorithms:

Here are the derived results for the comparative analysis study of YOLOv5, RCNN, and SSD algorithms.

1) You Only Look Once (YOLO V5):

   The metrics curves during the training process are displayed in Figure 8. Upon evaluation, the YOLO5 model attained precision and recall scores for validation, along with mAP scores at @0.5IOU and @0.95IOU. These results validate the efficacy of the approach in accurately predicting signs in various environments.
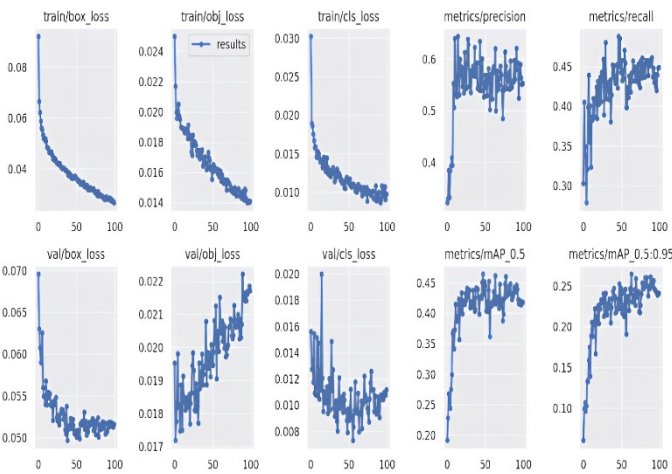

Fig.8. You Only Look Once model evaluation

A confusion matrix consists of a table that compares the predicted and actual labels for a set of data points. The rows represent the predicted labels, while the columns represent the actual labels. The entries in the table count the number of data points that fall into each possible combination of predicted and actual labels.

By analyzing the confusion matrix, it can gain insight into the model's performance, including which classes are being classified correctly and which are misclassified. This information can then be used to adjust the model's parameters, such as its architecture or hyperparameters, to improve its performance. The confusion matrix is displayed in figures 9,11 & 13.
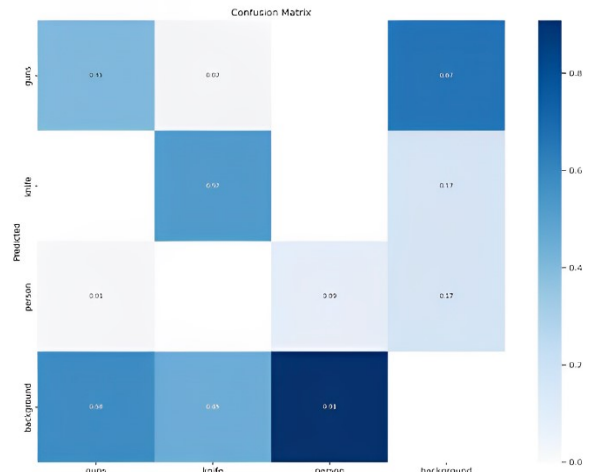

Fig.9. Confusion matrix for YOLO V5

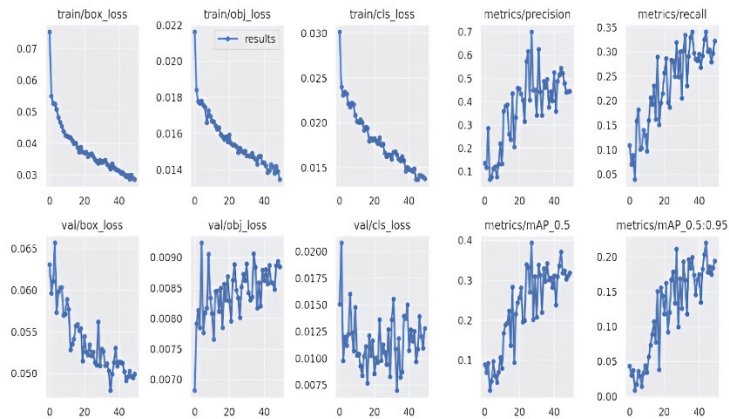2) Region-based Convolutional Neural Network (RCNN):

Fig.10. Region-based Convolutional Neural Network model evaluation
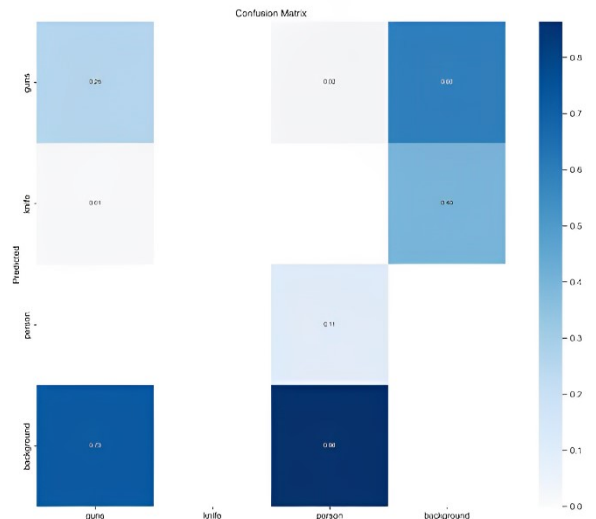

Fig.11 Confusion matrix for Region-based Convolutional Neural Network
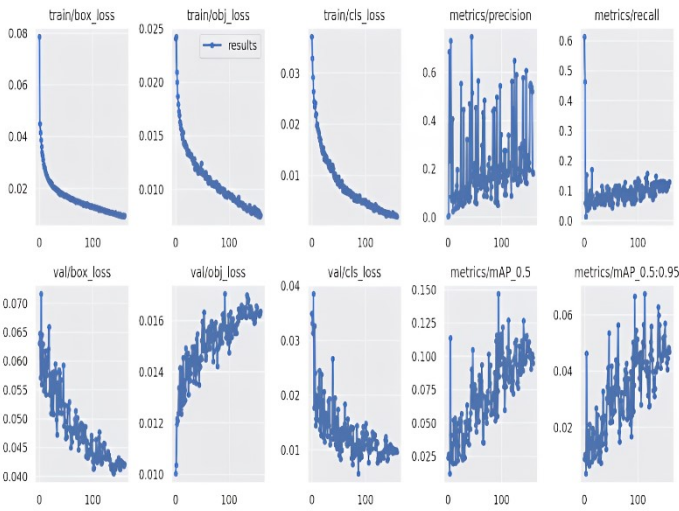
3) Single Shot Detector (SSD):
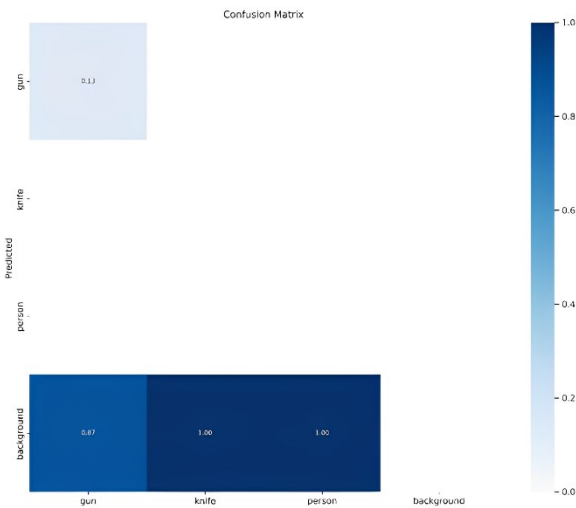

Fig.12. Single Shot Detector model evaluation

Fig.13.Confusion matrix for Single Shot Detector (SSD)

The YOLOv5 model was used to perform object detection on video footage and the results were evaluated in terms of true positive detections.

Table 1. Comparative analysis of map values

MODELS	YOLOv5	RCNN	SSD
Map value (Mean Average Precision Value)	56.2	47.1	36.7

From the information provided in table 1. Comparative analysis of map values, it seems that the model performed well in detecting small and blurry objects, as evidenced by a high mAP (mean average precision) score of 56% for small objects. This suggests that the YOLOv5 is known for its robustness in accurately detecting small and difficult-to-see objects in video footage. Similarly, the SSD model is known for its ability to perform well in detecting small and

blurry objects in video footage, as indicated by the high mAP score of 37% for small objects. The RCNN model performed well in detecting small and blurry objects in video footage, as indicated by the high mAP score of 47% for small objects.

VI.CONCLUSION

Different models as YOLOv5, RCNN, and SSD were used for image processing and computer vision, and for comparing their performance on the dataset. Thus, a comparative analysis of these algorithms was necessary for the development and improvement of weapon detection systems, as it allows for the identification of the most effective and practical methods for detecting weapons in a variety of different scenarios. As mentioned YOLOv5 has the best prediction accuracy, but it was slower than the other two models.YOLOv5 model included an affine-tuning approach to optimize its performance, and
 YOLOv5 has improved compared to previous versions and RCNN can be more accurate but slower. Ultimately, the choice between YOLOv5 and RCNN depends on the specific use case and the trade-off between accuracy and speed that is acceptable for the application.

REFERENCES

[1] Reagan L. Galvez; Argel A. Bandala; Elmer P. Dadios; Ryan Rhay P. Vicerra; Jose Martin Z. Maningo: TENCON 2018 - 2019 IEEE Region 10 Conference.

[2] Joseph Redmon, Santosh Divvala, Ross Girshick, Ali Farhadi: You Only Look Once: Unified, Real-Time Object Detection: IEEE conference on computer vision and pattern recognition (2016).

[3] Wei Fan, Zhenying Xu, Ziqian Wu: Improved SSD-assisted algorithm for surface defect detection of electromagnetic luminescence(2021).

[4] Razavian, A.S., Sullivan, J., Carlsson, S., Maki, A.: Visual instance retrieval with deep convolutional networks. arXiv preprint arXiv:1412.6574 (2014).

[5] Jeff Donahue, Yangqing Jia, Oriol Vinyals, Judy Hoffman, Ning Zhang, Eric Tzeng, Trevor Darrell: DeCAF: A Deep Convolutional Activation Feature for Generic Visual Recognition: arXiv preprint arXiv:1310.1531 (2014).

[6] Oquab, Maxime, Bottou, Léon, Laptev, Ivan, Sivic, Josef, et al. Weakly supervised object recognition with convolutional neural networks. In NIPS, 2014.

[7] Chen, Ling, and Xu Lai. "Comparison between ARIMA and ANN models used in short-term wind speed forecasting." Power and Energy Engineering Conference (APPEEC), 2011 Asia Pacific. IEEE, 2011.

[8] Sivaranjani, S., S. Sivakumari, and M. Aasha. "Crime prediction and forecasting in Tamil Nadu using clustering approaches." Emerging Technological Trends (ICETT), International Conference on. IEEE, 2016.

[9] Dr. N. Geetha, Akash Kumar. K. S, Akshita. B. P, Arjun. M: Weapon Detection in Surveillance System: International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181 IJERTV10IS050077 Vol. 10 Issue 05, May-2021.

[10] Neil Shah, Nandish Bhagat and Manan Shah: Crime forecasting: a machine learning and computer vision approach to crime prediction and prevention(2021)

[11] MalavikaNair, Mathew Gillroy, Neethu Jose, and Jasmy Davies in their "i-surveillance Crime Monitoring and Prevention Using Neural Networks", International Research Journal of Engineering and Technology (IRJET), e-ISSN:2395-0056Volume: 05 03rd March 2018.

[12] jha P.,jha R,Sharma A (2019) Behavior analysis and crime prediction using big data and machine learning.Int j Recent Technol Eng 8(1):461-468

[13] Harsh Jain, Aditya Vikram, Mohana, Ankit Kashyap, Ayush Jain Telecommunication Engineering, "Weapon detection using AI and deep learning for security application", IEEE (2019).

[14] M. K. Mohamed, A. Taha and H. H. Zayed, "Automatic gun detection approach for video surveillance," International Journal of Socio Technology and Knowledge Development, vol. 12, no. 1, pp. 49−66, 2020.

[15] J. Lim, M. Istiaque, A. Jobayer, V. M. Baskaran, J. M. Lim et al., "Gun detection in surveillance videos using deep neural networks," in Proc. of APSIPA, Lanzhou, China, vol. 1, no. 1, pp. 1−6, 2019.

[16] Erssa Arif, Syed Khuram Shahzad, Muhammad Waseem Iqbal, Muhammad Arfan Jaffar, Abdullah S. Alshahrani and Ahmed Alghamdi: Automatic Detection of Weapons in Surveillance Cameras Using Efficient -Net (2022).

[17] Karabo Jenga, Cagatay Catal, Gorkem Kar: Machine learning in crime prediction: Journal of Ambient Intelligence and Humanized Computing (2023).

IMAGE SENTIMENT CLASSIFICATION USING DEEP LEARNING APPROACH

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Abstract -
Image sentiment classification is very emerging trend due to high data generation in social media. In today's world, the proportion of individuals express their thoughts on the internet by replacing words with photo uploads on a wide range of social networking websites such as Instagram, FB, Twitter, as well as other platforms. Various visual elements along with image recognition strategies are applied to discern sentiments from image representation. Numerous previous systems have used machine learning (ML) methods to identify emotions, however typical extraction of features methodologies does not attain the requisite efficiency on different objects. In this paper we demonstrate the approach of image sentiment classification using deep learning technique. The training unit is responsible for image standardization, Feature extraction, classification, and selection throughout the procedure. This paper presents the most recent advancement in the area of picture sentiment using deep learning algorithms. We also examined the usage of traditional machine learning (ML) approaches against deep learning method. It appears that combining a rapid RNN (recurrent neural network) with a Convolutional Neural Network (CNN) can provide high precision while requiring minimal time complexities. According to a poll, present academics believe Convolutional Neural Network has an average precision of 96.50 percent for sentiment analysis on the flicker image corpora.

Keywords - Deep Learning, ML (Machine Learning), DCNN, Image Sentiment Classification, Image Processing, Analysis, Social Information Analytics.

I. INTRODUCTION

Humans often share a number of data in the format of photographs and video clips on social networking sites, whether it's sensitive details, daily sceneries, or pranks. The World Wide Web is a massive platform for communication and collaboration that is available internationally and instantly, giving users with either a good collection of people's point of view and thoughts on a wide range of subjects [1]. Numerous social media articles have no verbal captions and are instead saturated with photographs. As a result, visual content mostly leads to numerous of perceptions and feedbacks are conveyed indirectly.

Word, picture, and film can all be used to describe feelings. But while some previous studies [2, 3] have been using methodologies to identify sentiment through user articles, visual emotion recognition is about to be researched. Due to the sheer expanding utilization of social media to communicate sentiments in today's modern world, this seems to be an interesting area of investigation. Latest innovations are focused on increasing specificity. For visual sentiment classification, learning algorithms as well as methodologies have indeed been suggested.

These are divided into two categories: linguistic strategies as well as machine-learning (ML) approach. Machine learning (ML) methods comprise of NN (neural networks), naïve bayes (NB), SVM (Support Vector Machine) and maximum entropy strategies. Lexicon-based approaches encompass semantically and analytical methodologies.

II. OVERVIEW OF DEEP LEARNING

It is indeed a sub branch of ML (machine learning) that enables computers to perform from their past knowledge and perceive real-world facts. Machines learn information from experience of practical life and optimize decision-making in the approach [4]. The term "deep" within Deep Learning refers to the amount of hidden nodes in NN (Neural Networks). Significant amount of annotated data can be used to build Deep Learning algorithms. Deep learning strategies are applied to interpret image emotions and provide the maximum performance. Deep learning is important for image sentiment classification since it allows for the use of numerous techniques such as CNN (Convolutional Neural Networks), DNN (Deep Neural Networks), RNN (Recurrent Neural Networks), and Deep Belief Networks to obtain optimal outcomes [4]. The main issue arises when we experience contradictory sentiments that are expressed via picture and word [5].

The rest of the article is laid out as described in the following units: Unit 2 includes a brief summary of recent study, unit 3 describes suggested work, unit 4 discusses findings, unit 5 discusses research impact, unit 6 discusses picture object identification uses, unit 7 suggests future scope, and unit 8 concludes.

III. BACKGROUND

People all over the world are progressively using photographs and video clips or audio recordings to

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Data Security and Privacy in Cloud Computing

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Abstract— In these several previous year, Information technology has constantly been a prey to the data securities. As the data's are considerably scattering all over globe on the environment of clouds computing, it sort of gives rise to numerous issues. There are two primary reasons because of which users do have concerns regarding data security, privacy about cloud technology. Data securities , privacy protections are evidently becomes a important factor for growth in future of cloud computing technologies in any other sectors like government, industroy,businesss, even though, several different approach have been researched on the issues of clouds in sectors like academies as well as business. Hardware as well as the software in the cloud computing architecture are affected due to several concerns regarding data security as well as privacy protections. This case study intended to bring attention over the improvement of data securities and privacies protections for of reliable cloud environments can which had been done by reviewed many securities strategy as well as difficulty from softwares as well as hardware sides in sense to achieve the securities of data.

Index Terms— Data Security, Data Integrity, cloud Computing, privacy, Confidentiality.

I. INTRODUCTION

The upcoming environment in computations had been identified as of clouds computing. Application as well as resourses mostly is both make available non-offline service in the cloud computing environments. The word "cloud" means that the environments made up of the hardware's and software's sources in raw data centre that offers a various service along a networks or the Internet to tackle user need. According to the National Institute of Standards and Technology (NIST) , "cloud computing" points to the shared of concentrate collections of several recovered computing resource that can be of easily allotted and release with almost no-management and services providers of communications. The elaboration claim that clouds computing offer simple on demand networks communications access to the pool of shared, programmable computers resource. Application for computer, network recourses, platform and software's services, the virtual server, and computing infrastructures are the entire example of recourses. Cloud computing is a another new form of computing that may provides services quickly and make it affordable. There are generally three majorly known as well as frequently utilized services model in the clouds. They are software as a service (SaaS), platform as a service (PaaS), and infrastructures as a service (IaaS). With the SaaS, client accesses the programming and essential data through web browser from a clouds services provider. In PaaS, a services providers provides services to customers using a group of applications that are each capable of doing certain tasks. In the IaaS, the clouds services providers give customers accesses to storages and virtual machine to improve the productivity of their enterprises. Grids computing as well as cloud computing are same yet distinct from each other. While cloud computing combine computing and storage resources controlling by variety operating system to offer services likes large scaled data

and storage and high performances computing to user, grid computing integrates diverse resource together and control the resource with a single operating system. Cloud computing has altered the general landscapes of grids computing. When compared to grids computing, the cloud computing methods of data distributions is novels. Cloud computing will makes it simples to uses service on demands. On demand self services, omnipresent networks connectivity, location independents resources pooling, quick resources flexibility, usages based pricings, and risks transferences is some aspect of clouds computing. These benefits of clouds computing have sparked a lots of attentions from both the businesses and academics research's communities. The world of business is current changing due to clouds computing technologies. Although cloud computing hold great promises for IT application, there are still several issue that needs to be resolved before individual and business may stores data and runs app threes. Data securities, which is accompanied by problem with compliances, privacies, trusts, and legal's difficulties, is ones of the biggest obstacle to adoptions. Regarding privacy and securities in cloud computing, institution plays close-knits roles. It has always been a big problem in IT's to protect data. Because data are dispersed amongst several machine and storages device, such as server, PC, and various mobiles device like wireless sensors network and Smartphone, data securities become an especially critical issues in the clouds computing environments. Compared to traditional information's system, cloud computing data securities is more difficult to maintain.. Users' securities concern need to be addressed in order to build confidences in the clouds environments and encourages organisational adoptions of clouds computing. The first conditions for gaining's consumer trusts in adopting such a technologies is a reliable environment. The feature of cloud computing are examined firsts, and then the concern with data securities are covered. Another's names for clouds computing is on demands services. Cloud services providers oversees and enable service in the contexts of the clouds computing environments. While end customer utilises the services to meets their business need and then pays the services providers in accordance's, the clouds providers provide all of the service through the Internets. Computing and data's storage are the two's fundamental types of services offered by clouds computing environments. Customers of cloud services do not require anything's to use the clouds computing environments; all they need is Internet connectivity to access their data's and completes there computing chores. Client doesn't know where the data are kept and which machines are doing the processing during data accesses and computation. When it come to data storages, users trusts and the effectives uses of clouds technologies are mostly determined by data's protections and securities. In the studies of clouds computing, varieties of data's securities and protections method had been puts forth. However, procedure connected to the data protection needs to be improved much furthers. The full ranges of computers service is offered through cloud computing. In orders to cuts cost, business and organization are now expanding and relocating their operation to the clouds. This may helps frees up additional manpower's so they may concentrates on developing strategic difference and improving companies job responsibility. . Public clouds, private clouds, and hybrid clouds are three different forms of clouds, each with a different access scope. Publics clouds are owned by services provider are available to the general publics, private cloud are owned by businesses, and hybrid clouds combine publics and private clouds. The majority of the currently available cloud services are offered by well known cloud service providers like Google's, Amazon's, and IBM's. A private cloud is one the where only authorized users have accesses to the provider services. Anyone's can utilize clouds services in the public's clouds, but the hybrid cloud combine the ideas of both publics and privates clouds. An corporation can save time by using clouds computing. There are several ways to define security. Security combines availabilities, the prohibition of unauthorized withholdings of information's, confidentialities, the preventions of unauthorized disclosures of information's, and integrities, the preventions of unauthorized change or deletions of information's. Discusses the fundamental problem with data securities, governances, and managements in relation to control in clouds computing. The fundamentals securities, privacies, and trusts concerns in the currents contexts of cloud computing were emphasized by Sun et al, who also assisted user in recognizing the concrete and intangible risk associated with its use. The authors claim that securities, privacies, and trust are the threes mains potential dangers to cloud computing. In the currents sera of the long dreamed of concept of computing as a utility, securities play a crucial role. Safety mechanisms, cloud server monitoring or tracings, data confidentiality, and preventing malevolent insiders' illicit action and services hijackings are the fours subcategory that makes up this categories. Networks for cloud computing are intended to have a data security framework. The writers mostly covered security concerns with cloud data storage. Additionally, several data storage security solutions are covered by patents. A survey of safe clouds computing for critical infrastructures is provided by Younis's and Kifayat's . For RFID technologies combine with clouds computing, which will mix clouds computing with the Internets of Thing, a securities and privacies architectures has been suggested. In brief, data privacies, data protections, data availabilities, data locations, and safe transmissions are the keys concern in clouds data securities. Threat, data losses, services interruptions, externals assault as well as multitenancys problems are few of the securities

challenge that do occur in the clouds . By concentrating on privacies protections, data segregation, and cloud security, Chen's and Zhao's examined privacies and data securities challenges in clouds computing. Data sharing presents the biggest barrier in clouds computing, and data securities issue are mostly at the SPI 's(SaaS, PaaS, and IaaS) levels. We'll go through several security measures and issues related to protecting users' privacy and data storage in clouds computings environments. This study give a comparatives research reviews of the priors research on clouds computing solution through data securities issue such as data integrities, confidentialities, and availabilities, as shown in Figure 1. Because data privacies is typically associated with data's securities, clouds technology and data privacies problem are also explored. By protecting data in the clouds computing environments, comparatives study on data's securities and privacies might serves to increases consumers confidences.

A. Data Integrity

One's of the most important component of any information systems is data's integrities. Protecting data from unlawful erasures, alterations, or fabrications is the general's definitions of data's integrities. The admission and right of the managing entities to certain corporate resource ensures that priceless information and service are not misused, misappropriated, or stolen. In standalones systems with a singles databases, data integrities is simply attained. Through databases constraint and transaction, which are typically completed by a databases management systems, data integrities is ensured in the standalones systems (DBMS). To guarantees data's integrities, transaction should adhere to the ACID's (atomicity, consistency, isolation, and durability) criteria. Most database can maintains data' integrities and handles ACID's transaction. In clouds systems, maintaining data's integrities involve protecting information's integrities. Unauthorized user should not lose the data's or alters it. The foundations for offerings clouds computing service like SaaS's, PaaS's, and IaaS's is data integrities. In additions to large scales data storages, cloud computing environment typically offers data's processing service. Technique likes digitals signature and RAID's type scheme can be use to ensures data's integrities.

B. Data Confidentiality

For consumer to saves there privates or confidential data in the clouds, data confidentialities is crucial. Data's confidentialities are guaranteed through the use of authentications and accesses controls technique. By improving clouds reliabilities and trustworthiness, the difficulties with data confidentialities, authentications, and accesses controls may be resolved. Customer should avoids directly storing there sensitive's data in clouds storages since user do not trusts clouds provider and internals threat are nearly difficult to eradicates for clouds storages services provider. Simple encryptions cannot fulfil complicated need like inquiries, concurrent modifications, and fine-grained authorizations due to the keys management's issues.

Homomorphic Encryption

Typically, encryptions are employed to protect data's secrecies. Rivet's et al. suggested a particular type of encryptions scheme called homomorphic encryptions. Additionally, the whole method avoids the need to decrypts the data since it assure that the results of the cipher texts algebraic operations are compatible with those of the clears operations following encryption's the secrecies of data and data activity in the clouds may be resolved by the application of this technology. First put out by Gentry, the completely homomorphic encryption approach is capable of performing any operation possible in plains texts without the need for decryptions. It represents a significant advance in homomorphic encryptions technology. However, the cost of compute and storage is quite expensive, and the encryption mechanism requires extremely complex calculations.

Encrypted Search and Database Due to the inefficiencies of the homomorphism encryptions algorithm, researcher are now focusing on the limited's homomorphism encryptions algorithm application in the clouds environments. A frequents procedures is encrypted search .Transposition's, substitution's, folding, and shifting (TSFS) algorithms is a simple databases encryptions methods described by Manivannan's and Sujarani's . But as the number of key rise, so do the computation and processing's that go along with it.For the privacies and securities of sensitive's data in an unreliable clouds environments, an in the memory databases encryptions approaches is suggested . Betweens the owners and the clients wanting accesses to the data's, there is a synchronizer. To decode the encrypted shared data that it get from the owner, the clients would needs a keys from the synchronizers.

Distributive Storage

Potentials strategies in the clouds contexts are distribute data's storages. Alizarin's et al.talked on securities concern with regards to data's privacies in clouds computing, such as data's integrities, intrusions, and services availabilities. One possibility for ensuring data's integrities is to store data crosses several cloud or clouds database. Shamir's secrets procedures is used to creates a polynomials function against each pieces of the data's that has to be safeguarded as against internals or externals unwanted accesses. A method called securities as a service has been puts up by Ram's and Sreenivaasan's for protecting clouds data. Busy breakings up the user's data's, the suggested approaches can achieve utmost's securities.

Hybrid Technique

For data's secrecies and integrities, a hybrids methodology that combined keys sharing's and authentications method is presented. By making uses of robust keys sharing sand authentications procedure, the connections between the users and the clouds services providers may be made more secures. The users and clouds services provider can exchanges key in a safe manners using the RSA 's public keys algorithms. It is suggest to uses three-layereds datas securities approaches. The first tiers ensure the cloud user authenticities using one factors or two factors authentication; the second layers encrypt the user's data storage ensures safety's and privacies; and the third layers perform quick's data recoveries through a quicks decryption procedures. A proposed solutions for event based isolations of important data's in the clouds.

Data Concealment

For data securities and integrities, a hybrids methodology is developed that make uses of both keys sharing's and authentications method. Strong's keys sharing's and authentications procedure can increases the securities of the connections between the users and the clouds services providers. The RSA public keys technique may be used storage distributes key\ betweens user and clouds services provider in a safe manners. A suggested three-layered data securities approaches another methods for maintaining data secrecies in the clouds is data hidings. A concealing ideas was suggested for databases securities by Delettre's et al. Data concealing technique combines actual data with fictitious visuals information so inflates the amounts of genuine data. However, authorized users can quickly tells the differences between the true's data and the phony data.

Omissions Evidences

Omissions evidences mean that data could not be recovered when druggists cancels theirs data after the omission s evidences. The problems is veritably serious, because furthers than ones dupes exists in the palls for the securities and conveniences of data recoveries. When druggists cancels theirs data with evidences, all the clone of data should be deleted sat the same times. Still, threes are somas data's recoveries technology that could recover the data's deleted by druggy from the hard disk. So the pall's storehouse's provider should insures that the deleted data's of druggy could not be recovered sand used by others unauthenticated user. To avoid the data be recovered and unauthenticated lies used, a possible approaches is to ciphers the data before uploading storage the pall's storehouses space. FADE's system is grounded on technologies similar as Ephemerides. In the systems, data are translated before they're uploaded to the pall's storehouses. When druggists decides to cancels their data, the systems just to apply the specifics strategies to all the storehouses spaces could be covered with new data for replacing the omissions operations.

C. Data's Vacuity

Data's vacuity's refer to the extents to which's a stoner's data's can be used or recovered in the events of disaster like hard slices damages IDC fires, and networks failure, as well as the style by which druggists can singly corroborates their data's without counting's solely on the pall's services provider's credits guarantees. guest have majors enterprise about the problems of storing data's on internationals waiter since pall's supplier are subjects to originals law, and pall's guest should be apprehensive of similar regulations. also, the pall's services providers must guarantees data securities, especially data's confidentialities and integrities. The pall services providers should bandy all of these worried with the customers and establishes a fellowships grounded son trusts. The pall's sellers should gives s guest assurance on the securities of their data's and explains to them these operations of originals law. The study primarily focuses on data's difficulties and challenge related to costs, vacuities, and security, as well as the positions and movements of data storehouses. Druggies' faiths in the pall s Mays bees increased by chancing data's. Druggists can pierces a transparent storehouse through pall's storehouses, which can reduces pall complexities but also limits druggies' capabilities to manage their data's storehouses. Bensons and associates examined the substantiations for geographic replications.

Reliable Storage Agreement

The most frequents anomalous gestures associated with untreated storehouse is the pall service providers' eventuality to cancel some of the stoner's update data, which is delicate to corroborate by counting just on introductory data encryption. A good storehouse agreement must also let multitudinous druggies to modify data contemporaneously. The Depot suggested by Mahakam etal. can give chopstick- join unproductive thickness and long- term thickness. It can help the relinquishment of other safety preventives in the trusted pall storehouse terrain and successfully forefend against assaults like discarding (similar as Amazon S3) trust ability of Hard-Drive- Presently, the primary storehouse medium in a pall terrain is a hard slice. Hard slice responsibility creates the frame for pall storehouse. Grounded on literal hard drive data, Pithier etal. analyzed the error rate of hard drives. They discovered that, although having significant clustering features, the error rate of hard drives isn't directly related to operation frequencies or temperature. The hard slice error rate couldn't be prognosticated by the current SMART technology. Tsai etal. delved the relationship between the soft error and hard error of hard discs, and they discovered that the hard crimes of hard drives couldn't be directly prognosticated by the soft error, with only around1/3 liability that hard crimes follow the soft error.

D. Data sequestration

The capacity to conceal oneself or data about oneself and expose oneself only when asked is known as sequestration. Following are the factors of sequestration. iii) Extent Rather than a specific position, a stoner may want to have their information reported as an indeterminate zone. Service Abuse Service abuse refers to when an bushwhacker uses a pall service inaptly to steal data or detriment other druggies' interests. Other druggies could misuse stoner information. As a result of the wide operation of reduplication technology in pall storehouse, it's constantly the case that druggies partake the same data that has been saved just formerly. This will save pall service providers plutocrat and minimize storehouse space conditions, but bushwhackers still have access to the data if they know the hash law of the lines being stored. The sensitive data might also be exposed on the pall. Thus, a evidence of power fashion has been suggested to corroborate pall druggies' individualities. Bushwhackers could raise the price of pall services. Preventing Attacks- multitudinous participated coffers are made possible by pall computing on the Internet. Denial of Service (DoS) assaults should be suitable to be stopped by pall computing platforms. The need for security services in pall computing was examined by Sheen et al. The authors recommend combining pall services for trusted platform support services (TPSS) with trusted computing platform(TCP)(TSS). Confidentiality, stoutly creating trust disciplines, and dynamic of the services should all be features of the trusted model. druggies must move their data onto pall architectures only on the base of trust. Neisse etal. Examined academic assaults on the Xen cloud platform to assess the responsibility of pall services. The key to pall computing wider relinquishment is data security and consumer confidence. Concentrated on pall services from a security perspective and delved pall security difficulties when delivering the services. Security in cloud computing is primarily achieved

II. SECURITY CHALLENGES IN CLOUD COMPUTING

Many businesses priorities security while using cloud technology. The general concepts of security are: availability for client systems, confidentiality, authentication, integrity, and non-repudiation. Access control is yet another crucial element of security. The security of cloud computing is always under attack. A hostile hacker could be able to access the data of several clients using a single vulnerability in one client application. We call this issue "data breaches." Another problem is data loss, which occurs when a cloud provider's security hole allows an unauthorized user to change or delete all of the information in the system. Weak interfaces and insecure APIs are two more prevalent security issues in cloud computing.

III. PRIVACY CHALLENGES IN CLOUD COMPUTING

The fact that the location of data servers decides most recent data protection laws, like the GDPR and CCPA, contain an extraterritoriality provision, which means they apply to all businesses, or service providers in this example, regardless of where they are situated. The steps used to secure personal information must be in compliance with GDPR or CCPA as long as a corporation obtains it from residents of the EU or California. When gathering personal information from consumers and workers, businesses also make privacy promises to them, and they need to be sure the cloud service provider can fulfill them. It could be challenging for data subjects to exercise their rights under new data protection laws, such as the right to be forgotten or the right to data portability, if a cloud provider has operations in several different jurisdictions.

Data Security Challenges in Cloud Computing

1. Security – It is commonly known that security issues have seriously impacted cloud computing. Shared computer resources and the multi-tenancy model of cloud computing have led to security issues.

2. Storage - The data stored in virtual computers has a lot of issues. Data storage dependability is one of these problems. Physical infrastructure is required to house virtual computers, which might be problematic in terms of security.

3. Data Center and Operation- The data stored on virtual machines has a lot of issues. Data storage dependability is one of these problems.

4. Costing Model - Although migrating to the cloud can significantly reduce infrastructure expenses, it can also raise the cost of data connection. Since several clouds usually use exclusive interfaces and protocols, data integration might be costly. As a result, the cloud user must use protocols particular to each cloud provider to connect with other clouds. Splitting and combining data incurs considerable extra costs and may have a detrimental effect on system performance.

5. Service Level Agreement - Even though customers have no control over the underlying computer resources, they must ensure the quality, availability, reliability, and performance of those resources when they move their critical business operations to their trusted cloud. In other words, it's essential for consumers to receive guarantees from suppliers about service delivery. Additionally, different SLA Meta standards must be established for cloud service providers offering IaaS, PaaS, SaaS, and DaaS.

6. What To Migrate - At the present, IT systems that carry out auxiliary functions, such as IT management and personal apps, are the most transportable? Organizations often utilize IaaS more frequently than SaaS. This is partly because auxiliary jobs are typically sent to the cloud while core operations are frequently handled in-house. Conclusion The newest and most promising technologies for the next waves of IT applications is clouds computing. Data's security and privacies concern are roadblocks to the clouds computing industry's fasts expansions. Any firm must reduces the costs of data processing's and storages, and analysis of data's and information's is always the most crucial activities for decision makings in all enterprise. As a result, no companies will moves theirs data's or information's to the clouds unless customer and clouds services provider have established a levels of confidences. Researchers have puts out varieties of approach for data protections and to achieve the maximums levels of data securities in the clouds. However, there are still plenty of hole that must be addressed by improving these method.

REFERENCES

[1]   Leavitt N. Is Cloud Computing Really Ready for Prime Time?, Computer 2009 42 1 15 25.
[2]   Mell P., Grance T. The Nist definition of cloud computing National Institute of Standards and Technology 2009 53 6, article 50

[3] Berman F., Fox G., Hey A. J. G. Grid Computing: Making the Global Infrastructure a Reality, Volume 2 2003 John Wiley and sons

[4] Shah M. A., Swaminathan R., Baker M. Privacy preserving audit and extraction of digital contents IACR Cryptology EPrint Archive 2008 186

[5] Xiao Z., Xiao Y. Security and privacy in cloud computing IEEE Communications Surveys & Tutorials 2013 15 2 843 859

[6] Kshetri N. Privacy and security issues in cloud computing: the role of institutions and institutional evolution Telecommunications Policy 2013 37 4-5 372 386.

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Thresholding Techniques Comparison on Grayscale Image Segmentation

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Abstract

Image segmentation is a prime domain of computer vision backed by a huge amount of research involving both image processing-based algorithm and learning-based techniques. Due to this there is an upsurge in different segmentation technique from the research community. Various image segmentation techniques have their strength and weakness and some specific application are more geared up to some segmentation techniques. The automation systems like object detection, robotics and intelligent video analytics, do a lot of segmentation technique and hence there is need to evaluate the performance of these techniques.

The paper implements the different types of segmentation techniques. Threshold techniques including like histogram thresholding, mean thresholding, edge thresholding, variable thresholding and percentile (P%-tile) exists. Algorithms are applied using MATLAB coding on the considered images. White Pixel Ratio (WPR) parameter is used for analysis of various methods. Similar to the theoretical concept, practical approach shows that WPR is better for histogram thresholding as compared to other techniques.

Keywords: Computer Vision, Segmentation, Image Processing, Edge, Histogram pixel, P-tile and WPR

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Underwater Image Restoration Using Color Distance and Image Formation Model

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ABSTRACT

The use of underwater images for ocean study, archaeology, weather forecasting, scuba diving, and observing aquatic life is widespread. Inscrutable underwater world excited to be explored by scientists. Scientists acquire underwater images for carrying out underwater surveys, archaeology, and weather forecasting. However, due to haze, underwater footage is poor in terms of visibility and distinction. Haze removal may be challenging since it supports unknown depth information. As a result, removing the haze may be difficult and complex. Based on the survey, it appears that current methods have neglected techniques to reduce the noise issues present in fog removal algorithm output images. It is also a problem for dehazing methods to deal with uneven and over-illuminated areas. As a result, it is necessary to modify existing methods in a way that the modified methods will be more effective.

This paper introduces a new integrated algorithm for underwater image restoration based on an underwater image formation model (UIFM). For improved results, the new algorithm integrates dark channel prior (DCP), Contrast Limited Adaptive Histogram Equalization (CLAHE), and bilateral filtering. Firstly, bilateral filtering was performed on the underwater image to remove color deviations. Next, the difference was calculated between the forward channel and the background channel to obtain the enhanced image. Additionally, we strive to obtain contrast-enhanced images by using the CLAHE methodology. Compared to other popular underwater color image quality evaluation methods, our proposed method produces better visual effects.

Keywords: Dehazing, Image Processing, Light Intensity Visibility Restoration,

I.   INTRODUCTION

Here we have a tendency to describe a unique technique to reinforce underwater pictures by dehazing. Scattering and color modification are 2 major issues of distortion for underwater imaging. Scattering is caused by massive Suspended particles, such as murky water that contains thick particles. Color modification or color distortion corresponds to the variable degrees of attenuation encountered by lightweight traveling within the water with completely different wavelengths, rendering close underwater environments dominated by a chromatic tone. Our key contributions are planned a brand-new underwater model to compensate the attenuation discrepancy on the propagation path, and planned a quick joint pure mathematics filtering dehazing rule.

Fog, dust, haze or different sorts of region degradations area unit shaped by particles gift within the atmosphere

AlmaHub: An Engaging, Supportive Alumni-Students Interaction Platform

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Abstract— **Alma Hub project is aimed at developing an engaging, supportive alumni-student interaction platform. The al a cross-platform application and a website that can be accessed worldwide where alumni are present. This system can be used as an application and a website to connect with students and share their experiences with them. This system will reduce the gap between alumni, students, and the institute by providing them with a common platform to interact and stay updated and connected with campus activities. The project is innovative in all aspects since no such application is available to connect students and alumni of the college apart from the college portal where interaction and job posting activities are not present in the college portal. It will provide more customizability, a more effective user interface, and more modularity. Interaction between alumni and students will be on regular basis through the Alma hub.**

Keywords— *Mobile Application, Alumni Platform, Flutter*

I. INTRODUCTION

Alma hub will facilitate an effective communication platform through online chatting, profile viewing and personal messaging, job posting, events, and other features among two stakeholders of the institute via- students and alumni. This system will get used as a platform for the Alumni information Database to manage the college information and students' information. The system is an online platform that can be accessed throughout the organization as well with proper login provided, which will give better service to the customers. The Alma hub can act as an interactive medium between the alumnus and current students. Through the exchange of their experiences, opinions, ideas, advice, motivating inputs, and strategies, alumni and the concerned institution will benefit from the suggested system in forging strong ties. Users and administrators can quickly obtain information about alumni. After leaving the institute, a student continues his or her professional life or job, with higher education being crucial to become established in the field. In regards to the College, it has been our observation that alumni have kept in-person connections with one another rather than communicating through the Alumni Association from the outset. The development of new resources like alumni web pages, list servers, etc. has unquestionably been aided by improvements in information technology. So that more alumni can interact with one another.

II. LITERATURE REWIEW

The author of paper [1] has created a portal for the alumni association. The current methods for gathering alumni information need a lot of time because the alumni profile must be manually updated. A single repository for all alumni data would be offered via a web-based alumni software. Only after the administrator has properly validated the student will this alteration be updated. This Alumni Association portal application's goal is to facilitate communication between former and current students of an institution or college. This enables students to get to know one another and their present activities, which is essential for forging a lasting connection. This system would offer features including a listing of featured alumni, sophisticated search notifications, alumni notice boards for various announcements relating to alumni, and photo galleries in addition to being a way to rediscover academic recollections.

In article [2], the author uses an Android application to connect alumni with smart people. Since it was created on the Android platform, the system enables efficient communication across several classes of graduates from the same institution. This connect application's goal is to offer a mobile user interface that makes data storage easier, authenticates users, and offers various services. As part of the services, you can connect and communicate with a certain alumnus, have productive interactions with specific users, share expertise, create newsletters, etc.

The author developed a system that can gather and preserve alumni contact information for use in the future. Former students of the university can stay in touch with their closest friends, as well as incoming students and other community members includes in Article [3].

This one system can meet practically all of the alumni's needs. The author suggested creating a web-based application that would enable alumni to update their contact information, students to interact with them, and alumni and admin to filter events that are uploaded on the website (SVM). The alumni members were categorized using the suggested method, the SVM algorithm.

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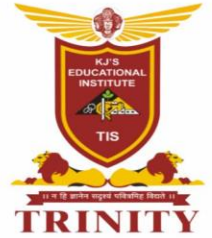**Dr. N.B. Sambre**
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Evaluation of Block-chain Transaction Accuracy using Neural Network Model

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Abstract— **Dubbed as distributed ledger technology, the based on blockchain (DLT). The fundamental features of blockchains include a shared ledger, updates that happen in almost real time, are time- and date-stamped, are secured, and support for programming programs. Human brains use nodes that are connected, which are similar to cells in the brain, to accomplish deep learning. As a result, human brains with many Deep learning is accomplished by using hidden layers. The confluence of block chain technology and artificial intelligence has been the focus of extensive recent research in payment information (AI). It is covered to use these artificial neural networks. The usage of blockchain technology can cut humankind's carbon emissions. AI. If AI robots take the role of human workers, mining companies will dramatically drop in energy and cost use.**

Keywords: Blockchain, Neural Network, Deep Learning, Artificial Intelligence, Machine Learning, Artificial Neural Network

I. INTRODUCTION

Blockchain network or "Distributed Ledger" are terms used to explain (DLT). A distributed ledger, thing upgrades that are almost real-time, cryptographic keys sealed treaties, and thing updates are among the fundamental components of the block chain technology. Brains, sometimes referred to as biological neural networks, are used to execute deep learning within neural network models. As a consequence, classifiers is done while using machine learning with multiple layers. Current findings in money transfers has focused heavily on the coupling of AI + block chains (AI). It is allowed to use this kind of artificial neural system. Neural network may be used to lessen the carbon impact of blockchain technology. Artificially intelligent (AI) tools might substitute workers, saving mining companies a significant amount of money and energy. [1]

1) Block Chain: It's difficult to undo, hack, or deceive the system using block chain. The blockchain network is indeed a blockchain platform of electronic payments in its most basic form. The information is accessible to everyone using a block chain-capable app. It is possible to view this ledger without permission, but the opposite is also true. Block chains and other common broad are distinctive in that systems store data in encrypted blocks that are linked by links. With each new item of data received, a separate block is built. Each block is connected to the previous one it to produce a historical chain of data. Digital data can be stored and disseminated via block chains without ever being able to change it. In terms of producing [2]

Public blockchains are perfect for unchanging accounting records, or records which cannot be changed in any manner. Block chains are also known as distributed ledger systems (DLT) (DLT). The public ledger, almost genuine updating, time and additional data, cryptography locked data, and programmed contract are really the main features of block chain.

2) Deep Learning: It could be viewed as a component of AI as a subgroup or computer vision. In this machine lesson learnt, data is extracted and transformed using nonlinear stream processors. Figure 1 states the data from the preceding layer is then copied to the following tier, and vice versa. To tackle the dimensions of wellness, deep models depend on the writer's direction to concentrate on the most appropriate features. When there are numerous inputs, supervised neural methods are used. [3]
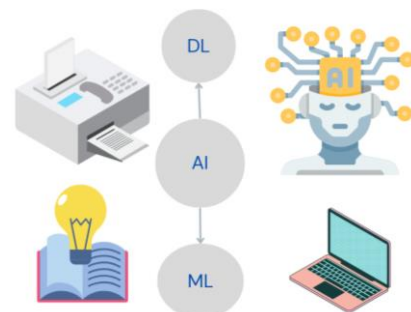

Figure 1. The diagram shows relationship between deep learning and ai

The fact that deep neural networks can only learn through observation is one of the biggest obstacles they must overcome.

It has sexism and prejudice problems.

3) Deep Learning Pros and Cons: Neural Training enables for faster and easier feature development. It eliminates any additional costs that go along with it. Even the challenging faults may be quickly detected. It's the greatest when that comes to figuring out solutions. It needs a lot of knowledge, training is expensive, and there's not many academic resources to help that method, to name a few disadvantages.

A. Neural Network

Human brains employ nodes that are connected, which are similar to cells in the brain, to accomplish deep convolutional neural network. Hence, artificial neural network with numerous hidden layers are more effective used to put deep learning into practise. It is a collection of algorithms which attempt to identify trends, relationships, and facts from datasets using a method that was influenced by and functions analogous to the human brain. Cognitive Networking I will discuss the important kinds of neurons, including: [4]

4) Artificial Neural Network (ANN): Consider that a Knn Algorithm represents each recurrent neural network. An ANN has several perceptron/neuron layers, one for each layer. As inputs are only ever processed forward, nutrient human brains are often referred to as Autoencoders. Due to the absence of rear in a circuit configuration, vertices cannot create a cycle. Three layers compensate the ANN: intake, concealed, then outputs. The input takes the input, analyzes it, and delivers the results to the output units. ANN may be used to handle issues using tabular, picture, or textual data. An Nn cannot analyse time series because of input lack contextual data.

5) Recurrentl Neural Network (RNN): The recursive neural network is greatly dependent on the results of previous runs, as even the name indicates. To correctly predict the next phrase in a phrase, for instance, one has to be conversant with both the words that have come before it. Given the fact that such a rnn ignores all future possible data, its effective part is quite sluggish. It struggles to remember the details of the past. Rnns are a fantastic tool to have on our discretion when working with Data Set, Text, & Audio files. RNNs exchange their characteristics across time steps. This procedure is referred to as user can give. Less variables need to be trained, which demands less computing time. [5]

6) Convolution Neural Network (CNN): Bpp is used to analyze input parameters as if they were running through in this form of filter. In this approach, the memory of a picture may be dissected into its constituent parts. One application of image and signal processing is face detection. Convnets (CNNs) are currently the craze in the field of deep learning. These Cnns are gaining popularity across a broad range of applications and industries. Filtering, that are frequently referred to as seeds, are used to construct CNNs from the bottom up. Kernels are employed to extract useful data form input

using the convolution approach. For them, sequential impulses come naturally. CNN learns about filters by not explicitly saying them. The input data may be more efficiently filtered for meaningful information by utilising these filters. The spatial components of an image are captured by CNN. The layout of pixels & its relation to one another are referred to as the geographical features of an image.

These aid in determining an item's precise location in relationship to other objects in a photograph.

TABLE I. COMPARISION BETWEEEN ANN, RNN AND CNN

	ANN	RNN	CNN
DATA	TABULAR DATA	SEQUECE DATA (TIME, SERIES, TEST, AUDIO)	IMAGE DATA
RECURRENT CONNECTIONS	NO	YES	NO
PARAMETER SHARING	NO	YES	YES
SPATIAL RELATIONSHIP	NO	NO	YES

A. Block Chain with Neural Network

Table 1 denotes, In latest days, the study of financial operations has concentrated on fusing block chain with machine learning. This group includes machine learning deep neural networks in addition to all forms of ai technology. An suitable computing method is chosen for each transactions to update the ANN and machine learning block chain. The basic setup of the computer is optimised using self-updating neural networks, and the data stored inside the operating system is then enhanced using ego and self-update data.

Due to Intelligence optimisation, mining activities may gain from decreased latency and quicker take several steps. AI may be used to lower the carbon emissions of blockchains. The cost and power requirements of miners will decrease if AI robots take over their work. Data trimming techniques created for AI may be used to block uses digital to auto delete data that will become useless in the near under light of a constant increase of blockchain technology data. 2 types of how neural network (AI) may be utilised to develop new decentralised learning systems are federation education and novel data-sharing tactics. Using AI, blockchain technologies are indeed a perfect location to store incredibly private and confidential information that, when analysed, may be useful and convenient. It's an excellent illustration of an intelligent healthcare system that utilises health scans and data to make precise diagnoses. [6]

II. LITERATUREIREVIEW

For our study on "Evaluation on Blockchain technology transactions accuracy using algorithms," we took inspiration and knowledge from reading a number of academic articles on blockchain, deep learning, and neural networks. The publications that form the basis of our work and help to steer the study in the direction of our research aim will each receive a short introduction soon.

In order to complete the rearrangement of raw transactions into separate convolutional patterns, Zhaohui Zhang et al. proposed a convolutional neural system model that was intended to be used for the tracking of fraud for online transactions. It is crucial because the receptive field produces distinctive derivative elements based on various attributes. Input for such a model is based on non-derivative, close to the bottom online banking data. It system consists of a complete layer, a layer with input sequencing, four parabolic and pooling layers, and a layer. Data from such a business bank's online banking service is used by the model to was successful at detecting fraud well without the aid of generated characteristics. An empirical examination comparing Posterior machine learning with various linear and ou pas baseline models on the Bitcoin process was conducted, as mentioned by Huisu Kang and associates.

Scholars Fran Casinoa and company examined the use cases of blockchain technology now available and discovered that it has the ability to alter "business as usual" behaviour. In order to streamline their assessment and include the ever even block chain sector, this study uses information from dark literature and research publications that have been published in prestigious scientific journals. They were able to provide a thorough categorization of block chain-enabled systems across several industries, including distribution network, trade, healthcare, IoT, safety, and database administration, thanks to a systematic investigation and discourse analysis of reviewed literature. It was also said that the negatives of blockchain technology were widespread throughout many different fields and companies.

Shuai Wang et al used CNN to recover damage characteristics from a steel - framed construction. A broken structure's acoustic parameters may be extracted using a convolution process, and those values can then be used with different classifiers to categorise the damage status of the structure. [7]

Liu et al. employed several asset modelling parameter settings to train the weight off-line, and they evaluated the trained ANN-solver online to determine the weights the neurons in each layer. Analysis Neural (ANN) models may automatically pick up on changes in implied vol, and a modified It is possible to calibrate a model rapidly and precisely using a parallel global optimization technique without getting bogged down in local minima.

A research by Sudeep Happy and pleased et al. looks at how machine learning may be used to increase the security of smart applications that are based on BT. The detection of attacks on a network stationed on a bitcoin blockchain may be accomplished using clusters, bagging, & Svms (SVM).

Wenyou Gao et al. studied the block chain and studied how the weight of the financial events adjustment waves that propagate and the way the human brain learns by using load model (BP) neural networks. An driver and a limited Bb computer were used to resolve our BP local minimal value and delayed convergence of neural network. [8]

To assess price changes in the blocked chain financial trading of stock index futures, two new deep learning algorithms were deployed. A constrained Boltzmann machine fared worse than the vehicle, an unsupervised machine learning system, which had a lower error rate and required fewer iterations to create initial weights and threshold. Wei Zhang et alresearch .'s on forecasts about how stocks will respond are based on how official information affects stock price movements and the whims of interactive information.[9]

A secure and transparent technique based on blockchain was developed to locate and organise networks. created by Ravi Prashar et al. The usage of cloud-based solutions was plagued by a lack of trust as well as concerns about privacy, security, and data management. They suggested a blocking chain-based solution to this issue in their paper. The network inference technique was tested on Mininet, Cfd Tracer, and indeed the Ethereum blockchain.

A three-dimensional perspective on blockchain and AI was taken by Zhonghua Zhang and her colleagues . Blockchain and artificial intelligence concepts were introduced. The two technologies' compatibility with one another was then established.

The authors that put the most emphasis on identifying emotional patterns were Aguilera et al. Ongoing and non-recurrent neuromorphic combinations may help patients whom have previously experienced an emergency yet were still very ill by foretelling future health crises. Many healthcare challenges, including those in schools, doctor's offices, research, and other settings, were resolved using machine intelligence in a blockchain environment. A second study scenario was provided since bitcoin network has the ability to enable secure transactions.

According to Muhammad Shafay et al. , combining deep learning with block chain technology is important. They reviewed the body of knowledge on the integration of deep learning with blockchain. The literature was identified and categorised using seven parameters, including the kind of block chain, deep learning models, and particular consensus techniques, as well as the application area, service types, and deployment objectives. They spoke about the benefits and drawbacks of the cutting-edge, block rack transfer learning frameworks now available. The public blockchain type, consensus protocol, deep learning technique, and dataset were the four features that the researchers used to assess the existing block filament machine learning frameworks. [10]

The Evidence of Work (Snowboard) consensus mechanism, built for this purpose on a dual HW/SW architecture, has been the most widely used unanimity mechanism as in block chain, as per Tarek Frikha and colleagues.

Faisal Jamal and colleagues offered in-the-moment assistance and resource allocation for distributed

generation units as a component of a network for selling power that would be based on a planned block chain. Prescriptive modeling enabled by smart contracts and energy trading make up the two aspects of the proposed ledger platform. Kevin Martin et al. [11] employed a variety of machine learning methods to find questionable activity in many databases for digital currencies.

III. PROBLEM STATEMENT

Numerous studies have been conducted in the topic of block chains, although they have certain limitations. Few previous studies focused on performance and accuracy. Furthermore, many studies were unable to address real-world problems. These studies are rigid and have a narrow perspective. In other words, a number of research have indeed been done in the field of block chains, however they have certain limitations. In earlier research, accuracy and performance weren't given enough attention. Furthermore, a real-world issue could not be addressed by these investigations. Those studies are limited in scope and unable to change to account for new information. [12]

IV. PROPOSED WORK

The proposed study should be able to address the problems raised by earlier studies. With this study, accuracy & productivity would improve. The goal of the proposed effort is to use blockchain in practical situations. The suggested task offers a versatile solution with a broad reach. In the presented effort, bitcoin blockchain transactions from several networks, including the ERC20, TRX, and MATIC block chains, have now been gathered. The author and destination addresses, the money, the reference number, and the operation status are included in the data set. figure 2 states, The Hidden layer training set was used to train this batch of data. When compared to the actual test, the taught model takes into account 70% of the dataset. [13]
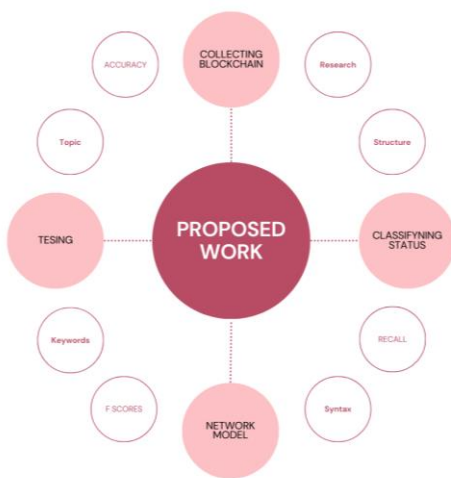
Figure 2. Process flow of proposed work

V. RESULTS AND DISCUSSION

Ten thousand blockchain technology activities were examined for the project, which was separated into three classes: achievement, failure, [14] and awaiting. Attributes including block chain information, writer and recipient addresses, bank account, time and date, and status are among the elements affecting the training model. The dataset was categorised as shown in column 2. [15]

Following Mlp and training, (where row 1 represents failure, row 2 represents outstanding, and row 3 represents completed trade) has been obtained.

Results of Simulation

TP: 9932
Overall Accuracy: 99.32%

Table II denotes, the accuracy chart has been presented in table 4 and its graphical simulation is shown in fig 3 for all three classes.

For all 3 classes, the accuracy chart is shown in tableau 5 and its visual depiction is illustrated in fig 4. [16]

TABLE II. PRECISION CHART

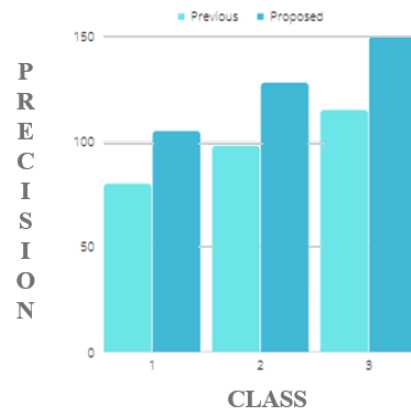| CLASS	N (TRUTH)	N (CLASSIFIED)	PRECISIO0 N
1.	2445	2436	0.99
2.	3098	3100	0.99
3.	4550	4555	1.00

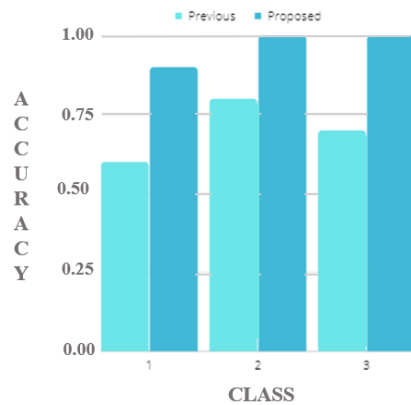**Figure 3**. Precision chart

Figure 4. Accuracy chart

VI. CONCLUSION

The problems from earlier studies can be addressed by this study. Look and productivity are the results of this study. This study is relevant to real-world situations. The current work offers several customised solutions. [17] In the other words, it may be claimed that somehow this investigation can address the issues raised by earlier research. This study's findings were more precise and effective. This research may be put to use in the actual world. The present project offers a flexible solution with several potential uses. As a consequence, accuracy for classes 1, 2, and 3 is 90.30%, 93.50%, 96.70%, and 99.41%, respectively, in earlier work.

99.58% and 99.65%, respectively, for the planned work. In prior work for Precision, the values were 0.67, 0.81, and 0.9, however in the proposed work, they are 0.99, 0.99, and 1. As for the recall value, the suggested job is 0.98, 0.99, and 1 correspondingly, whereas the prior values are 0.87, 0.88, and 0.87. [18]

REFERENCES

[1] X. Zhou, Z. Zhang, L. Wang, and P. Wang, "A Model Based on Siamese Neural Network for Online Transaction Fraud Detection," Proc. Int. Jt. Conf. Neural Networks, vol. 2019-July, 2019, doi:10.1109/IJCNN.2019.8852295.

[2] H. Jang and J. Lee, "An Empirical Study on Modeling and Prediction of Bitcoin Prices with Bayesian Neural Networks Based on Blockchain Information," IEEE Access, vol. 6, pp. 5427–5437, 2017, doi: 10.1109/ACCESS.2017.2779181.

[3] F. Casino, T. K. Dasaklis, and C. Patsakis, "A systematic literature review of blockchain-based applications: Current status, classification and open issues," Telemat. Informatics, vol. 36, November 2018, pp. 55–81, 2019, doi: 10.1016/j.tele.2018.11.006.

[4] S. Teng, G. Chen, G. Liu, J. Lv, and F. Cui, "Modal strain energy-based structural damage detection using convolutional neural networks," Appl. Sci., vol. 9, no. 16, 2019, doi: 10.3390/app9163376.

[5] S. Liu, A. Borovykh, L. A. Grzelak, and C. W. Oosterlee, "A neural network-based framework for financial model calibration," J. Math. Ind., vol. 9, no. 1, 2019, doi: 10.1186/s13362-019-0066-7.

[6] S. Tanwar, Q. Bhatia, P. Patel, A. Kumari, P. K. Singh, and W. C. Hong, "Machine Learning Adoption in Blockchain-Based Smart Applications: The Challenges, and a Way Forward," IEEE Access, vol. 8, pp. 474–448, 2020, doi: 10.1109/ACCESS.2019.2961372.

[7] W. Gao and C. Su, "Analysis on block chain financial transaction under artificial neural network of deep learning," J. Comput. Appl. Math., vol. 380, p. 112991, 2020, doi: 10.1016/j.cam.2020.112991.

[8] W. Zhang, K. X. Tao, J. F. Li, Y. C. Zhu, and J. Li, "Modeling and Prediction of Stock Price with Convolutional Neural Network Based on Blockchain Interactive Information," Wireless Communications and Mobile Computing ., vol. 2020, 2020, doi: 10.1155/2020/6686181.

[9] D. Prashar et al., "Blockchain-Based Automated System for Identification and Storage of Networks," Secur. Commun. Networks, vol. 2021, 2021, doi: 10.1155/2021/6694281.

[10] Z. Zhang, X. Song, L. Liu, J. Yin, Y. Wang, and D. Lan, "Recent Advances in Blockchain and Artificial Intelligence Integration: Feasibility Analysis, Research Issues, Applications, Challenges, and Future Work," Secur. Commun. Networks, vol. 2021, 2021, doi: 10.1155/2021/9991535.

[11] R. C. Aguilera, M. P. Ortiz, A. A. Banda, and L. E. C. Aguilera, "Blockchain cnn deep learning expert system for healthcare emergency," Fractals, vol. 29, no. 6, pp. 1–10, 2021, doi: 10.1142/S0218348X21502273.

[12] M. Shafay, R. W. Ahmad, K. Salah, I. Yaqoob, R. Jayaraman, and M. Omar, "Blockchain for Deep Learning : Review and Open Challenges," no.October, pp. 1–32, 2021

[13] T. Frikha, F. Chaabane, N. Aouinti, O. Cheikhrouhou, N. Ben Amor and A. Kerrouche, "Implementation of Blockchain Consensus Algorithm on Embedded Architecture", Secur. Commun. Networks, June 2021.

[14] F. Jamil, N. Iqbal, Imran S. Ahmad and D. Kim, "Peer-to-Peer Energy Trading Mechanism Based on Blockchain and Machine Learning for Sustainable Electrical Power Supply in Smart Grid", IEEE Access, vol. 9, pp. 39193-39217, 2021.

[15] K. Martin, M. Rahouti, M. Ayyash and I. Alsmadi, "Anomaly detection in blockchain using network representation and machine learning", Secur. Priv., pp. 1-12, August 2021.

[16] I. Z. Emiris, E. Christoforou, A. Florakis, I. Z. Emiris, E. Christoforou and A. Florakis, Neural networks for cryptocurrency evaluation and price fluctuation forecasting To cite this version: HAL Id: hal-03116041 Neural networks for cryptocurrency evaluation and price fluctuation forecasting, 2021.

[17] P. Gulati, A. Sharma, K. Bhasin and C. Azad, "Approaches of Blockchain with AI: Challenges & Future Direction", SSRN Electron. J., pp. 1-7, 2020.

[18] Deepak Purohit, Goverdhan Singh and Udit Mamodiya, "A Review Paper on Solar Energy System", International Journal of Engineering Research and General Science, vol. 5, no. 5, September-October 2017.

[19] Fakih, A. H., Venkatesh, A. N., Vani, Naved, M., Kshirsagar, P. R., & Vijayakumar, P. (2022, May). An efficient prediction of diabetes using artificial neural networks. In AIP Conference Proceedings (Vol. 2393, No. 1, p. 020071). AIP Publishing LLC.

[20] Singh, A. V. (2018). Fundamental Concepts of Neural Networks and Deep Learning of Different Techniques to Classify the Handwritten Digits. In Advances in Systems, Control and Automation (pp. 287-297). Springer, Singapore.

[21] Jaiswal, P., Gupta, N. K., & Ambikapathy, A. (2018, October). Comparative study of various training algorithms of artificial neural network. In 2018 International Conference on Advances in Computing, Communication Control and Networking (ICACCCN) (pp. 1097-1101). IEEE.

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Bhagwan Parshuram Institute of Technology, India
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BLOCKCHAIN-ENABLED SECURE DATA SHARING SCHEME IN WIRELESS COMMUNICATION

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Charging Station Placement for Electric Vehicles

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Abstract-The increased CO2 emissions are the major environmental concerns of the 21st century. The transportation sector is one of the key players in the degradation of air quality. Electric vehicles (EVs) are suitable alternatives to deal with emission problems. To adopt EVs on a large scale, proper charging infrastructure is very important. In this work, a novel approach is proposed for the placement and sizing of EV charging stations considering both transport and distribution networks. This paper presents a two-stage planning model for the sizing and placement of EV charging stations. In the first stage, candidate locations are identified using the technique for order preference by similarity to the ideal solution (TOPSIS) method. In the second stage, optimal locations for EV charging stations are obtained by optimization technique, particle swarm optimization algorithm (PSO) and grey wolf optimization (GWO) is utilized to find optimal locations. Results of PSO & GWO are compared, it is observed that GWO gives slightly better results than PSO. Also, GWO converged in less iteration. Optimization result gives the size of the charging station and no. of fast and slow chargers. Power loss in the distribution grid, accessibility of charging station, and road traffic, cost of charging station are considered for optimal sizing and allocation of the EV charging station.

Keywords— charging station, distribution network, transportation network, superimposition, pso, gwo.

I. INTRODUCTION

It is important to place EV charging stations in the road transportation network. Using EVs is an environmentally friendly way to reduce emissions from the road transportation sector. EV market growth is constricted due to a smaller number of public charging stations, inappropriate positioning of the charging station, limited range of EVs compared to conventional vehicles, etc. Inappropriate placement of charging stations in the distribution network may affect the smooth operation of the distribution system causing voltage instability and lower reliability indices. It increases power loss and harmonics in the power grid [1]. The lack of charging infrastructure is limiting the large deployment of electric vehicles in India. The development of charging infrastructure is very important [2]. The stability of the grid and accessibility of the charging station should be considered while solving the CS placement problem [3].

While dealing with charging station placement, positioning of charging stations in the road network is required, also it is important to consider the operating parameters of the distribution grid network, ease of EV user, and economic factors [4]. Due to limited fossil fuels and environmental factors use of the electric vehicle is increasing. Hence, it is required to increase the number of charging stations, update the electrical distribution system, increase its capacity and have a V2G strategy [5]. As CS load directly affects the power quality of the distribution system. To find the electrical parameters of the distribution grid, power flow

analysis is required. Backward-forward sweep method is used for the distribution power flow study. This approach has fast convergence in the radial distribution system [8]. Power losses and voltage deviation in the distribution system should be minimum also proper utilization of CS is important [11].

From [12] to [18], researchers worked on the minimization of the cost related to charging station placement. The authors considered installation cost and cost of traveling (the cost required to cover the distance between the charging demand point and the location of charging stations) as objective functions to locate the charging station [13]. Along with the construction cost of CS cost of upgradation of the protective device, charging stations, and the cost expansion of the distribution network is considered in the CS placement problem [15]. Charging station construction cost depends on geographical location and its operation cost depends on EV traffic flow. The objective function includes the construction and operation cost of the charging station and traffic flow is used as a constraint condition. [18]. Multicriteria decision-making methods are also used to select optimum locations in charging station placement problems. EVCS location selection is based on environmental criteria, social criteria, and economic criteria. Different factors are considered for selection criteria which are economic factors, technical factors, natural factors, & social factors. Economic factors include construction cost and payback period, technical factors include the impact on the power grid and future expansion of the capacity of CS [19][20][21].

Ease of EV user and traffic density is hardly considered in these studies of CS placement problems. Also, very few studies are available that consider the road network of an Indian city. Contributions of present work are:

- This work presents an approach to find optimal locations for EV charging stations by considering both the electrical distribution network and road transport network of Islampur, India.
- Accessibility of charging station, road traffic density, and electrical grid parameters are taken into account to formulate the charging station placement problem.
- Proposed work gives the size of the charging station and also no. of fast and slow chargers in a CS.

II. EV CHARGING STATION PLACEMENT METHODOLOGY

It is important to place EV charging stations in the road transportation network considering distribution network parameters. Considering traffic congestion and accessibility of location while placing CS will help to reduce range anxiety among EV users. The placement of CS is aimed at minimization of cost and the overall power loss in the distribution grid considering the convenience of EV users and operating parameters of the distribution grid. This work

Analysis of Hybrid Energy Storage System for Electric Vehicles

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Abstract—**Electric vehicles are getting important in the recent market because of depleting fossil fuels and the environmental effects of IC engines. Battery technology used for electric vehicle (EV) applications are still developing. The performance of batteries needs to be improved for the application of EVs. Range anxiety, short lifecycle, and large charging time are the main concerns in using a battery. Non-monotonic discharge of the battery is the main reason for degrading the performance and life of the battery. The non-monotonic discharge can be avoided using another energy storage device with fast charging and discharging characteristics. Battery and supercapacitor are having dissimilar but complementary characteristics. Li-ion battery has high energy density but poor power density while supercapacitor (SC) has high power density but poor energy density. The paper presents a comparative study of various topologies of a hybrid energy storage system (HESS) consisting of two energy storage devices (battery and supercapacitor) for EV applications.**

Keywords—*electric vehicles, hybrid energy storage system, SOH, current response of the battery*

I. Introduction

Various types of batteries have been used for EV applications, but li-ion turned out to be the most promising energy storage device for EVs[1]. It is currently most popular in portable electronic and EV applications. The design of the li-ion battery is specific to the application. For EV applications a high rate of charging and discharging is required. Electrode material needs to be selected accordingly.

Li-ion batteries are currently popular due to their high energy density and acceptable life cycle. But they have limitations of low power density and relatively high energy density. Nowadays supercapacitors are considered a good option for energy storage systems. SCs have advantages over Li-ion batteries in terms of peak power delivery, high power density, low internal resistance, wide operating temperature range, excellent durability, etc [2]. Above properties were obtained due to double layer capacitor structure. These properties render them in tandem with high-energy storage devices. SC consists of electrodes, membrane separator, and electrolyte [2].

Both the environmental concerns and market demands have created the necessity of EVs, but energy storage technology is still far behind fuel technology. Recent advancements in battery technology proved that the li-ion battery is the most promising energy storage device for EVs. But the limitations in thermodynamics and kinetics in the electrochemical reaction in battery cannot completely satisfy all the requirements of EV application. If a supercapacitor is used along with the battery, it can satisfy almost all the requirements of EV applications [1]. Extensive research needs to be done in the area of power electronics and transient analysis of hybrid energy storage system.

II. Methodology

A. Modelling of EV and HESS

Modeling of EV and modeling of a hybrid energy storage system is presented in this section. EV is modeled in MATLAB Simulink. Specifications of TATA Nexon EV are used for modeling vehicle bodies and tires. Battery current requirements for different driving conditions are recorded from the model. Three different driving conditions are considered as shown in figures. This model has also studied the effects of HEV and pure EV on battery current requirements. DC to DC buck-boost chopper is used to supply the required power from the energy storage system. PWM control technique is used to control the output voltage of the chopper. A PI controller is used as a driver to control the speed of a vehicle.

As per the research paper [4], multi-objective optimal sizing of a hybrid energy storage system for an electric vehicle is studied. In the current market, li-ion batteries are being used for EVs. Supercapacitors can be used along with the battery. Both battery and supercapacitor can supply power in parallel. There are three circuit topologies [1],[3] for this type of HESS.

i. Passive design: In the passive design the battery and SC packs are connected in parallel and directly coupled to the DC bus. This design is more affordable but the SC's performance in its full potential cannot be used. It also does not involve any control algorithm.

ii. Fully active design: The best control can be implemented in a fully active HESS that involves two DC/DC converters and an additional control circuit. This design can make use of the battery and supercapacitor at an optimum level. However, in this design, the size of the HESS and cost are compromised. In addition, the design is not as simple as a passive design.

iii. Semi-active design: The semi-active HESS involves only one DC/DC converter and presents a good compromise between the performance and the system cost. Given these advantages, semi-active HESS is favored to be the most intensively used topology.

Based on this theoretical background the research paper has discussed four topologies of the HESS system. Four different topologies of hybrid energy storage system have been modeled in MATLAB Simulink. A comparative study

Battery Energy Storage Train Scheduling in Power System Considering Renewable Power Generation

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Abstract— **Uncertain nature of renewable power sources (RES) like wind generation presents a significant issue for system operators. To reduce the negative effects of network congestion on the power system, battery energy storage (BES) Trains offer a potential way to deliver the energy produced by RES to the load center. The effects of stochastic scheduling of BES trains for railway transportation networks with uncertain wind power generation are evaluated in this paper. Using Autoregressive Integrated Moving Average (ARIMA) models, the uncertainties related to wind power for scenario generations are considered. Also, the vehicle routing problem related to the railway transportation system is solved using the time-space network model. As a case study, the BES Train integrated six-bus system with a three-station and three-line railway network is investigated. Simulation results evaluate the impact of BES Train, wind uncertainty, BES Train charging/discharging schedule, wind curtailment and computational time. In addition, BES Train can economically reduce network congestion and decreases operational cost.**

Index Terms— *Autoregressive Integrated Moving Average Battery Energy Storage Train, Time Space Network, Wind Power Uncertainty*

NOMENCLATURE

Indices and Sets:

p, q	Index of buses.
pq	Index of arcs in time-space network from station to station q.
k, Ω_K	Index and set of BES trains.
tn, Ω_{TN}	Index and set of time span.
Ω_{NA}	Set of arcs in a TSN for a single time span.
$\Omega_{NA_p^+}, \Omega_{NA_p^-}$	Set of arcs in a TSN which starts and ends at station p
w, Ω_W	Index and set of wind power generation
t, Ω_T	Index and set of time in hours.
g, Ω_G	Index and set of thermal units.
s, Ω_{SP}	Index and set of wind power scenarios.

B. Parameters:

$I_{k,p,0}^s, I_{k,p,TN}^s$	Initial and final state of BES Train k for station p at scenario s.
$C_{k,pq}$	Transportation cost of arc pq on BES Train.
RD_g, RU_g	Ramp up and down rate limit of unit g.
P_g^{max}, P_g^{min}	Maximum and minimum of thermal unit g.
E_k^{max}, E_g^{min}	Maximum and minimum energy capacity of BES Train k.
$E_{k,0}$	Initial energy in BES Train k.
$P_{d,t}$	Total system load at time t.

C. Variables:

F_g	Fuel consumption function of unit g.
$P_{g,t}^s, P_{k,t}^s$	Thermal and BES Train of unit g and k at time t for scenario s.
$SR_{g,t}^s, SR_{k,p,t}^s$	Spinning reserve of thermal and BES Train unit g and k at time t for scenario s.
$P_{k,t,dch}^s, P_{k,t,ch}^s$	Discharging and charging of BES Train k at time t for scenario s.
$P_{g,t,inj}^s, P_{w,t,curt}^s$	Active power injected and wind curtailment of unit g and w at time t
$I_{dch,k,t}^s, I_{ch,k,t}^s$	Status of charging and discharging of BES Train k at time t for scenario s.
$LF_{p,q,t}^s$	Line Flow limit at bus p and q at time t.

I. INTRODUCTION

With an increasingly severe impact of global climate change, many countries or regions have set ambitious plans to achieve net-zero carbon emissions by 2050-2060 [1]. Literature indicates a consensus that decarbonization of electricity generation by renewable energy sources (RESs) along with demand-side electrification (including building, transportation, and industry sectors) will play an integral role in achieving carbon neutrality [2]. Due to its low production cost and effective operation, wind energy has recently attracted the attention of scientists as one of the predominant types of RESs. However, the intermittent nature of wind energy would significantly affect the power system's operation. Therefore, balancing measures such as integration with energy storage systems (ESSs) is necessary to preserve the system's stability and dependability [3]. In the big picture, ESSs are one of the important nodes connecting the major sectors and will pose enormous challenges. Particularly, battery energy storage systems provide pollution-free, long-lasting, responsive, and highly efficient performance [4].

Artificial Intelligence and its applications in Renewable Integrated Power Systems

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ABSTRACT

Electric power system is undergoing major changes, due to large-scale integration of renewable energy, complicated network structure and increased energy demand. Developing autonomous systems, intelligent and digital communication technologies are becoming more and more urgent to modernize, strengthen and stabilize the power grid. Among several innovative efforts, artificial intelligence (AI) is becoming more popular due to its human like thinking logic, advanced wisdom, reasoning, learning capability and knowledge representation. AI approaches have demonstrated precise, faster and scalable outcomes, thus can be ideal to handle complex non-linear power systems. The recent technological developments in AI and hybrid techniques, makes it possible for solving large-scale complex power systems problems like control, planning, scheduling, prediction etc. This article has briefly discussed seven major areas, where AI has been used easily to handle constraints such as power system stability assessments, power system forecasting studies, power quality problems, optimization of generation scheduling, 5G network data communications, SCADA intrusion detection and transformer fault identification.

Keywords: artificial intelligence, power system stability, power quality disturbance, renewable energy, SCADA.

1. INTRODUCTION

The transformation of conventional power grid to smart grid, incorporating renewable energy systems and other energy conservation technologies are subjected to various challenges on network's security and stability [1]. Therefore, it is very important to rely on technologies, which can monitor, and control various elements required for stable and secure power system operations [2]-[7]. The power system based control and monitoring techniques must deal with difficult tasks with more interconnections, connected with renewables and other distributed energy resources [1]. The renewable energy penetration can cause increase in uncertainty, huge economic loss and technical failures in power systems. Hence, there is a pressing need to use intelligent computational methods to identify the uncertainties and mitigate their potential risk both at the planning and operation stage [2]-[7].

Since the mid of 1980, most of the power systems analysis has turned away from conventional mathematical modeling into more sophisticated computer tools and digital technologies to solve the complex problems of power systems [1]. Among various computer tools, the research in artificial intelligence (AI) has made greater progress and has been extensively applied in various areas of power system including power system planning and design, coordinated control, simulation, prediction and estimation, diagnosis, and identification [3]-[7] etc. AI based techniques can self-adapt and self-learn, thus plays a vital role in handling the dynamic, non-linear and complex renewable integrated power system operations. AI techniques combined with other hybrid approaches can be a powerful computation tool for efficient analysis in power system applications, which are on the direction of future development [8]-[10].

This article has discussed seven important and relevant real-world power systems applications, where AI techniques shows greater potential in handling intellectual assignments successfully. The applications discussed are AI in stability assessments, forecasting studies, power quality problems, optimization of generation and scheduling, 5G network data communication, supervisory control data acquisition

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Application of Modified Artificial Bee Colony Algorithm for Optimization of Reactive Power

Rohini Mahadik, A. R. Thorat, and Iranna Korachagaon

Abstract Reactive power is beneficial to a power system's voltage stability. As a result, optimizing reactive power is required to enhance voltage profile. RPO also aids in the minimizing of active power losses while being compliant with all limitations. Honey bees' seeking behaviour is influenced by the ABC algorithm. Honeybee behaviour is used to a variety of RPO challenges. In this study, standard ABC is changed by using a weighted technique to improve exploitation capability. This updated ABC approach is used to solve the RPO problem as well as standard benchmark functions. For both regular ABC and MABC, the benchmark functions are tried with different dimensional sizes and the results are studied and compared. MABC is determined to be more successful than normal ABC for the majority of activities. To prove its effectiveness, the modified method is implemented on standard IEEE 30 and 57 test bus systems. Data from the literature is compared to the findings.

Keywords Optimization · Modified ABC algorithm · Weighted method · Benchmark functions · Reactive power optimization (RPO)

Nomenclature

ABC	Artificial Bee Colony
GABC	Global best guided artificial bee colony
MABC	Modified artificial bee colony
RPO	Reactive power optimization

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Electric Vehicle Charging Station Design for V2G and G2V Operation

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Abstract—Nowadays the adoption of large number of electrical vehicles (EV's) will considerably reduce the emission and appear to be the best replacement for IC engine vehicles. Thus, the requirement of charging station is very important due to the increasing number of EV's. These EV charging stations are operated in connection to the grid, will also increase the requirement of more power supply from the grid. The increasing requirement of power will lead to the increase in the load on the distribution grid. The proposed electrical vehicle charging station can perform the vehicle-to-grid (V2G) and grid-to-vehicle mode of operation and fast DC charging for multiple EV's. In proposed charging station, the EV's are integrated to the DC bus through the individual control system for separate power transfer from the AC grid through the DC bus. The proposed model is simulated to demonstrate the charging (G2V) and discharging (V2G) behavior of the electric vehicle in grid connected mode. The simulation result shows the effectiveness of the proposed model for the V2G and G2V operation.

Index Terms—EV Charging station, Simulink, Grid, Vehicle-to-Grid, Grid-to-Vehicle

I. INTRODUCTION

A large number of EVs are being deployed on the roads in near future. Nearly 8-10 million electrical vehicles will be deployed on road and it is expected that 30 % of present IC engine vehicles will be replaced till 2030 [1]. Thus, the role of charging station is very important for charging this large number of vehicles . The growth of EVs penetration has lots of economic and environmental benefits. This will also introduce a lot of opportunities and challenges for the deployment of EV charging stations. Moreover, the electrical vehicles are intermittent load to the grid since the energy requirement is not constant because the EV users charge the vehicles in different charging stations at different times and they are not continuously on charging. In [2], the authors have discussed mode switching technique for EV charging station, where charging station operate on the islanded, grid-connected, and DG set connected mode. Usually, during the grid-connected mode, the solar PV array generated power become unusable, even if the solar power is available, because charging station continuously taking power from the grid. In the islanded mode of operation, the charging station charge vehicle battery by using solar-generated power. In this, a storage system is used to regulate the power supply for EV charging purpose. It will also use MPPT techniques to protect the battery storage system

from the overcharging. In [3], the authors have identified voltage drop in DC bus, and addresses the issue by introducing a control strategy for DC bus voltage control. An analysis of total harmonic distortion of the current (THDi) in the inverter-side inductor can be found in [4]. The authors in [4] have also worked on LCL filter design for 3 phase AC grid connected PWM voltage source inverter (VSI) for harmonic reduction by injecting grid current through the LCL network. The ability of different controllers to compensate the lower- order harmonics can be found in [5] for a grid side converter. The authors in [5]also provide an overview of grid synchronization algorithms for the same. A new bidirectional battery charger control strategy is introduced in [6] and their performance is verified in simulation environment. The V2G technology that allows power flow between the electric vehicle battery and the grid in a bidirectional manner. Moreover, the performance of proposed bidirectional EV battery charger to perform fast charging as well as fast discharging operation is found to be efficient. Modeling of an EV charging station for fast DC charging has been proposed in [7],[8]. Article [7],[8], also explain the capability of this model for DC fast charging for many number of electric vehicles. The designed charging station has the ability to support V2G configuration. In [9], authors have illustrated the V2G operation in micro-grid environment with V2G parking lot. The developed model is having one common DC bus with two control strategies. The first one is the strategy for power regulation of a bidirectional AC/DC converter and the later is the strategy for charge/discharge management of EV group. In [10], authors have presented real EV charging behavior of eleven brands and seventeen models of electric vehicle according to the EV users and charging stations utilization by the users. From the study conducted the authors have generated 24-hour load curves during EV charging and analyzed it for various load periods, such as hourly to yearly basis. Further, concluded the impact of EV charging load on the same distribution network. An LCL filter for improving the grid compatibility of a grid connected high power wind turbine via NPC inverter has been proposed and designed in [11, 12]. An integrated renewable energy resource integration, vehicle to grid and grid to vehicle operation coordination algorithm (IntVGR) was presented in [15]. The focus of this study mainly includes the interdisciplinary nature of approach in IntVGR scheme for wireless communications infrastructure over a broadband fiber. In [16], authors have

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Abstract—The practise of farming has endured significant transformation as technology advances every day. The constraints of area and nonlinear nature of climatic conditions, polyhouse kind of concepts are increasing, which is helpful in production of flowers, vegetables and fruits. The proposed work discusses such an automated irrigation system that highlights the optimum solution for the efficient use of water and electricity for agricultural purposes. Field survey and literature shows that the existing systems are available with two solutions, one is timer-based and another one is moisture-based automization. Moreover, the timer-based system has demerits like being semi-automated i.e., timer needs to be changed manually according to climate. Similarly, in moisture-based systems, reliability is the issue. Therefore, the main objectives of the proposed work are to overcome the demerits of the present systems by integrating both the systems, to develop a fully automated irrigation system, to manage the use of water, electricity, and to add a remote controlling system. The report includes algorithm for the integration of moisture and timer-based system which provides the optimum efficiency on the water use and the use of solenoidal valve.

Index Terms—Automation, irrigation, microcontroller, farming

I. INTRODUCTION

The process of farming has witnessed dramatic change as technology advances every day. The demands for off-season yields has dramatically increased, and when traditional methods were formerly deemed to be sufficient for crop production, they now have little application and appeal to consumers. India's ground water levels are critically low and present irrigation systems are poor in efficient water and energy management. Moreover, the situation is similar all over the World. So there is definite need of developing the efficient system for irrigation of water.

Traditional farming practises in India have changed because of concepts like polyhouse [1], which also offers new chances to increase productivity while using fewer resources. The motivation behind this work is as follows:

- It takes time for the farmers to visit their fields to check the moisture content. They turn on the motor and wait till there is enough water in the tank before watering the land. It takes a lot of time and is unpleasant.
- Any unconsciousness could result in excessive watering. Over-irrigating refers to providing too much water to the soil. The productivity of crops is harmed by this.
- Additionally, it is a waste of water. Power usage increases. Thus, the price of irrigation rises.
- Smart irrigation systems [2]–[5] automatically adjust watering schedules and run times to suit unique landscape requirements.
- Farmers will find it easy to steer the motor away from them. This will make their lives and work easier.

This article proposes an automated irrigation system that highlights the optimum solution for the efficient use of water and electricity for agricultural purposes. There are some existing systems who came up with two solutions, one is timer-based [6] and another one is moisture-based [7], [8] automation. The timer-based approach includes drawbacks such being semi-automated, or the necessity to manually modify the timing in accordance with the weather. Similar problems with reliability exist in moisture-based systems.

Therefore, the major contributions of the article are to construct a completely automated irrigation system, monitor the usage of water and electricity, and add a remote controlling system in order to eliminate the drawbacks of the existing systems by merging both systems. The employment of solenoidal valve and siphoned technology reduces the consumption of less water and power therefore increasing the overall system

Low Power Wide Area Network Technologies: A Comparative Study for IoT Applications

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ABSTRACT

The rapid advancements in the world of the Internet of Things (IoT) have extended the opportunities of IoT-based techniques in various fields including smart metering, smart city, smart agriculture, industrial automation, and smart building. Wide coverage, high capacity, longer battery life, low device cost, and deployment cost are the characteristics of LPWANs. For IoT-based applications that need low power consumption, low cost, and greater range, the low-power wide-area network (LPWAN) is the best choice. Three leading LPWAN technologies are Sigfox, LoRa, and NB-IoT. This paper presents a comparative study of these three LPWAN technologies and also describes the success factors of the Internet of Things (IoT). Considering application scenarios explains the best suitable technology choice for these applications.

Keywords: IoT, LoRa, LPWAN, NB-IoT, Sigfox.

I. INTRODUCTION

Large coverage, less power consumption, and cost- effectiveness are the particular needs of IoT applications. For long-range transmission, ZigBee and Bluetooth are not used as these are short-range radio technologies. Cellular communications give a large coverage area however the power consumption is more. For IoT applications, LPWAN is most suitable as a result of its low cost, less power consumption, and greater range capabilities [1]. LPWAN communicates over a long distance up to 1-5 kilometres for urban and 10-40 kilometres for rural. LPWANs are energy economical and cheap. LPWAN is usually appropriate for IoT applications transmitting data over a long distance [2]. Cellular and Non- cellular are the two sorts of LPWAN technologies. These days Sigfox, LoRa, and NB-IoT are the most usually used technologies. The Narrow-band IoT (NB-IoT) is cellular technology, whereas Sigfox and LoRa are non-cellular technologies. This paper describes the technical distinction between Sigfox, LoRa, and NB-IoT technologies. These 3 technologies are compared considering IoT performance factors. This paper is structured into five sections. Section one gives a detailed introduction. Section two explains the technological difference between Sigfox, LoRa, and NB-IoT. The comparative study of Sigfox, LoRa, and NB-IoT based on IoT parameters is presented

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A Review on Torque and Current Ripple Minimization Techniques in a BLDC Motor Drive for EV Applications

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Abstract—The approaches for reducing torque-based ripple in brushless DC motors are investigated in this research (BLDC). It is caused by a range of variables, including the motor's natural design process and its inverter drive commutation features. This torque ripple can cause low-quality speed-torque characteristics, noise, vibrations, and serious failures in sensorless motor drives. In the literature, various solutions for decreasing torque ripples have been published. This study provides a thorough examination of various methodologies as well as a summary of the findings from the literature. The primary goal of this study is to present a practical method for improving the performance of a BLDC motor and its drive for the rapidly developing electric car market.

Index Terms—BLDC, Torque Ripple, Current Ripple, Commutation, multi-level inverter, filter, electric vehicle

I. INTRODUCTION

EV is the future of India, due to the large-scale adoption of electric vehicles on road as per Compound Annual Growth Rate (CAGR) with a market worth of Rs. 185 billion by 2027 [1]. The national electric mobility mission plan (NEMMP) 2020, which refers to a concentrated policy effort at the Paris climate agreement, has implemented faster manufacturing electric vehicle schemes for future automobile businesses by 2030 [2]. The battery prices have depreciated by 73% since 2010 thereafter; an expected projection of vehicles on the road is about 70 million by 2025. Moreover, the price of electricity as a fuel has fallen by Rs. 1.1/km helping start-ups and other EV producing giants to save Rs. 20,000 for every 5,000 km traversed [3]. With adequate penetration in the transportation sector, EVs are predicted to outperform this statistic, but it is not the only rationale for resurrecting this century-old and once-dead notion as a commercially viable and available product. An electric car is quiet, simple to run, and does not have the high fuel expenditures that conventional vehicles do. It is capable of frequent start-stop driving, offers total torque from start-up, and does not require trips to the gas station because it does not use any stored energy or emit any emissions when idling. It does not add to any of the haze that contributes to the city's highly filthy air. It is also beneficial in military applications due to its quietness and low infrared signature [4].

The BLDC motor replaces mechanical commutation with an electronic commutation that improves the reliable and durable performance of the motor. Under the category of high power density design approach, BLDC motors have the most suitable traction characteristics for electric vehicles like high starting torque, low noise, longer durability due to non-existence of brushes, and commutator erosion with ionizing sparks and higher efficiency around 98% [5]. Brushless motors can therefore be trapezoidal or sinusoidal depending on the form of the BEMF. Permanent magnets in BLDC motors produce a trapezoidal air gap flux density distribution, resulting in trapezoidal BEMF waveforms. Non-ideal current waveforms are caused by torque pulsations in BLDC motors caused by deviations from ideal circumstances, which are connected to either the motors design characteristics or the power inverter supply. Improved motor designs and improved control schemes are the main methods for reducing torque pulsations. Skewing, fractional slot winding, short pitch winding, increased number of phases, air-gap windings, adjusting stator slot opening and wedges [6], and rotor magnetic design through magnet pole arc, width, and positions are some of the improving cognitive design methods for resonating torque minimization [7]. Many applications in motor drive systems use control algorithms, which are used in applications that require high-speed and precise control. To create and analyze drive system outputs, as well as identify and safeguard the system from abnormal over-voltage conditions, modern embedded processors, micro-controllers, and digital signal processors are used [8].

In high-precision machines, undesirable torque ripple in the BLDC motor drive generates speed oscillations and activation of resonances in mechanical sections of the drive, resulting in auditory noise and visual vibration patterns. Torque ripples in BLDC motors cause noise and vibration in the system. As a result, noise and vibration reduction or elimination is a major concern in BLDC drives [9]. Some of these ripples are caused by the motor's natural structure, while others are caused by the motor's design specifications [10]. However, during the machine design phase, this torque could be reduced. The control and drive sides of the motor are another source of

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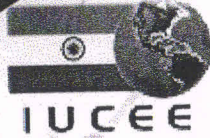
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Miniaturized Microstrip Antenna using Defected Ground Structure and Soft Surface with Reduced Cross Polarization

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Abstract—The miniaturized antenna of a length less than $\lambda/2$ is an essential part of low-power and small-size wireless devices. However, the miniaturized antenna faces problems of impedance mismatch, narrow bandwidth, and cross-polarization. This paper proposes a miniaturized microstrip antenna with soft surface (M-MSA-SS) that provides better cross-polarization isolation and bandwidth than the classical microstrip antenna (MSA). The MSA is miniaturized using a diamond-shaped Defected Ground Structure (DGS). The cross-polarization level is reduced using a metamaterial family periodic surface called a soft surface.

Index Terms—soft surface, metamaterial, DGS, miniaturization, bandwidth

I. INTRODUCTION

Antenna is a device which makes communication systems wireless. The demand for small size, low power wireless devices is never ending. To achieve this Microstrip antenna (MSA) is the best choice in the antenna family for wireless devices because of its advantages: low profile, low cost, lightweight, conformable, and easy integration in the circuit on PCB [1]. For compact wireless systems, miniaturized MSA is a must. However, it suffers from disadvantages, such as MSA length being around $\lambda/2$, low gain and narrow bandwidth [2].

Recently MSA antenna miniaturization has become an essential part of antenna design due to an increase in the demand for small-size wireless devices that consume less power. The miniaturized MSA has a length less than $\lambda/2$. So, one of the research thrusts is keeping MSA length less than $\lambda/2$ without significant change in antenna characteristics. Various MSA miniaturization techniques reported in the literature without significant change in the antenna parameters are as: i) Antenna reshaping, ii) Shorted and folding, iii) Slotting, iv) Defected Ground Structure (DGS), and v) Metamaterial loading [1], [3]–[6]. Many efforts have been taken by researchers in the design of the miniaturized MSA for wireless applications. The planar inverted F antenna (PIFA), MSA using DGS, and MSA using metamaterial are some of them.

Among these techniques, the MSA miniaturization using DGS is a widely used technique. The DGS geometry can easily be implemented by etching the ground plane to give the slots. These slots are either periodic or non periodic. The DGS does not require additional areas to implement. Researchers are using the DGS not only for antenna miniaturization but also for cross-polarization and mutual coupling reduction [7], [8]. There are several challenges in miniaturized antenna design, which are as follows: The miniaturized antenna's input impedance is reactive, causing the problem of impedance mismatch. So the antenna is not radiating effectively, consequently, reducing radiation efficiency, bandwidth, and gain. Antenna parameters are susceptible to shape and size. With minute changes in the antenna dimension, the antenna parameters changes significantly. Moreover, the cross-polarization effect of a miniaturized antenna is a important problem identified by the researchers.

The metamaterial is used by many researchers for reduction of the cross polarization level. The soft surface from the metamaterial family is one of the sophisticated and low-profile planner surfaces that can be used to suppress the surface wave at desired frequency band [9]. The soft surface behaves like a Perfect Magnetic Conductor(PMC) for a vertically polarized wave for the planar surface [10]. However, it acts as a Perfect Electric Conductor (PEC) for a horizontally polarized wave for the planar surface [10]. If the wave with two different polarizations is applied simultaneously, both polarizations will cancel. This behaviour occurs at any angle of incidence of the wave

This article proposes a miniaturized MSA design with reduced cross polarization effect using the DGS technique and soft surface. Initially, the classical MSA is designed for the 1.8 GHz frequency. In addition, the diamond-shaped slot DGS is developed in the MSA for miniaturization. The cross polarization effect is reduced using a soft surface integrated with the MSA. In the results and discussion section, a classical MSA and miniaturized MSA are compared.

DESIGN AND DEVELOPMENT OF SWITCH MODE POWER SUPPLY FOR RO WATER PURIFIER

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Abstract— The objective of this paper is to present the design and development of a switch mode power supply (SMPS) for an RO water purifier with a DC output voltage of 24V, 2.5Amp, and 60Watt using the UC3842 IC. The proposed designed and prototyped it and the results were compared with the theoretical calculations. The SMPS was then constructed and tested in the laboratory, and the experimental results demonstrate that the SMPS is capable of providing a stable and efficient source of power to the RO water purifier.

Keywords: Switch mode power supply, RO water purifier, UC3842 IC, PSIM software, efficiency.

I. INTRODUCTION

In this paper, a design and development of an SMPS for a RO water purifier with an output of 24V DC, 2.5A which is 60W power using the UC3842 IC is presented. The UC3842 is a high-performance current mode controller that can operate at high frequencies with good stability and accuracy.

A switch mode power supply (SMPS) is a power supply that uses a switching regulator to convert electrical power efficiently. SMPSs are widely used in various electronic devices due to their high efficiency, small size, and low weight. SMPSs are particularly useful in devices that require a stable and efficient source of power. Switch mode power supplies (SMPS) are widely used in electronic devices that require a stable and efficient source of power. An SMPS is capable of converting an input voltage into a regulated DC output voltage with high efficiency, making it a popular choice in many applications.

A switch mode power supply (SMPS) is an efficient and compact power supply that converts AC voltage into a regulated DC voltage. SMPS is widely used in electronic devices, including water purifiers, due to its high efficiency, small size, and low cost. In the case of a reverse osmosis (RO) water purifier, a SMPS is required to provide a stable and regulated DC voltage to power the water purification system.

RO water purifiers require a stable and efficient source of power to operate effectively, and therefore, this paper focuses on the design and development of an SMPS for an RO water purifier with a DC output voltage of 24V, 2.5Amp, and 60Watt using the UC3842 IC.

RO water purifiers are becoming increasingly popular due to their ability to remove impurities and contaminants from water. These devices require a stable and efficient source of power to function properly. In this research paper, we present the design and development of an SMPS for an RO water purifier, with a DC output voltage of

IV SET MONITORING AND AUTOMATION

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Abstract— The objective of this paper is to present the design and development IV Set Monitoring and Automation. The proposed designed and prototyped it and we are working on verifying the results. Initial results demonstrates that is capable of level of Saline water in bottle and system gives alarm when it is going to finish. We are working on automation i.e. to stop the flow of saline water when it is going to finish. We are using Atmega 328 P-pu, IC1298, Node MCU, IR sensors, DS 1307 Module

Keywords: IV, Saline, IC1298, Node MCU, IR sensors, DS 1307 Module

I. INTRODUCTION

Intravenous Infusion set (IV set) is the fastest mode to infuse medication or replace fluids throughout the body from sterile glass/plastic vacuum IV bags or bottles. It is not used for blood or blood related products.

IV infusion sets are divided into two main categories based on the fluid type. One is for transferring blood and the other for giving non-blood products such as saline.

I.V. set has a needle for the initial injection, a catheter tube to keep the vein open, an access cap that the healthcare professional can open when administering medications and close when not in use. A syringe for administering the medication into the catheter

Some problems will arise in traditional system. Always presence and monitoring of nurse is also needed. The automatic IV fluid feed system is a simple and inexpensive solution to regular monitoring and injecting IV fluid like injection fluid, saline etc in vein. For assuring the safety of the patient during IV period, there is a need to develop an efficient health monitoring system. This invention will be helpful in this regard. A close control of solution feeding rate can be thereby achieved. This idea of automatic IV fluid feed system can be done where servo motor, arduino, dc power supply, RTC, buzzer, water flow valve etc are used to provide control and injecting IV fluid in time which is set by the doctor or nurse. This will reduces the stress in continual monitoring and all time presence by the doctor or nurse at an affordable cost.

II. LITERATURE REVIEW

The infusion pumps commercially available are not entirely automated. They cannot be controlled precisely. They are equipped to give required amount doses at a particular time but they have to be manually set. Hence development and

implementation of an automatic IV fluid feed system that can be monitored from a distance and the infusion rate is very necessary. The benefit of such a system is that it would enable the physician to monitor and

STUDY AND CLASSIFICATION OF SUGARCANE BUDS USING DEEP LEARNING

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Abstract— Sugarcane is one of the widely taken crop. From sugarcane produced raw material like sugar ethanol and bagasse. In most of countries harvesting machines are used. Recently plantation of sugarcane is done by using billets. But it has disadvantage also because when forming billets by harvesting machine it gets damaged and causes billet quality degradation and spreading of diseases. We developed a prototype model to classify the good and damaged billets separately. This model runs on Python program which segregate healthy (good) and damaged billets with the help of image processing technique after taking pictures of these billets using USB camera.

Keywords—USB camera, Sugarcane Buds,

I. INTRODUCTION

In this paper, from sugarcane produced raw material like sugar ethanol and bagasse. In most of countries harvesting machines are used. Recently plantation of sugarcane is done by using billets. But it has disadvantage also because when forming billets by harvesting machine it gets damaged and causes billet quality degradation and spreading of diseases. We developed a prototype model to classify the good and damaged billets separately. This model runs on Python program which segregate healthy (good) and damaged billets with the help of image processing technique after taking pictures of these billets using USB camera. So, the good billets goes for next planting method and remaining billets i.e. damaged billets used for sugar recovery and other by-products.

For sugarcane identification, as a technology in sugarcane cultivation, its mechanical and intelligent advancement is essential. Sugarcane bud recognition, a significant amount of algorithms work goes into the location and recognition of sugarcane bud images this method is called traditional method. There are three dataset of buds i) training set (80%), ii) validation set (10%) and iii) test set (10%). The repeated training, the structure and parameters of the model are optimized, and an optimal application model is obtained. The experiment results show that the recognition accuracy of sugarcane bud reaches to 99%, which is about 6% higher than traditional methods.

Literature Review

Sugarcane is one of the widely taken crop. From sugarcane produced raw material like sugar ethanol and bagasse. Globally the use of machines during production process differs time to time [1]. Still plantation of sugarcane is done manually. But, after a long period, there will be degradation of yield and scenario of replanting occurs. Currently,

Design and Implementation of Quasi Z-source Converter Based Battery Charger for Electric Vehicles

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Abstract-- **An electric vehicle consists of large rechargeable battery pack as main source of energy. Conventional iron core transformers based battery chargers makes the charger bulky and inefficient. Electric vehicle chargers must be light weight, efficient with high power density. In this paper, an electric vehicle charger for lithium ion batteries is designed and studied, which is suitable for light electric vehicles. The proposed charger comprises quasi Z- source fed phase shift full bridge converter. In this two stage dc-dc conversion, the quasi Z- source is implemented for power factor correction and to reduce harmonic distortion wherein, phase shift full bridge converter converts high DC voltage to lower one required to charge the battery with high efficiency. To analyse the charger performance, MATLAB simulation is carried out. The experimental result obtained from proposed charger has exhibited the charger efficiency of 90%, unity power factor and low (3.53%) harmonic distortion.**

Keywords – Battery charger, power factor, harmonics, Quasi Z-source converter, DC to DC converter, Electric vehicle.

I. INTRODUCTION

Now a day, Electric two and three wheelers are widely used as private as well as public transport vehicles in urban areas. Electric Vehicles (EV), besides their advantages like high energy efficiency, less maintenance cost, zero emission and low operating cost, there are multiple challenges exists in EV adoption like availability of charging facility, time required for battery charging, and driving range. Significate growth in electric two and three-wheeler has increased the demand of charging stations as well as portable domestic chargers. Therefore, it becomes imperative to develop fast, light weight and efficient chargers which can reduce battery charging time and can maintain healthy battery status [1].

The research on design of battery charger is now focused on fast charging, yet it must satisfactorily accomplish unity power factor, light in weight and efficient. In [2], Phase Shift Full Bridge (PSFB) converter along with conventional diode rectifier is suggested for battery charger. But the use of diode rectifier affects negatively on power factor and harmonics in supply. Moreover, conventional battery chargers use iron-core transformers possess efficiency less than 80%, wherein power electronics-based chargers having high frequency ferrite core transformer exhibit more than 90% efficiency and also reduces the weight [3]. The limitations of conventional voltage or current source converters that operates in either buck or boost mode are overcome in Quasi Z-Source (QZS) converters [7]. QZS converter carries all the advantage of traditional Z-source converter like: immunity to

the EMI noise; suitable in various converters (DC-DC, DC-AC, AC-AC); offer buck as well as boost capability. QZS converter achieves high boost factor with reduced duty cycle and reduction in instability caused by inductor saturation [4-5, 8]. In addition to this QZS converter is having advantage of common grounding path between input and output [9]. It also reduces voltage stress on impedance network capacitor as compared to traditional Z-source converter. Due to these advantages, QZS converter is used in proposed charger to take care of power factor and harmonic distortion of AC supply. At the same time it maintains DC output voltage and current constant. Further, the adoption of PSFB converter increases voltage and power handling capacity [11]. Shoot through mode of QZS fed PSFB dc-dc converter is advantages in terms of minimizing switching losses and zero voltage switching reduces EMI and improves charger efficiency [6, 12-14].

The paper is organised in different parts. The proposed charging system and its working operation is explained in section II followed by analysis and circuit design in section III. The simulation results to demonstrate charger performance is explained in section IV. Conclusion of paper is discussed in section V.

II. PROPOSED CHARGER SYSTEM

Diode rectifier converts input AC to DC voltage. The DC output voltage of diode rectifier is then fed to QZS converter. QZS converter works as a boost converter to provide the desired DC voltage level, required as input for MOSFET based PSFB converter. The traditional voltage and current source converters are having conceptual and theoretical limitations, that operates in either buck or boost mode. The issues in the conventional voltage source converters are overcome by adding QZS converter after diode rectifier. QZS network consists of a filter circuit made up of two inductors (L1, L2), two capacitors (C1, C2) and a diode (D1) as shown in fig. 1. A MOSFET, diode and filter capacitor connected after QZS network controls the output voltage and minimizes ripples in output voltage and current. The MOSFET is operated at very high PWM switching frequency. The output voltage is controlled by varying shoot-through duty ratio of the converter. During shoot-through state MOSFET is turned ON, causing short circuit across the QZS network. When shoot-through duty ratio is zero the output voltage is of converter is equal to the input voltage whereas, the output voltage can be boosted to required value when appropriate shoot-through duty ratio

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Preface

This book contains outstanding research papers as the proceedings of the 3rd International Conference on Sustainable and Innovative Solutions for Current Challenges in Engineering and Technology (ICSISCET 2021). ICSISCET 2021 has been organized by Madhav Institute of Technology and Science, Gwalior, India, and technically sponsored by Soft Computing Research Society, India. It was held on November 13–14, 2021, at Madhav Institute of Technology and Science, Gwalior, in virtual mode due to the COVID-19 pandemic. The conference was conceived as a platform for disseminating and exchanging ideas, concepts, and results of the researchers from academia and industry to develop a comprehensive understanding of the challenges of the advancements of sustainable and innovative solutions for current challenges in engineering and technology viewpoints. This book will help in strengthening congenial networking between academia and industry. The conference focused on collective intelligence, sustainable computing and information technology, computational intelligence and machine learning, embedded systems and VLSI design.

We have tried our best to enrich the quality of the ICSISCET 2021 through a stringent and careful peer-review process. ICSISCET 2021 received a significant number of technical contributed articles from distinguished participants from home and abroad. ICSISCET 2021 received 267 research submissions from 40 different countries, viz. Algeria, Austria, Bangladesh, Canada, China, Egypt, Ethiopia, Finland, Germany, Ghana, Greece, India, Iran, Italy, Kenya, Liberia, Malaysia, Mexico, Morocco, Nepal, New Caledonia, Oman, Peru, Poland, Portugal, Romania, Russia, Saudi Arabia, Senegal, Serbia, Slovakia, Spain, Sri Lanka, Turkey, Ukraine, United Arab Emirates, UK, USA, Vietnam and Yemen. After a very stringent peer-reviewing process, only 55 high-quality papers were finally accepted for presentation and the final proceedings.

Chapter 43
All-Digital ADC Using Time-to-Digital Converter

Darshan R. Shaha, Mahadev S. Patil, and Sachin Magdum

1 Introduction

Current versions of FPGAs have become extremely puissant logic devices. Interfacing different sensors and further data processing have become valuable collection nodes for the physical sciences. Applications designed are verbally expressed to be feasible and reliable when they are

- Compact form factor (i.e., small footprint)
- Ultra-low-power compared to discrete system having same functionality.
- Use of limited input–output pins.
- Less affected to external parameters.

When an application is designed by taking all the above parameters into account, it amasses data from external sensors and processes it in FPGAs. The sensors used in many applications are the analog sensors, i.e., processing of continuous signal; due to advancement in digital field, analog approaches are losing their advantages to process and analyze output, so it can be further transformed using ADC into a digital signal. In many applications, ADC consequently plays a critical role, since it is the first phase of any design that uses analog-based circuitry/sensors.

The implementation of time-based ADC has increased in many of the emerging applications over traditional ADC. Currently, the key method used to implement an

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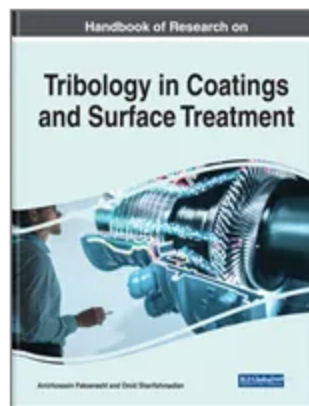
Tribo-Corrosion Behaviour and Characterization of Biocompatible Coatings

Amol Bajarang Chavan, Sanjaykumar S. Gawade, Digvijay G. Bhosale

Source Title: Handbook of Research on Tribology in Coatings and Surface Treatment
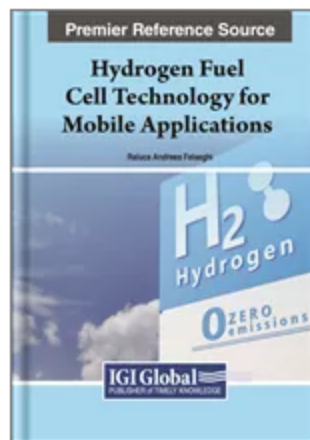
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DOI: 10.4018/978-1-7998-9683-8.ch011

Abstract

Commercially available metallic orthopaedic implant materials cause major problems like stress shielding and the release of harmful ions due to corrosion and wear. Also, the secondary operation is a must for the implant removal. Therefore, the biodegradable and biocompatible magnesium (Mg) implant materials have been investigated. Mg shows favorable biological properties and matching mechanical properties with the natural bone. Mg alloys rapidly corrode in the physiological environment, which cause failure of the implant before completing the expected function. Surface coating is the most effective method for improving the corrosion performance of Mg and its alloys. Hydroxyapatite (HA), being the most stable phase of calcium phosphates in physiological conditions, is preferred as a coating material. The chapter focuses on the tribo-corrosion and characterization of HA coatings prepared by electrodeposition process on Mg alloys. The results are useful for the designer community in the selection of biocompatible coatings and process parameters to maximize the life of bio-implants.

Chapter Preview

Hydrogen Storage Technologies and Related Heat and Mass Transfer Studies

Rahul Uday Urunkar, Sharad Dattatray Patil

Source Title: Hydrogen Fuel Cell Technology for Mobile Applications

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DOI: 10.4018/978-1-6684-6721-3.ch008

Abstract

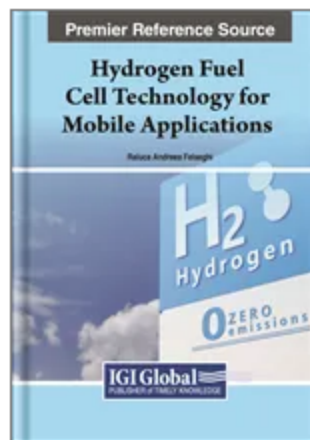The energy demands of the future are ever increasing, and hydrogen as an ideal energy carrier can fulfil these demands. The production, purification, delivery, storage, and application are the significant measures of the hydrogen-based economy. The utmost challenge to utilize hydrogen as a fuel lies in the improvement of storage techniques. Hydrogen storage technologies comprise of high-pressure compression, cryogenic liquefaction, and absorption in solid state such as metal hydrides and complex hydrides. As compared with other techniques, hydrogen storage in solid form seems to be one of the utmost likely solutions. However, it involves extremely coupled transport processes such as chemical kinetics, heat, and mass transfer. Complex hydrides are capable substitute aspirants for solid state hydrogen storage because of many advantages, but many of such hydrides suffer from poor kinetics as well as great thermodynamic stability. Significant heat transfer techniques and issues associated with hydrogen storage methods are discussed, with emphasis on metal hydride.

Chapter Preview

Hydrogen Storage Technologies and Related Heat and Mass Transfer Studies

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Abstract

The energy demands of the future are ever increasing, and hydrogen as an ideal energy carrier can fulfil these demands. The production, purification, delivery, storage, and application are the significant measures of the hydrogen-based economy. The utmost challenge to utilize hydrogen as a fuel lies in the improvement of storage techniques. Hydrogen storage technologies comprise of high-pressure compression, cryogenic liquefaction, and absorption in solid state such as metal hydrides and complex hydrides. As compared with other techniques, hydrogen storage in solid form seems to be one of the utmost likely solutions. However, it involves extremely coupled transport processes such as chemical kinetics, heat, and mass transfer. Complex hydrides are capable substitute aspirants for solid state hydrogen storage because of many advantages, but many of such hydrides suffer from poor kinetics as well as great thermodynamic stability. Significant heat transfer techniques and issues associated with hydrogen storage methods are discussed, with emphasis on metal hydride.

Chapter Preview

Design and Analysis of Trailing Arm of Bajaj Auto-Rickshaw

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Abstract: An auto rickshaw is a three wheeled motor vehicle with one front steering wheel. Due to their inexpensive pricing, low operating expenses, and maintenance requirements, auto rickshaws are most frequently encountered in developing nations. Because the rear suspension of three-wheeler vehicle rickshaws offers a simple structure, the trailing arm mechanical system is frequently employed. The trailing arm is a crucial part of the suspension system since the suspensions regulate how the wheels move, keeping the car on the road. The most effective method for calculating a structure's strength under known boundary and load conditions is finite element analysis (FEA). The optimization is carried out using FEA methodology. 3D model of a trailing arm is drawn in SOLIDWORKS, and ANSYS is be used for numerical solutions. Finally, ANSYS results are validated through experimental results.

Keywords: Trailing arm; Optimization; FEA; ANSYS

1. Introduction

In many nations, public transportation options include buses, automobiles, and three-wheeled vehicles; however, the most prevalent mode of transportation in India is the three-wheeler. This vehicle is frequently referred to as an auto-rickshaw. These vehicles are specifically utilised as public transportation in Asian nations. The driver and four passengers add about 1000 kg to the vehicle's overall weight. Both urban and rural areas employ auto rickshaws.

The wheel hub and chassis were joined via the trailing arm. On both sides, the suspension subframe or body is fastened to the trailing arm, which is positioned longitudinally along the path of travel. The likelihood of bending and torsional stress increases since the trailing arm must withstand forces in all directions. If only vertical and lateral pressures are imparted to the trailing arm, neither camber nor toe change. The rear suspension of three wheelers is often equipped with a trailing arm suspension. The crank axle suspension system is another name for it. There are significant bending and torsion forces placed on the trailing arm. The wheel can only move up and down to it. Due to lateral and vertical stresses, camber and toe will remain unchanged. However, the quality of the ride is reduced as the upsprung mass of the trailing arm is increased

Computational fluid dynamic Modeling and Simulation of Composite Based Fluid for Battery Thermal Management System.

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A b s t r a c t	**K e y w o r d s**
This research paper investigates the thermal management of battery systems through a combination of experimental measurements and computational fluid dynamics (CFD) analysis. The study focuses on active and passive cooling methods for thermal energy storage. Active cooling is achieved through air-cooling, while passive cooling utilizes a composite phase change material (PCM) made from paraffin and graphene. Experimental measurements on bare cells and characterization of the composite PCM are conducted, and the obtained thermal characteristics are incorporated into the CFD simulations. The results demonstrate the effectiveness of both active and passive cooling methods in reducing the temperature of battery cells compared to bare cells. The simulations incorporating the composite PCM exhibit superior cooling performance compared to air-cooling. This research contributes to the development of optimized thermal management strategies for battery systems, enhancing performance, longevity, and safety.	*Thermal management, Battery systems, Thermal energy storage, Composite Phase change material*

1. *Introduction:*

Thermal management is a critical aspect of battery technology, as efficient temperature regulation is essential for ensuring optimal performance, longevity, and safety of batteries. Computational fluid dynamics (CFD) analysis plays a significant role in investigating and improving thermal management strategies for battery systems. In this study, the focus is on the thermal energy storage of battery systems, specifically exploring the effectiveness of active and passive cooling methods.

Active cooling, such as air-cooling, utilizes forced convection to remove heat from the battery cells. On the other hand, Phase change materials (PCMs) are used in passive cooling systems to capture and release thermal energy during phase transition processes., thereby regulating the temperature of the battery. This study aims to evaluate the performance of these cooling methods through a combination of experimental measurements and CFD simulations.

To achieve this, experiments were conducted on bare cells at different discharge rates (1C, 2C, and 3C) to establish a baseline for comparison. Additionally, a composite PCM composed of paraffin and graphene was synthesized and characterized for its thermal properties. The same thermal characteristics were incorporated into the CFD model to simulate the behaviour of the PCM during battery operation. The obtained experimental results were compared with the CFD simulations of the bare cells, as well as the simulations incorporating the active cooling method (air-cooling) and the passive cooling method (composite PCM). By analyzing the temperature profiles, it is possible to assess the effectiveness of each cooling method in maintaining desired temperature ranges under various discharge rates.

To gain insights from previous research, a comprehensive literature survey was conducted. **Xiang Gao et al. [1]** Using numerical simulation, the melting and solidification of paraffin in a spherical heat storage unit was studied., providing valuable insights into the behavior of phase change materials (PCMs). **Hwang et al. [2]** investigates the battery pack heat dissipation in electric vehicles. The proposed method uses a phase change material to store the heat generated by the battery pack and then release the heat at a later time when

Code 1 Mathematical Modelling and Simulation

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Development of an exact analytical second-order slip velocity model

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Abstract:

In this work, an exact second order analytical model was developed by solving Navier Stokes equation with general second order boundary condition to accurately capture the slip velocity profile at wall in a microchannel. To model the transition regime flow (0.1< Outlet Knudsen number (Kn_o) <10) for such applications, the approximation of the pressure terms in the non-linear pressure equation is often invoked for simplicity. However, such approximations may lead to poor model behaviour as the non-linearity associated with the pressure term manifests significantly in the transition flow regimes. In the present work, the expression involving the pressure term in the second order model was solved without approximation to develop the exact slip velocity profile. The slip velocity profile is calculated using the analytical modelling of the two-dimensional compressible Navier-Stokes equation with general second-order slip boundary conditions and equation of state. The pressure gradient is substituted in slip velocity profile expression to obtain slip velocity at the wall. Plot of variation of pressure profile and corresponding slip velocity profile for Kn_O = 0.0662, 0.22, 0.89 show the clear deviation between exact and approximate modelling-based profiles. This indicates that as modelling of rarefied flow in transition regime exact model must be implemented to know physics of flow.

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Development of simulation model for analysing cutting forces in micro drilling process

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Abstract:

Micro drilling of Nimonic 90 superalloy is a complex process due to its high strength and toughness, which can lead to various issues like workpiece deformation, tool breakage, and reduced tool life. This paper explores the use of TiAlN-coated tungsten carbide drill bits and optimizing cutting parameters to enhance the quality of drilled holes and reduce cutting forces during micro-drilling of Nimonic 90. An analysis of forces was conducted using ANSYS 2021R2 for 1000, 2000, and 3000 RPM and feed rates of 3, 6, and 9 μm/rev. The deformation graph indicated an increase over time, with maximum stress occurring during the final layer penetration. The study revealed that cutting forces on the drill bit ranged from approximately 22N to 28N, depending on the drilling speed. 3000 RPM yielded the lowest average force, suggesting that it would be the best RPM to choose to reduce drill breakage. The development of alternative methods like numerical simulations and modelling can aid in predicting and controlling the cutting forces during micro drilling of Nimonic 90, further optimizing the drilling process.

Design of Plate Heat Exchanger (PHE)

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ABSTRACT

This paper presents a part of a complex research program-baseddesign of plates for heat exchangers and shows the results of theoretical research conducted for designing plate heat exchanger. The main purposes of this research is to develop the suitable methodology for designing the plate type heat exchanger.

Key words:*PHE, Heat transfer.*

1.   INTRODUCTION:

For being compact, easy to clean, efficient and very flexible, the gasketed plate heat exchanger (PHE) is widely employed in the chemical, food and pharmaceutical process industries. The PHE consists of a pack of gasketed corrugated metal plates, pressed together in a frame (see Fig. 1). The gaskets on the corners of the plates form a series of parallel flow channels, where the fluids flow alternately and exchange heat through the thin metal plates. The gasket design and the closed ports of the plates determine the fluid flow distribution, which can be parallel, series or any of their various possible combinations.(see Fig. 2) The number of plates, flow distribution, type of gaskets and the fluid feed locations characterize the exchanger configuration.
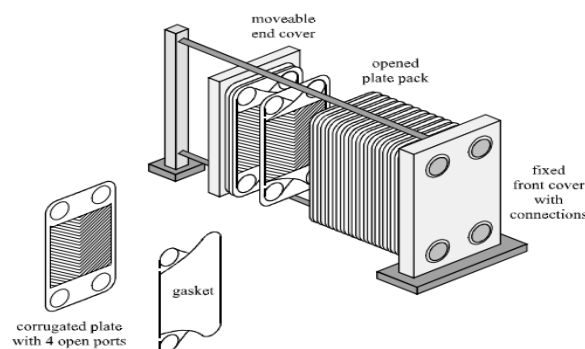
Figure.1

INVESTIGATION OF STRESSES ON DEFERENT MATERIALS FOR HEAT EXCHANGER APPLICATION BY USING FEA .

Ankit R. Wasnik[1], Abhijeet shah[2] And Ajikya k. patil[3]

[1,2,3]Mechanical Engineering Department, Rajarambapu Institute of Technology,affiliated to shivaji university, kolhapur.

Abstract	Keywords
The efficiency, reliability, and durability of the equipment heavily rely on the selection of the right materials that can withstand the stresses and strains encountered during operation.Therefore, selecting the appropriate material is a crucial step in reducing the design time and cost. The choice of material depends on the stress levels that the component or equipment experiences under loading conditions. Therefore, researchers typically use finite element analysis (FEA) to analyze the stress levels and predict the behaviour of the structure or component. FEA involves solving mathematical models for each element of the structure or component to determine the stresses and strains under different loading conditions. The analysis results can then be used to predict the deformation and failure of the structure or component, providing critical insights into the behaviour of the equipment under various operating conditions.The primary aim of this research is to optimize the selection of materials for a heat exchanger using FEA software. That ensures heat exchanger can withstand the stresses and strains encountered during operation. Therefore, the researchers will use FEA to analyze the stress levels and identify the most appropriate materials for the heat exchanger.	Efficiency, FEA, heat exchanger and reliability

1. Introduction:
1.1. Project Background :

A heat exchanger is a device designed to efficiently transfer heat from one fluid or gas to another. Heat exchanger are commonly used in wide range of industrial and domestic application, including air conditioning system, power plant, chemical processing plant and refrigeration system. Basic principle of a heat exchanger is that is allow two fluids to exchange heat without coming into direct contact with each other. The fluids are separated by a solid wall or plate, which allows heat to be transferred through conduction. The heat transfer rate is determined by factors such as the surface are of the heat exchanger, the temperature difference between the two fluid, and flow rate. There are different type of heat exchangers available in the market including shell and tube , plate and frame and finned tube heat exchangers and tube in tube heat exchanger each type has its own advantages and disadvantage, depending on the specific application . for example, shell and tube heat exchangers are commonly used in large scale industrial application, while plate and frame heat exchanger share of ten used in smaller, more compact system. Overall, heat exchanger are an essential component in many industries processes, helping to increase energy efficiency and reduce operating cost. any mechanical component efficiency depends on the material use in the. One of the greatest methods to validate the

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Modeling and development of magneto rheological damper for changing damping system

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Abstract - As the piston thickness is smaller, a limitation is there on getting a large magnetism. The other important drawback of having coils over the outer periphery of the piston is local magnetism which is achieved because the piston is not stationary but moving and length of the wire is changing. In this research work, the magnetic coils are wound over the outer periphery of the cylinder which is stationary. This can achieve a large magnetic field, negligible local magnetization effect i.e., equal magnetism on the cylinder for the whole stroke of piston. The piston rod also need not to be hollow and the circuit connections can be taken out directly externally from the cylinder. CFD analysis of the developed shock absorber is also carried out to validate the design of the system. To check efficiency of designed magneto rheological damper; it is tested experimentally on laboratory test setup.

Keywords: MR damper, damping factor

Optimal Piezo Patch Placement using Genetic Algorithm and Performance Evaluation of Various Optimal Controllers for Active Vibration Control of Cantilever Beam

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Abstract - The In active vibration control placement of actuators/sensors plays very important role along with the selected controller in attenuating vibration of the flexible structure under given operating condition. In this paper cantilever beam is considered as a system for study. An objective function is formulated based on strain equation of the cantilever beam, and it is solved using a genetic algorithm to choose the best location to place multiple actuator/sensor pairs. Maximum strain location is regarded as the ideal deployment location for multimode vibration control. For modal analysis, ANSYS is used, and the top 10 eigenvalues and eigenvectors are extracted. The state space approach is used to construct the mathematical modelling in MATLAB. For the analyzed multi-input system, LQR, LQG, and H-∞ controllers are designed with state feedback and output feedback law. Their control effectiveness at determined optimal locations are studied and the simulation results are compared.
Keywords: flexible structure, genetic algorithm, Active vibration control, LQR controller, LQG controller, H-∞ controller.

Self-Powered MEMS Sensor System for Monitoring of Ocean Parameters

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Abstract- In this paper a design of a self-powered sensor system to operate Micro-Electro-Mechanical Sensors (MEMS) is proposed. The arrangement for energy harvesting from ocean waves has been used to convert the wave kinetic energy to useful electric power, which comprises of Mechanical Motion Rectifier (MMR), energy storage element, motion regulator mechanism and an electric generator. The harvester can utilize vertical as well as horizontal movement of ocean waves. A float is used which transfer the ocean wave motion to the energy harvester, which further is stored in the energy storage element through MMR. Further, as threshold energy is stored in the energy storage element it drives a rotary electric generator to generate electric power. Proposed architectures is represented in block diagrams and Matlab-Simscape simulations with rigid body analysis indicate that a float with 30 mm sized square cross section area can deliver peak power of 1.87 W, for amplitude 20mm at 0.5-1.5 Hz frequency, which can be used to power various sensors used for ocean monitoring.

Keywords— motion rectifier, Wave energy harvester, rigid body simulation, strain energy storage.

I. INTRODUCTION

There is increasing need of sensor for ocean monitoring in content to pollution and natural disaster. Important parameters in case of ocean monitoring include temperature, chemical contamination level, noise level, salinity, pH level, heavy metal presence, turbulence monitoring, etc. In order to ensure a robust and sustainable solution; use of self-powered and autonomous ocean sensors is being investigated in order to collect the important data related to the ocean parameters.

Initially literature for wave energy harvesters is discussed with focus on the devices and methods used for conversion of the wave energy to useful electric power. There are sensor systems for monitoring of the ocean parameters using various types of sensors including optical fiber sensors, shear probe sensors, hydrophone, etc[1]–[3] . A self-sustaining system proposed by Harms and Kern performed remote surveillance of ocean to monitor pressure and temperature [4]. The system used solar panels and wave energy harvesters operated with linear generator to supply power to the sensor module. In order to design an autonomous sensor system for ocean monitoring, an efficient, compact and reliable source of energy is necessary. It is possible to utilize the wave motion and convert the kinetic energy of the waves to useful electric power. Conventional ocean wave energy harvesters utilize

mechanical elements including float, gears, flywheel and pulleys along with an electric generator [5], [6]. Velichkova et al. utilized the kinetic energy of water in the waterway to design an efficient wave energy harvester with a combination of hydraulic turbines, oscillating blades and air turbines [7]. Chen et al. used a linear translator and rotary electric generator to deliver 2.3 W of average power from wave height of 1.25 m and frequency of 0.2 Hz [8]. Electronic spring has been implemented to ensure variable stiffness to maximize the harvested electric power with feedback control of the translator displacement. Swing body and oscillating buoy devices utilize ultra-low frequency vibrations of ocean waves to ensure power density of 0.2 mW/cm3 and energy harvesting efficiency of 46-57 % for waves of 0.015-0.6 m height [9]. Xie et al designed anenergy harvester to power ocean sensor. WEH can deliver peak voltage 3V with an efficiency of up to 46.17% for a wave frequency of 1.2Hz and wave amplitude 15mm [10]. Mosleh et al. used a mechanical float, flywheel and pulley system to harvest 0.36 W of electric power from ocean waves at Lebanese coast with energy harvesting efficiency of 10% [11]. Graves et al. designed a electromagnetic pendulum Wave Energy Converter(WEC) to harvest lowfrequency wave energy to deliver 0.997 W at 0.75 Hz [12]. Yang et al. have developed a WEC comprising of a coaxial MMR and variable inertia flywheel to deliver average power of 1.17 W, peak power of 2.15 W with efficiency of 51.54% [13]. Wang et al. have designed and constructed a prototype of a thermal energy harvester using nitinol spring as a driving element. The maximum output power and efficiency are measured 1.7 watt and 3.5%, respectively [14]. Linear generator based wave energy harvesters ensure electrical efficiency up to 86-90% with recent advances in variable reluctance, Vernier hybrid construction and ironless rotor construction. However, their overall energy conversion efficiency is limited up to 15% [15].

Recently there are attempts to utilize the wave energy for powering the sensors used in case of ocean condition monitoring. Use of the self powered sensors has improved he reliability and packaging of the ocean monitoring sensor systems. To overcome the energy constraint of underwater gliders, Ding et al. have presented a pendulum-type wave

Synthesis, Rheological Characterization and Tribological Performance of Olive Oil Biolubricant Enhanced With Mos₂ Additive

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Keywords: Tribology, Lubrication, Biolubricant, Transesterification

Abstract

The stringent environmental regulations, non-renewability, poor biodegradability, and toxic nature of petroleum oil motivate the researcher to seek eco-friendly biodegradable alternatives synthesized from vegetable oil feedstock. In Industry, Biolubricants synthesized from vegetable oil are gaining more importance because of their renewable, eco-friendly, and less toxic nature and excellent lubrication properties such as high viscosity index, high flash point, high lubricity, and low volatility. In this study, Olive oil biolubricant is synthesized using the transesterification method, and MoS2 additive is blended in biolubricant with 1 wt.%, 2 wt.%, and 3 wt.% concentration. The FTIR technique is used to identify the synthesized biolubricant. The effect of synthetic lubricant SAE20W40 and Olive oil biolubricant enhanced with MoS2 on the tribological performance of journal bearing has been measured using a pin on disc tribometer and four-ball tester under a boundary and thin film lubrication regime. The surface of the pin after the wear test is analyzed using an optical microscope. The rheological, physicochemical, and thermal properties of olive oil with MoS2 are found to be reasonable compared to SAE20W40 oil. Test result reveals that Olive oil with MoS2 has excellent rheological and tribological properties compared to synthetic lubricant. Olive oil blended with 3 wt.% MoS2 could be considered a better sustainable biolubricant oil which would help to reduce the global demand of petroleum and synthetic-based lubricants.

Introduction

The demand for lubricating oil is increasing daily; conventional petroleum-based lubricants are high in cost, depleting rapidly, and would be exhausted in a few decades. Due to availability issues, toxicity, and the non-biodegradable nature of conventional lubricants, researchers moved towards biodegradable lubricants such as vegetable oils [1]. Vegetable oils are the best alternative to conventional lubricants because they are environmentally friendly, renewable, and less toxic. They also have excellent lubricating properties, such as high viscosity index, lubricity, and low volatility. Conventional petroleum-based lubricants are toxic to the environment. A significant portion of used lubricants worldwide is thrown in the environment, which is non-biodegradable and pollutes the surrounding. So, it is necessary to find an alternative for this lubricant.. Bio-lubricants have many advantages over conventionally used lubricants such as having higher lubricating properties, viscosity property, shear stability, high load carrying capacity, and superior dispersencies [2].

Many edible and non-edible vegetable oils are available in the market, such as palm oil, castor oil, canola oil, mustard oil, karanja oil, jatropha oil, coconut oil, sunflower oil, safflower oil, soybean oil, olive oil, groundnut oil, sesame oil, etc. Vegetable oil is obtained from various kinds of seeds, and almost 350 oil-bearing crops are available worldwide. Vegetable oils cannot be used as lubricants directly due to their low thermal oxidation stability, low cloud and pour point, and pour atomization [3]. It can be overcome by using suitable chemical modification methods and proper blending with chemical additives and high oleic vegetable oils. Globally, different kinds of lubricants, such as refined synthetic, mineral, and vegetable oils, are used as lube oil [4]. Olive oil was selected as suitable vegetable oil for the synthesis of biolubricant due to its high oleic acid content, high oxidation stability, and high viscosity index. The presence of a large percentage of monosaturated fatty acids in olive oil results in more resistance to oxidation and stability. Olive acid consists of long-chain fatty acids (more than 20 carbon atoms). Molybdenum disulfide (MoS2) was used as the additive for improving olive oil's wear and friction properties.

Synthesis Of Olive Biolubricant

The two-step transesterification process is used to synthesize the biolubricant from olive oil. In esterification/transesterification, acyl moieties are rearranged to produce new triesters from triglycerides. The

CONFERENCE PAPER

Leakages through Pressure Packing Rings of a Reciprocating Compressor.

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Abstract

When a double-acting reciprocating compressor operates with or without lubrication, pressure packing rings are critical for sealing the piston rod. The effectiveness of these packing rings is also essential for pinpointing leaks. This paper's goal is to forecast leakages through a pressure packing ring and create a mathematical model to account for them. We can predict leakage as the displacement of the pressure packing ring and calculate curves for the pressure in the mathematical model for the various reciprocating compressor with different pressure inside the cylinder. The gas flow is also found to be in line with the experimental data. Due to some mathematical model assumptions, the results are slightly higher in these papers, but they still aid in predicting leakage for any reciprocating compressor pressure ratio.

Keywords-Flow of gas, Mathematical modeling, Pressure packing ring, Reciprocating Compressor

I. INTRODUCTION

In Double acting reciprocating gas compressors, one of the most critical technologies is sealing the piston rod which reciprocates in order to compress the gas within the cylinder. Based on the application, and the operating condition of the reciprocating compressors the design and size of the piston rod, the bore of the cylinder, size of the cylinder cup, and width and thickness of rod packing rings vary accordingly. When compressing gas at various pressure (suction pressure to discharge pressure) using a reciprocating type piston compressor, there will be leakage along the piston rod due to the clearance between the cylinder cup and the rod. Pressure packing rings are an essential part of reciprocating compressors because they provide a dynamic, mechanical seal around the piston rod and against the sealing surface of the packing cups to stop leakage from the cylinder. The effectiveness of their sealing also has a big impact on how well the compressor works. With displacement and velocity of the piston rod during the start of suction to discharge pressure, the pressure generated inside the cylinder forces some amount of the gas through the allowable path i.e. through the pressure packing ring. In order to predict the amount of gas flow for different situations, the compressor size, the flow of gas should be found out in order to know the gas flow velocity, and pressure produced along the pressure packing ring with respect to change in crank angle of the reciprocating compressor, which can be used for determining the force acting along the pressure packing ring which will help to determine the stress acting on it. The objective of the paper is to provide a Mathematical model that can help to predict the flow of gas along the Pressure Packing Ring, with suitable code whereby providing the input of the Specification of the Double Acting Reciprocating Compressor we can get the required results.

A Review on Recent Trends and Techniques in Heat and Mass Transfer of Metal Hydride Hydrogen Storage Reactor

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Abstract: Research on the transmission of heat and mass in relation to technologies for hydrogen storage are provided. Future energy needs are growing daily, and hydrogen is the perfect energy carrier to meet those needs. The key components of the hydrogen-based economy are production, purification, delivery, storage, and application. The most difficult obstacle to using hydrogen as a fuel is the development of methods for storing hydrogen. Hydrogen can be kept in solid state compounds, liquid and gaseous forms, as well as in gaseous form. Technologies for storing hydrogen include compression at high pressures of 700 bar or more, cryogenic liquefaction, physisorption, and absorption in the solid state using compounds like metal hydrides and complex hydrides. Storage of hydrogen in solid form compounds, which is safer and more effective than other methods, appears to be one of the most plausible alternatives. It does, however, entail extremely linked transport mechanisms like mass, heat, and chemical kinetics. Complex hydrides have significant advantages over traditional metal hydrides, making them suitable alternative hopefuls for solid state hydrogen storage. However, many of these hydrides exhibit both high thermodynamic stability and low kinetics. The use of catalysts and thermodynamic destabilization can, up to a point, solve such issues. Each storage method has serious heat transmission issues, according to earlier studies. These heat transfer issues, as well as potential fixes, are discussed in this review study, with a focus on Metal Hydride and three different hydrogen storage techniques. The usage of nanoparticles to improve the thermal conductivity of heat transfer fluid is another feature that is revealed. Each method examined has particular drawbacks, therefore none of them can fully meet the demands of a hydrogen-based economy.

Keywords: Hydrogen storage, Metal hydride, Heat and mass transfer, Nanofluid

Paper Code: 335   **Track:** Mechanical Engineering

EFFECT OF PHASE TRANSFORMATION ON SHIFT IN NATURAL FREQUENCY OF EPOXY-SHAPE MEMORY ALLOY COMPOSITE BEAM

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ABSTRACT

The fibre-reinforced composite structural members play an important role in enhancing the strength-to-weight ratio of the structure. Smart reinforcing fibers like Shape Memory Alloy (SMA) provide an additional feature of adaptive stiffness to the structure. In this paper SMA wire reinforced epoxy resin composite is analyzed for change in natural frequency to reveal the change in stiffness concerning change in transformation temperature from martensite to the austenite phase. The numerical study is carried out by using FEA software and the experimental validation of the same is completed. The natural frequency shift is predicted by measuring the natural frequencies of the composite for free-free boundary conditions at different transformation temperatures. The significant change in the natural frequency of composite is observed during transformation temperature and the FEA results are close to experimental results with reasonable accuracy, thus the proposed composite provides ways to have adaptive stiffness.

Keywords - Shape Memory Alloy reinforcement, adaptable natural frequency, fibre reinforced composite

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Paper Code: 388   **Track:** Mechanical Engineering

DESIGN AND ANALYSIS OF HYDROGEN STORAGE PRESSURE VESSEL

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ABSTRACT

The world as of today is found to be inclined towards the use of more renewable sources of energy. Hydrogen as a fuel has been in the limelight due to its immense applications to generate energy. But the storage of hydrogen is of concern as it is a very volatile substance which burns vigorously. And this gas is to be stored in its compressed form for various applications. This has led the scientific community to explore the various possibilities for its storage and transportation. Type IV hydrogen storage vessels are one of the most prominent contenders for hydrogen storage. This work is mainly focused on the design of a Type IV pressure vessel.

Keywords - hydrogen, pressure vessels, carbon-fibre filament

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Paper Code: 6306   Track: Mechanical Engineering

IMPACT OF INSULATED ROOF ON ENERGY CONSUMPTION UNDER VARIABLE INDIAN CLIMATIC CONDITIONS: AN APPROACH TOWARD SUSTAINABLE BUILDINGS

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ABSTRACT

This study aims to determine the effects of insulating a building's roof with a composite insulation layer made up of seven different insulating materials stacked one on top of the other on the building's cooling load requirements in various climate zones in India. eQuest software is used to simulate the energy performance of residential buildings under various environmental circumstances. The outcome demonstrates that installing composite insulation on a building's roof greatly reduces the need for cooling and the magnitude of energy saved varies depending on the climate.

Keywords - Composite Insulation, Cooling Load, Energy Performance

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Paper Code: 6461   Track: Mechanical Engineering

THE TRANSIENT VIBRATION ANALYSIS OF SHAPE MEMORY ALLOY (SMA) REINFORCED COMPOSITE

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ABSTRACT

Many civil, mechanical, and constructional systems must analyse and attenuate forced harmonic vibrations. Its useful resolution aids in the management of resonance, reduction of noise, an extension of system lifetime, and avoidance of structural fatigue disaster. Also, transient vibration analysis of structures is crucial in engineering practice for simulating real instances like aircraft wings, turbine blades, robot arms etc. SMA has advantages in dampening vibrations due to pseudoelastic behaviour, and hysteresis behaviour. To check the suitability of SMA composites for different applications, it is necessary to analyse their transient vibration response at different transformation temperatures of SMA. In this work, the SMA reinforced composite with viscoelastic material as matrix material is fabricated and tested for transient vibration response. Using suitable experimentation, the effect of SMA transformation temperature on transient and frequency response has been analysed. Response equation and MATLAB coding are used to create transient response curves at transformation temperatures. It has been observed that there is a significant effect of SMA transformation temperature on the transient vibration response of the composite. Also, the damping factor is found to be increased as austenite temperature affects viscoelastic matrix material.

Keywords - shape memory alloy (SMA), composite, transient vibration analysis, damping behaviour

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Numerical Investigation of Metal Hydride Hydrogen Storage Reactor Using Various Cooling Fluids.

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A b s t r a c t	**K e y w o r d s**
Variational Homotopy Perturbation Method (VHPM) is formulated by the coupling of variational iteration method and He's polynomials. The method introduces a reliable and efficient process for a wide variety of scientific and engineering applications. Variational homotopy perturbation method has a very simple solution procedure and absorbs all of the positive features of variational iteration and homotopy perturbation methods and is highly compatible with the diversity of the physical problems. In this article, Variational homotopy perturbation method(VHPM), is used to solve the diffusion equation.	*Hydrogen, Hydride bed reactor, Heat transfer, Cooling fluids.*

1. Introduction:

Nowadays, despite being aware of a series of technologies that are related to energy harvesting, only a few technologies are taken for granted in terms of innovation. For the selection category reversibility, pollution rating, physical feasibility, and many more factors are taken into account. But, along with these factors maximum energy output is undoubtedly expected. In the presented work hydrogen energy is emphasized for being quite well suited for the needs. In particular, the metal hydride hydrogen storage reactor is subtly studied both numerically and computationally to conclude.

There are a series of reasons that bolsters the selection of metal hydride such as being counted as a renewable energy source, being reversible, and best possible alternative for some traditional thermal-related systems. From the renewable energy point of view, Suarez et al has done a series of experiments based on black box modeling. In particular, the absorption and desorption rates were monitored under pressure and temperature with a function of time. the research concluded with the maximum reversibility during storage capacity is at 100 grams with a relative capacity of 0.8 percent and equilibrium pressure between 1 to 4 bar for both sorption processes [1]. Due to ecofriendly nature of metal hydrides, it is used in many renewable terminologies such as at concentrating solar power plants, Heating Ventilation and Air Conditioning (HVAC) [2-5]. Nowadays, to prevent the leaching of earth's rare elements, dry chlorination of spent nickel hydride batteries come forward as an utmost alternative [6].

In theoretical as well as experimental manners, a lot of common trends related to the capability of metal hydride are seen. Hydrides phonons are nontrivial in high superconductivity and the density of electrons can influence temperature [7]. Discharging pressure is inversely proportional to the heat transfer; whereas on the other hand terms such as thermal conductivity, number of air passages, usage of coiled tube heat exchanger is directly proportional to the heat transfer [8-10].

As per the need for high efficiency, there are certain ways of increasing the efficacy of the reactor such as by using catalysts, graphene-based material, or using Phase Change Material (PCM). **Pukazhselvan** et al got that by the addition of zirconia in MgH_2 powder, hydrogen start liberating at a temperature

Finite Element Analysis of Extension Bar For Pneumatic Impact Wrench

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Abstract- Accurate torque measurement plays a vital role in ensuring optimal performance and safety of mechanical systems across industries. This research paper presents a detailed analysis of an extension bar utilized in a smart torque measurement system specifically designed for a pneumatic impact wrench by employing advanced software tools like CATIA and ANSYS, the paper highlights the modeling process, material selection, and stress analysis to evaluate the extension bar's structural integrity. This analysis aids in optimizing the design and ensuring the long-term functionality and reliability of the system.

Keywords- Finite Element Analysis, extension bar, stress analysis, pneumatic impact wrench, ANSYS, CATIA.

I. INTRODUCTION

The ability to accurately measure and control torque is of paramount importance in various industries, especially in the field of mechanical engineering. Torque measurement plays a vital role in ensuring proper assembly, maintenance, and performance of numerous mechanical systems. Pneumatic impact wrenches, also known as air impact wrenches or air guns, are handheld tools powered by compressed air. They are commonly used in industries such as automotive, construction, and manufacturing. These tools are designed to deliver high torque output for fastening or loosening nuts and bolts.

In the project "Design and Development of smart torque measurement system for impact wrench" we focus on creating a robust and efficient torque measurement system that provides accurate real-time data and enables precise control over torque application. The developed system consists of a torque measurement mechanism integrated into the extension bar of an impact wrench, as well as a wireless control panel for data display and manipulation. The torque measurement system utilizes the principle of measuring the torque applied to the extension bar, which serves as a reliable proxy for the overall torque exerted by the impact wrench. By accurately measuring the torque at the extension bar, we can effectively monitor and control the torque output of the impact wrench during various applications.

One crucial aspect of this project involves the analysis of the extension bar to ensure its structural integrity under Torque. The extension bar is constructed using high-strength chrome molybdenum steel material, selected forits excellent mechanical properties.

The stress analysis is conducted using advanced software tools such as CATIA and ANSYS for modeling and stress analysis respectively.The stress analysis allows us to understand the distribution of stress within the extension bar and identify potential areas of concern where failure may occur under extreme torque conditions. By conducting a comprehensive stress analysis, we can ensure that the extension bar is capable of withstanding the expected torque loads and guarantee the reliability and safety of the torque measurement system.

In this research paper, we present the modeling and stress analysis of the extension bar and compare the results to validate its structural integrity and determine its maximum torque-carrying capacity.

A. Extension bar

An extension bar serves as a vital intermediary component between a power tool, such as a wrench or drill, and the target object or workpiece. To ensure a secure and stable connection, extension bars are equipped with attachment mechanisms at each end.

One end is designed to fit the power tool, typically using a square or hexagonal drive that matches the corresponding drive size of the tool. This ensures a precise and reliable connection between the power tool and the extension bar.

At the other end of the extension bar, there is an attachment point where the socket or other tool-specific attachments can be affixed. The socket attachment point is designed to accept various socket sizes, allowing users to work with different bolt or nut sizes, further enhancing the versatility of the extension bar.

Data Cast- A web-based application for Foundry

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ABSTRACT— Data collection and analysis is a critical component of Industry 4.0. The majority of data in MSMEs is manually entered in a register book. However, retrieving and analyzing data from the register book takes too long when determining the root cause of any casting defect or tracking the casting. In this paper, an attempt is made to create an application that will overcome the disadvantages of the current method of data collection (manual entry in register books) and will also perform data analysis. Data-Cast (Responsive Web-Application Development for Foundry goal)'s is to automate data collection and analysis in the foundry using a mobile and full-fledged computer web application. The data gathered will assist the foundry in determining the root cause of the problem. Data Cast allows for the tracking of castings as well as the detection of casting defects, as well as the quick retrieval of data. The necessary software and hardware are easily available and simple to use. As previously described, the Data-Cast System can result in an error-free, secure, reliable. The foundry can keep computerized records without duplicate entries and retrieve data in less time when needed. This will also assist foundries in reducing losses caused by missing castings sent for fettling or shot blasting outside the facility. As a result, the primary goal of ensuring quality and effective data management is met.

Keywords— Industry 4.0, Data Analysis, Foundry, Data Management

Introduction

Improvement of Foundry Web-Application to replace manual interaction (for example, keeping up with the data of deformities rate in projecting in Register), which was causing errors, was not secure, was not solid, and it was a slow cycle. MSMEs (specifically foundries) are currently lacking in Digitization due to cost and unfriendly solutions.

Many researchers emphasized on data collection system and the importance of Industry 4.0 in a foundry. Industry 4.0 not only improves productivity and profit but also helps to attain sustainability[1]. Grischa et.al explained the relationship between of Industrial Internet of things and sustainability[2]. Stefan et.al highlighted the scope of Industry 4.0 implementation will lead to resource-saving and also achieving sustainable manufacturing[3]. Amit highlighted on, using the cloud-based system for categorizing the casting defects. This helped the foundry to access the data freely and widely[4].

Emanuele Pagone emphasized the importance of data collection in the foundry and created a tool to analyze energy and material flow[5]. Eric discussed the significance of data collection and analysis software in foundries, as well as the study on digital monitoring of process parameters[6].

"Data-Cast" enables the adaptation of old foundry technologies to modern responsive web applications that can run on any operating system. With very little investment, traceability, accountability, and real-time data collection from the shop are now a reality.
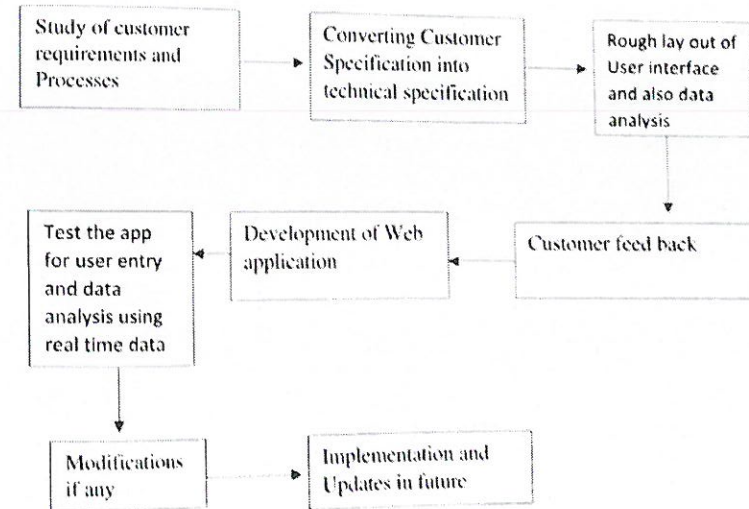
Methodology

Fig1. Methodology

Figure 1 depicts the methodology used. The problem was identified by the Quality Assurance team after several brainstorming sessions and process analysis. Casting defects were discovered during shake-out, fettling, and inspection. The user interface was created based on this. Following further feedback from the manager, an update to the developed system was made. The goal is to collect data, track the product, and use the data to reduce defects.

A Review on Waste to Energy conversion.

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A b s t r a c t	**K e y w o r d s**
Waste-to-Energy(WtE) techniques are becoming more significant globally due to the rising demand for affordable energy sources. Different methods help with solid waste management in India by lowering the demand for landfills while also producing electricity from municipal solid trash. The focus of this review has been on different WtE techniques used to produce the energy from waste which are originated from different sources. The type of solid waste and emission regulations differ depending on the nation and state, which has an immediate influence on air quality requirements and the actions necessary to limit such emissions. The percentage of wet solid waste in India is much larger than the percentage of dry solid waste, which has a considerable negative impact on the technical and economic viability of WtE plants. When inappropriate waste segregation occurs, the energy content of solid waste decreases dramatically, which is harmful from the perspectives of both pollution and power production. The text goes into great length on these issues related to solid waste management. This review article also compares Indian WtE plants to their international, particularly European, counterparts. The article has covered the detrimental impact of pollution produced from WtE plants upon human health as well as solutions for reducing air pollution. Environmental impact assessments have also been explored in order to analyse the value and limitations of WtE plants in comparison to more traditional solid waste management techniques like landfills, which further underscores the need for the current article.	*Waste, Collection, Segregation, Energy, Recycling*

1. Introduction:

To meet the needs of the general public for energy without negatively affecting the environment, trends in this period of sustainable growth are shifting away from traditional resources and towards renewable resources. The potential of every country in the field of solid waste management and putting it to use in the energy recovery industry is being recognised through a global effort. Developed nations like the US have recognised the potential for energy recovery from waste as merely potential long-term source of energy (Chengand, Hu, 2010) In industrialised nations, waste to energy (WtE) has been employed to solve a variety of waste-related environmental issues (Brunner and Rechberger, 2015). Cities like York Metropolis, Paris, Montreal, Toronto, and other such cities are compelled to carry hundreds of tonnes of garbage every day from the city to a faraway disposal facility and unprocessed waste to underdeveloped countries. China itself is country where both cities' dump sites are completely full in more than 66% of urban centers (Curry and Pillay, 2012). The following reasons have increased the significance of WtE conversion using Municipal Solid Wastes (MSW). Along with recovering valuable substances like metals, polymers, and certain other recyclable materials, WtE processes may be utilised to create heat as well as power and offer a financial incentive. This lessens its influence on the environment and tackles the following problems: the rate at which WtE practises decrease the amount of waste and the lack of landfill space; and (b) a lessening of the environmental effect. categorised as solid garbage (Lombardi et al., 2012). Any separated

MAGNETIC FIELD ASSISTED ELECTROCHEMICAL MACHINE: A REVIEW

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Abstract: This paper deals with an overview of the electrochemical machining process and its principles. It also focuses on the magnetic field-assisted plus electrochemical machine and Ultrasonic vibration process. The magnetic field-assisted electrochemical machine is used to machine 3-D complex-shaped macro, micro and Nano features for components made of difficult-to-machine materials. Machining characteristics improve with a magnetic field in ECM, as well as the material removal rate (MRR), surface integrity, hole taper, energy consumption, and negative environmental impact. This method (process/way) has shown great potential and superiority for enhancing the machining process and its performance due to the ease of contactless forces using the magnetic field-assisted method. Technological advances have been reported in magnetic field-assisted ultrasonic pulse electrochemical processes. This paper briefly reviews the state of the art academic and industrial research in magnetic field ECM applications.

Keywords: Electrochemical machine; Material remove rate; Magnetic field; Overcut

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Advanced Engineering Optimization Through Intelligent Techniques pp 287–303 | Cite as

Measuring the Performance of Circular Supply Chain Implementation Using Pythagorean Fuzzy DEMATEL Approach

Swapnil Lahane ✉ & Ravi Kant

Conference paper | First Online: 08 April 2023

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Abstract

Abstract

Circular supply chain (CSC) has gained attention in the recent years amongst the research communities due to concerns of waste generation, global warming, climate change, resource scarceness, and ecological degradation. CSC amalgamates the circular economy (CE) into supply chain operation of industry. It is considered as a cradle-to-cradle approach to traditional supply chain model known as cradle to grave or linear economic model of production and consumptions. Several manufacturing organizations across the globe have started to adopt CSC into their business practice due to its wide range of sustainable benefits. ...zations in developing economies, especially in India, are facing

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Bearing element integrity analysis using dimensional analysis and response surface method (RSM) for fault diagnosis of rotor bearing system ⊘

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Application of fuzzy inference system (FIS) for assessment and predication of compressive asset of concrete containing fly ash

Rahul Boadh [a] 🔍 ✉ , S.N. Yadav [b], Agnivesh Tiwari [a], Yogendra Kr. Rajoria [a], Jitendra Singh [c]

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Abstract

Fuzzy Inference System (FIS) for forecasting the 90 days compressive asset of cements containing low and high limes cinders have been modified by using MATLAB2016a. For motivation behind to modified this model is 160 specimens and 48 different mixes found form the literatures. Water, cover of the day, crushed stone-I (3–7 mm), Portland cement, Fly Ash (FA) replacement ratio has been used as input parameter in the FIS modelling system. The output is the boundary which is compressive strength of cement. The preparation and testing results advocate that the FIS modelling system have the durable potentially predict 90 days compressive strength of concretes fly ash and maybe used for some other purpose also. This FIS system provide the reasonable results with the comparison of previous studies.

Introduction

The residue which is produced due utilization of coal and is elated via combustion chamber using exhausts is known as fly ash (FA). More than 219 million metric tons of FA are produced every year only in India itself. It is emitted by coal powered energy producing power plants. Normally, coal is reduced to fine particles & gusted using force of air into the tank's combustion compartment where coal instantly catch fire, producing heat & results in a liquefied mineral scum. Tubes from combustion compartment absorb heat from the chamber, cools down the flue gas & triggering the liquefied mineral scum to harden & resulting in formation of ash. Presently, more than 22 million tons of this produced fly ash is used per annum in various engineering purposes. Distinctively highway engineering usages comprise soil & road foundation stabilization, Portland Cement concrete (PCC), flowable seals, grouts, structural fill & tarmac filler. It is mostly used as a metakaolin in PCC applications. The exceptional spherical form & particle size allocation of FA makes it a suitable mineral grout in hot mix asphalt (HMA) applications & advances the smoothness of flowable fill & grout. The evenness and abundant availability of fly ash in most areas of our planet provides a exclusive opportunity for usage in structural fills & various highway applications.

A study on predicting concrete strength has been done by using pressure wave along with shear waves as well as Rayleigh waves and concluded that ML model using all these 3 waves was more accurate than only P-wave [1]. They used two models firstly support vector machine and secondly artificial neural network. The two models that are multilayer perceptron & radial basis function networks for predicting the compressive potency of Moroccan fly Ash Phosphogypsum and they concluded multilayer perceptron network model to produce the most accurate outcomes [2]. The obtained an approximation equation for the development of compressive strength [3]. The developed equation can express coefficient a, which implies the role of FA as a binder, in the way of function of age, Blaine particular surface area of FA & FA content. The developed equation can explain the upsurges in the initial strength due to FA in place of portion of fine combination, the reductions in the initial strength due to FA in place of portion of cement, the upsurges in the lasting strength due to metakaolin reaction, the connection b/w the FA replacement ratio & the ratio of strength upsurge/plop, & the result of FA's Blaine specific expanse on the strength.

The non-linear regression & optimization technique used to unify the model of compressive Assets (CA) & the efficiency Factor model (EFM) [4]. In other words, the EFM is a component of the CS model. The EFM report can be supportive in the creation of FA concretes at various age, at separate replacement percentage & distinct water-binder proportion with more confidence. A prediction model proposed for testing
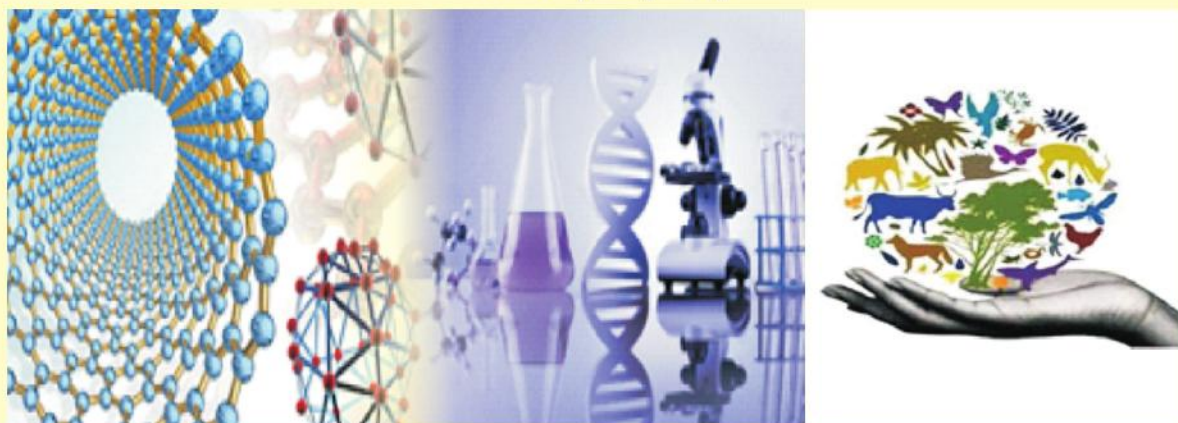
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Structural Properties of $Ba_x Sr_{1-x} Al_2 O_4$ Nanomaterial Synthesized By Sol-Gel Method

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Abstract:-

Nano-material with composition $Ba_x Sr_{1-x} Al_2 O_4$ (where x= 0.25, 0.50, 0.75, 1) were prepared by sol-gel method. X-ray diffraction (XRD), Fourier Transform Infrared spectroscopy (FTIR) and Thermogravemetric Differential Thermal Analysis (TGDTA) techniques are used to study structural properties of nano-materials. XRD analysis shows the formation of hexagonal spinel structure of $BaSrAl_2 Sr_4$. The crystallite size of the $Ba_x Sr_{1-x} Al_2 O_4$ nanomaterials obtained from Debye Scherrer formula is found to in nanosize.Fundamental absorption band at 430 cm^{-1}, in FTIR spectra suggests the formation of metal oxide bond. TG-DTA analysis confirms the phase formation of material and it achieved at 491.80°C.

Keywords: - *Sol-gel Method, XRD, FT-IR, TG-DTA*

Synthesis and Characterizations of $Ni_x Cd_{1-x} Al_2 O_4$ Nanomaterial by Sol-Gel Method

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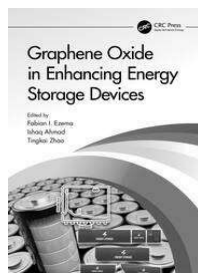Gmail – sakshideshmukh4981@gmail.com

Abstract:-

The study examined the properties of a series of compositions with varying levels of $Ni_x Cd_{1-x} Al_2 O_4$ (where x ranges from 0.0 to 1). The samples were synthesized using a sol- gel method. XRD analysis confirmed that the cubic spinel structure of $NiAl_2 O_4$ was present in all samples. The smallest crystallite size (7.5 nm) was observed in the $Ni_{0.5} Cd_{0.5} Al_2 O_4$ sample. The FTIR spectra revealed a fundamental absorption band at 700 cm^{-1}, which gradually shifted to higher energy levels as the concentration of Cd^{2+} increased. The dc electrical conductivity of the samples increased with temperature due to the mobility of thermally activated charge carriers. However, the conductivity decreased with increasing Cd^{2+} content because of the electrostatic screening effect of the B-site cations.

Keywords: *Sol- gel method; XRD; FTIR ; DC electrical resistivity.*

Chapter

Flexible Supercapacitors Based on Graphene Oxide

By Swati N. Pusawale (/search?contributorName=Swati N. Pusawale&contributorRole=author&redirectFromPDP=true&context=ubx)

Book   Graphene Oxide in Enhancing Energy Storage Devices (https://www.taylorfrancis.com/books/mono/10.1201/9781003215196/graphene-oxide-enhancing-energy-storage-devices?refId=9732f832-4b89-49c3-8b9c-252573911ac3&context=ubx)

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