3.2.1 - Number of papers published per teacher in the Journals notified on UGC website during the year

Response: 14

3.2.1.1 - Number of research papers in the Journals notified on UGC website during the year

Response: 21

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2023-2024

1. Summary of Number of papers published per teacher in the Journals notified on UGC website during the year

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1	Lokesh Aurangabadkar	3
2	shweta Agrawal	2
3	Er. Poonam Bagora	2
4	Ms. Shanu Sharma	1
5	Dr. Mukesh Patidar	1
6	Dr. Keshav Patidar	1
7	Ankit Jain	2
8	Dr Nitin Kumar Chauhan	1
9	Devendra Singh Mandloi	1
10	Dr Ankit Saxena	2
11	Dr.Namrata Kaushal	2
12	Dr.Neena Thacker	1
13	Dr. Gopal Yadav	1
14	Dr. Jyoti Gupta	1

2. Number of research papers in the Journals notified on UGC website during the year

3.3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year						
Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
THERMAL ANALYSIS OF ECONOMIZER USING ANSYS BY VARIATION IN GEOMETRIC PARAMETERS AND TUBE MATERIAL.	Lokesh Aurangabadkar	Mechanical	Journal of Emerging Technologies & Innovative Research	2024	ISSN 2349-5162	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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Saturday, December 21, 2024

3.3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year						
Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Optimization of Convergent-Divergent Nozzle Design for Enhanced Thrust Generation and Efficiency	Lokesh Aurangabadkar	Mechanical	Journal of Emerging Technologies & Innovative Research	2024	ISSN 2349-5162	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Thermal Analysis Of I.C. Engine Fins By Variation In Geometry For Different Materials	Lokesh Aurangabadkar	Mechanical	Journal of Emerging Technologies & Innovative Research	2024	ISSN 2349-5162	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Rice Plant diseases detection using convolution neural networks	shweta Agrawal	AIML	International Journal of Engineering Systems Modelling and Simulation	2023	ISSN 1755-9766	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
A Systematic Review on Deep Learning-Based Automated Cancer Diagnosis Models	shweta Agrawal	AIML	Journal of Cellular and Molecular Medicine	2024	ISSN 1582-4934	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Exploring IoT Integration for Innovative	Er. Poonam Bagora	Civil	Building Materials and Engineerin	2024	ISSN 2584-0266	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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3.3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year						
Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Advancements in Civil Engineering			g Structures			
Enhancing Monsoon Predictions for the Upper Chambal Catchment through Temporal and Spatial Downscaling of Predicted Future Precipitation	Er. Poonam Bagora	Civil	Journal of Institution of Engineers (India) – Series A, Springer	2024	ISSN 2250-2157	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Exploring IoT Integration for Innovative Advancements in Civil Engineering	Ms. Shanu Sharma	Civil	Building Materials and Engineering Structures	2024	ISSN 2584-0266	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
An ultra-dense and cost-efficient coplanar RAM cell design in quantum-dot cellular automata technology	Dr. Mukesh Patidar	Electronics & Tele Communication	The Journal of Supercomputing	2023	ISSN 1573-0484	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
An ultra-dense and cost-efficient	Dr. Keshav Patidar	Electronics & Tele	The Journal of Supercomputing	2023	ISSN 1573-0484	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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Saturday, December 21, 2024

3.3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year						
Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
coplanar RAM cell design in quantum-dot cellular automata technology		Communication				
An ultra-dense and cost-efficient coplanar RAM cell design in quantum-dot cellular automata technology	Ankit Jain	Electronics & Tele Communication	The Journal of Supercomputing	2023	ISSN 1573-0484	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Structural elucidation, morphological properties, dielectric properties and their physical interpretation of cerium-substituted cobalt and barium-based M-type hexagonal nano ferrites	Ankit Jain	Electronics & Tele Communication	Physica Scripta	2024	ISSN 1402-4896	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Binary and Ternary Classifiers to Detect COVID-19 Patients Using	Dr Nitin Kumar Chauhan	Electronics & Tele Communication	New Generation Computing	2024	ISSN 0288-3635	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Chest X-ray Images: An Efficient Layered CNN Approach						
Energy Meter and Electricity Theft Detection Using IOT and ESP32	Devendra Singh Mandloi	Electronics & Tele Communication	International Journal of Artificial Intelligence, Internet of Things and Cloud Computing	2023	ISSN 2583-8911	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Simulation and Analysis of the Code Domain NOMA with UFMC for 5G Wireless Networks	Dr Ankit Saxena	Electronics & Tele Communication	Electrical, Control and Communication Engineering	2024	ISSN 2255-9159	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Joint 5G NR Polar Code-Convolutional Code design for Massive MIMO-UFMC system	Dr Ankit Saxena	Electronics & Tele Communication	International Journal of Autonomous and Adaptive Communications Systems	2024	ISSN 1754-8640	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Some Generalized Continuous Mappings on Intuitionist	Dr.Namrata Kaushal	ESH	Indian Journal of Mathematics	2023	ISSN 0423-5229	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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3.3.2.1 Number of papers published per teacher in the Journals notified on UGC website during the year						
Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
ic Fuzzy Bitopological Space						
Impact of Internal & external communication on the effectiveness of public speaking	Dr.Neena Thacker	ESH	LangLit: An International Peer - Reviewed Open Access Journal	2023	ISSN 2349 - 5189	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
ON COMPLEX VALUED FUZZY b - METRIC SPACE	Dr. Gopal Yadav	ESH	UGC Care	2024	ISSN 2455-7463	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Exploring volume polynomial : Revealing M-convexity in Matroid Theory	Dr.Namrata Kaushal	ESH	Journal of Technology	2024	ISSN 1012-3407	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search
Exploring volume polynomial : Revealing M-convexity in Matroid Theory	Dr. Jyoti Gupta	ESH	Journal of Technology	2024	ISSN 1012-3407	https://ugccare.unipune.ac.in/Apps1/User/WebA/Search

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2. Author: Lokesh Aurangabadkar- Thermal Analysis Of Economizer Using Ansys By Variation in Geometric Parameters And Tube Material

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

THERMAL ANALYSIS OF ECONOMIZER USING ANSYS BY VARIATION IN GEOMETRIC PARAMETERS AND TUBE MATERIAL.

Shreya Bhawsar[1] , Jayprakash Patidar[2] ,Sharad Lakhre[3], Gautam Divekar [4] ,Mr. Lokesh Aurangabadkar [5]

1,2,3,4Students, Mechanical Engineering Department, 5 Assistant Professor, Mechanical Engineering Department 1 Indore Institute of Science and Technology, Indore, India

1,2,3,4 Students, Mechanical Engineering Department, IIST Indore 5

Abstract : **Economisers play a crucial role in enhancing the efficiency of thermal systems by recovering waste heat from exhaust gases. This study employs ANSYS, a powerful computational tool, to conduct a comprehensive thermal analysis of an economiser. The investigation focuses on varying two key parameters: tube thickness and tube material, to optimize heat transfer efficiency and overall performance.**

In the present work we have taken 3 different thickness values of economiser Tube through which the feed water flows. the dimensions are 3mm,4mm and 5mm keeping the inner diameter same for each tube. SolidWorks software is used for model design and Ansys workbench is used for analysis. The analysis is performed on different tube thickness models and a comparison is made between them. Also, the material is changed to achieve a better heat transfer rate.

The research begins with the development of a finite element model representing the economiser geometry. ANSYS is utilized to simulate heat transfer processes within the economiser for different geometric parameters and same operating conditions. By systematically altering tube thickness and material properties, the impact on heat transfer rate, pressure drop, and overall thermal efficiency is evaluated.

IndexTerms - **Economiser, FEA Analysis, Ansys.**

I. INTRODUCTION

BOILER:

A boiler is a sealed container designed to heat water, creating steam or hot water. This steam or hot water serves numerous functions, such as heating buildings, powering turbines for electricity generation, and sanitizing equipment.

Boilers function by transforming water into either steam or hot water, adaptable for diverse applications like heating, steam-driven processes, and electricity generation. They come in various configurations tailored to suit the unique requirements of different sectors.

ECONOMIZER:

A boiler economizer, also referred to as an economizer, serves as a mechanical apparatus aimed at curbing energy usage or executing beneficial tasks like preheating. This crucial component enhances the energy efficiency of the system by capturing heat from the circulating water while ensuring an adequate level of enthalpy for the boiler's operation. Consequently, it contributes to a more efficient and enhanced boiler room environment.

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3. Author: Lokesh Aurangabadkar- Optimization of Convergent-Divergent Nozzle Design for Enhanced Thrust Generation and Efficiency

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Optimization of Convergent-Divergent Nozzle Design for Enhanced Thrust Generation and Efficiency

[1] Kunal Yele , [2]Arjun Khannade , [3]Preet Gupta ,[4] Yash Vaghmare , [5]Lokesh Aurangabadkar

[1,2,3,4,5]Students, Mechanical Engineering Department, [5]Assistant Professor, Mechanical Engineering Department

[5]Indore Institute of Science and Technology, Indore, India

Abstract: **Convergent-divergent (CD) nozzles are crucial components in propulsion systems, particularly in aerospace engineering, where they play a significant role in enhancing thrust generation and efficiency of rocket engines and jet propulsion systems. This study focuses on the optimization of CD nozzle design parameters to maximize thrust performance while increasing operational efficiency. Computational fluid dynamics (CFD) simulations and optimization algorithms are employed to explore the complex fluid dynamics within the CD nozzle geometry. The optimization process considers various parameters such as nozzle geometry to achieve desired performance metrics, including thrust and exhaust velocity. Additionally, considerations are made for minimizing shock formation and losses.**

Index Terms -: **CD Nozzle, CFD, Ansys**

1. INTRODUCTION

A nozzle is a device that increases the velocity of a fluid at the expense of pressure. Nozzle is a part of rocket which is used for the expansion of combustion gases through it and produces thrust. Nozzle is a passage used to transform pressure energy into kinetic energy. During the combustion of fuel, chemical energy is converted into thermal energy and pressure energy. The combustion gases at this stage are at a high pressure and temperature and these gases under such high pressure expand through the nozzle during which the pressure energy is converted into kinetic energy which in turn moves the vehicle in a direction opposite to that the exhaust gases, according to Newton's third law of motion. Two primary functions of nozzle are - First, they must control the engine back pressure to provide the correct and optimum engine performance, which is done by jet area variations. Second, they must efficiently convert potential energy of the exhaust gas to kinetic energy by increasing the exit velocity, which is done by efficiently expanding the exhaust gases to the atmospheric pressure.

Computational Fluid Dynamics (CFD) Simulations utilize CFD simulations using software such as ANSYS to model fluid flow through the nozzle and evaluate performance metrics. The successful optimization of the convergent-divergent nozzle design will result in improved propulsion system efficiency, enhanced thrust generation capabilities, and minimized losses.

The objective of this project is to optimize the design of a convergent-divergent nozzle to enhance its performance in terms of thrust generation, flow velocity, Mach number, and pressure distribution. By systematically varying geometric parameters and conducting optimization analyses, the goal is to identify the most efficient nozzle configuration that achieves the desired performance metrics.

This optimized design has the potential to find applications in various engineering fields, including aerospace propulsion, fluid dynamics research, and industrial processes. Optimizing convergent-divergent nozzle designs is crucial for improving the efficiency and performance of propulsion systems, fluid flow control mechanisms, and related engineering applications. By addressing this engineering challenge, the project contributes to advancements in aerospace engineering, fluid dynamics research, and industrial innovation.

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4. AUTHOR: LOKESH AURANGABADKAR- THERMAL ANALYSIS OF I.C. ENGINE FINS BY VARIATION IN GEOMETRY FOR DIFFERENT MATERIALS

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

THERMAL ANALYSIS OF I.C. ENGINE FINS BY VARIATION IN GEOMETRY FOR DIFFERENT MATERIALS

[1] Shreya Bhawsar, [2]Jayprakash Patidar , [3]Sharad Lukhre,[4] Gautam Divekar, [5]Lokesh Aurangabadkar

[1,2,3,4]Students, Mechanical Engineering Department, [5] Assistant Professor, Mechanical Engineering Department

Indore Institute of Science and Technology, Indore, India

Abstract: **The main aim of this project is to analyse the heat dissipation rate from the fins by varying the geometry and for different materials. In this case, we have considered an air-cooled IC engine. Modelling cylinder block with fins is done by using SolidWorks. Internal combustion engine design specification is taken from the Honda CB Shine 125CC. Finite Element analysis is performed using ANSYS considering the steady-state thermal setup and overall heat flux distribution and temperature distribution are obtained. The same analysis is carried out for two more materials and the results are compared.**

IndexTerms -: Fins, FEA, Ansys

I. INTRODUCTION

Internal combustion engines (IC engines) plays a key role in the transportation industry, powering the vehicles that are the foundation of our modern societies. Increasing the efficiency of these engines is necessary to meet the requirements for better fuel consumption and reduced environmental impact. One of the key aspects affecting the performance of internal combustion engines is the thermal management system, particularly the design and material composition of heat-dissipating components such as fins.

The fins in an internal combustion engine are essential for the efficient removal of excess heat generated during combustion. The choice of material for these fins significantly affects their thermal conductivity, heat dissipation capabilities, and overall performance. The quest to optimize these factors has led researchers to explore advanced computational tools for in-depth thermal analysis. In the study of heat transfer, fins are surfaces that extend from an object to increase the rate of heat transfer to or from the environment by increasing convection. The amount of conduction flow, convection flow, or radiation in an object determines the amount of heat transfer. An increase in the temperature gradient between the object and its surroundings, an increase in the convection heat transfer coefficient, or an increase in the surface area of the object all increase heat transfer. Sometimes it is not possible or economical to change the first two options. So, adding a fin to an item increases the surface area and can sometimes be an economical solution to heat transfer problems. Fins are widely used in various engineering industries as a device to increase the rate of heat transfer from the surface. A fin is an area that widens from a part to increase the amount of heat switched in or out near the rising convection. To increase the temperature difference between the object and the environment, increasing the coefficient of the convective thermal switch or increasing the surface area of the object increases the heat dissipation. However, adding a fin to the object increases its surface area and can still be an opportunity for an affordable approach to heat transfer problems. The most commonly used materials for Fins are aluminum and its alloy, copper and its alloy, and brass. There are exceptional types of fin shape and length used in engineering applications to increase heat transfer rates. They are: rectangular fins, triangular fins, trapezoidal fins, circular segment fins, and square fins.

In this context, this study focuses on the thermal analysis of IC Engine fins using the powerful finite element analysis software ANSYS. The primary objective is to investigate the effect of different fin materials on heat dissipation efficiency. Understanding how different materials affect thermal performance can provide valuable insights for engineers and designers looking to improve the overall efficiency and reliability of internal combustion engines.

The paper is structured as follows: Section 2 provides a comprehensive review of related literature, highlighting previous research efforts and advances in the field of internal combustion engine thermal management. Section 3 describes the methodology and details the numerical simulations performed using ANSYS software. Section 4 presents the results of the thermal analysis, discussing the effects of material changes on fin performance. Section 5 concludes the paper with a summary of key findings, implications and avenues for future research.

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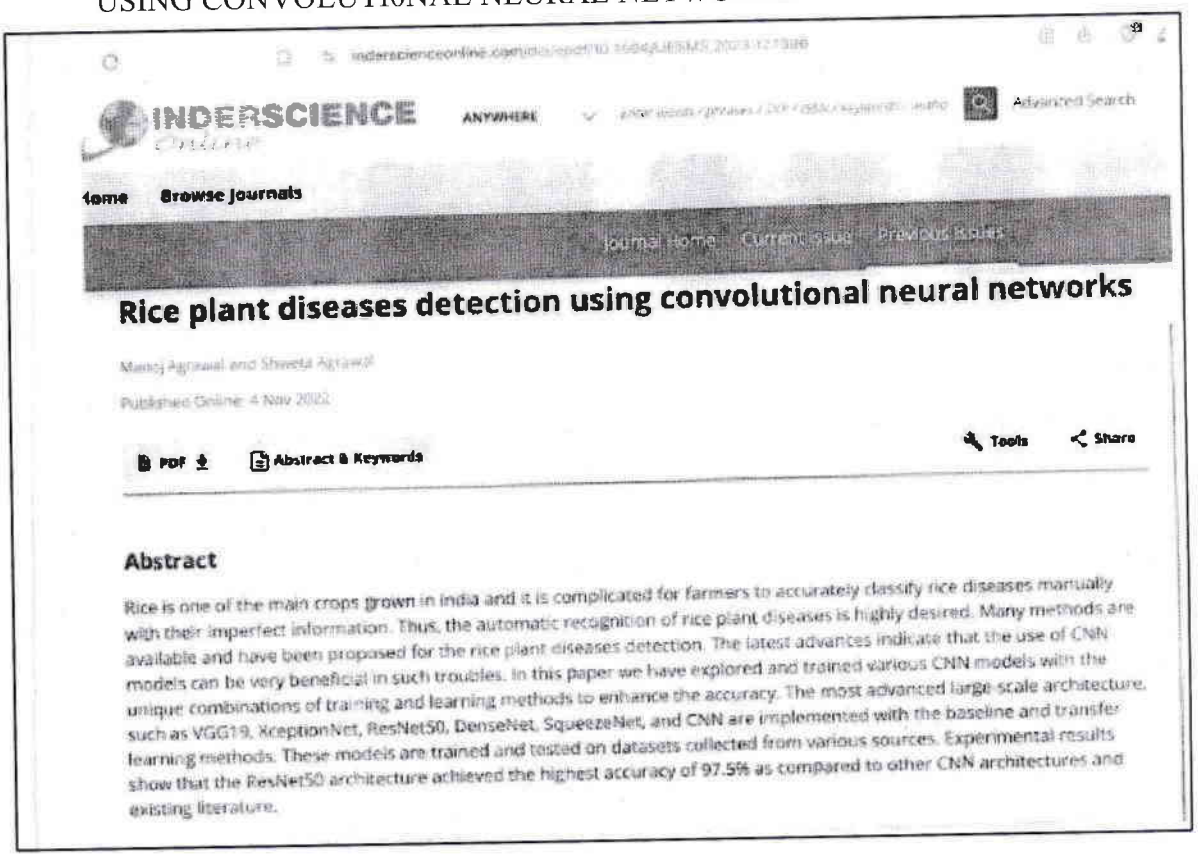
5. AUTHOR: SHWETA AGRAWAL- RICE PLANT DESEASES DETECTION USING CONVOLUTI0NAL NEURAL NETWORKS



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Rice plant diseases detection using convolutional neural networks

Manoj Agrawal and Shweta Agrawal

Published Online: 4 Nov 2022

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Abstract

Rice is one of the main crops grown in india and it is complicated for farmers to accurately classify rice diseases manually with their imperfect information. Thus, the automatic recognition of rice plant diseases is highly desired. Many methods are available and have been proposed for the rice plant diseases detection. The latest advances indicate that the use of CNN models can be very beneficial in such troubles. In this paper we have explored and trained various CNN models with the unique combinations of training and learning methods to enhance the accuracy. The most advanced large scale architecture, such as VGG19, XceptionNet, ResNet50, DenseNet, SqueezeNet, and CNN are implemented with the baseline and transfer learning methods. These models are trained and tested on datasets collected from various sources. Experimental results show that the ResNet50 architecture achieved the highest accuracy of 97.5% as compared to other CNN architectures and existing literature.

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6. AUTHOR: SHWETA AGRAWAL- A Systematic Review on Deep Learning-Based Automated Cancer Diagnosis Models

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DOI: 10.1111/jcmm.18144

REVIEW

WILEY

A systematic review on deep learning-based automated cancer diagnosis models

Ritu Tandon[1] | **Shweta Agrawal**[2] | **Narendra Pal Singh Rathore**[3] | **Abhinava K. Mishra**[4] | **Sanjiv Kumar Jain**[5]

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[3]Acropolis Institute of Technology & Research, Indore, India
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Abstract

Deep learning is gaining importance due to its wide range of applications. Many researchers have utilized deep learning (DL) models for the automated diagnosis of cancer patients. This paper provides a systematic review of DL models for automated diagnosis of cancer patients. Initially, various DL models for cancer diagnosis are presented. Five major categories of cancers such as breast, lung, liver, brain and cervical cancer are considered. As these categories of cancers have a very high percentage of occurrences with high mortality rate. The comparative analysis of different types of DL models is drawn for the diagnosis of cancer at early stages by considering the latest research articles from 2016 to 2022. After comprehensive comparative analysis, it is found that most of the researchers achieved appreciable accuracy with implementation of the convolutional neural network model. These utilized the pretrained models for automated diagnosis of cancer patients. Various shortcomings with the existing DL-based automated cancer diagnosis models are also been presented. Finally, future directions are discussed to facilitate further research for automated diagnosis of cancer patients.

KEYWORDS
cancer diagnosis, CNN, deep learning, machine learning, medical imaging, RNN

1 | INTRODUCTION

Cancer is considered as one of the most dangerous diseases in the world. Cancer is caused by the combination of genetic, environmental and lifestyle factors. In developing countries such as India, cancer is responsible for the maximum mortality rate with about 0.3% death per year.[1] For the correct diagnosis and treatment planning early detection of cancer plays a very important role. It is a tedious task for the radiologists, oncologists and pathologists. Detection of cancer at the initial stages can improve the percentage rate of cured patients and hence the survival rate. Medical imaging techniques like magnetic resonance imaging (MRI), X-ray and computed tomography (CT) are used most widely by medical practitioners for detecting cancer.[2] Detecting cancer manually through biopsy images may be biased and may have varied opinions from doctors to doctors depending on their expertise and the parameters like exact and correct quantitative procedures to classify the images as normal or cancerous one. Automated system to identify cancer through microscopic images can play a significant role to reduce human errors, dependency and time and can provide better results.[3]

Use of Machine Learning (ML) algorithms for cancer detection with medical imaging and feature extraction is gaining high

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7. AUTHOR: POONAM BAGORA- Exploring IoT Integration for Innovative Advancements in Civil Engineering

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Website: https://restpublisher.com/journals/bmes/
DOI: https://doi.org/10.46632/bmes/2/1/1

Exploring IoT Integration for Innovative Advancements in Civil Engineering

*Poonam Bagora, Shanu Sharma
Indore Institute of Science and Technology, Indore, Madhya Pradesh, India.
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Abstract: *Civil engineering developments have allocation with the recent trends of integration with IoT technologies and devices. This technology significantly improves automation and remote monitoring for various tasks in the construction process, building maintenance and safety, allowing operators to remain remote free ever than before. IoT is simply the connection of several devices to the internet as per the need. The real implication of IoT is beyond and complex than this. The IoT is meant to signify the establishment of entire networks of devices which are connected to the internet and with each other. Various sensors and monitors recognize the conditions, communicate them to online network or app, and transmit relevant information to your phone automatically. Internet of Things (IoT) is the technology that transforming construction industries, automate processes, and improves construction area and other relevant fields in civil like Global Positioning System (GPS), Water Resources Management and Water Supply, Smart Construction, Water & Waste Water Treatment, Traffic Management and Control, Waste Management, Concrete Technology, Environmental Impact Assessment & Monitoring and Smart Lighting System. This research paper covers implementation of IoT in all these fields of civil engineering and updating the current scenario. IoT is potentially used to increase the productivity, on-site safety, and operational efficiency. Through the placement of low-power sensors, managers can improve workers' visibility at every stage of a project in real-time, from planning to construction, and even task post-construction. The construction industry is bringing real-time information into processes that are long-standing. Internet of Things (IoT) devices and sensors are collecting job site data in a more affordable, efficient and effective way than can ever previously imagined. This latest technology represents exciting hikes forward to the civil engineering world. Foremost principles among these are integrated in this study for Internet of Things with the world of civil engineering.*
Keywords: Internet of Things, Smart city, Sensor, Devices, Automation

I. Introduction

Internet of thing is very latest subject for research today. It is related and most important topic in computer science engineering and communication engineering. IoT has an important role in civil engineering also. Now a day's Internet of things (IoT) has been in demand in smart construction. Internet of things is based on the sensors and internet technologies. IoT technology can generates intelligent machines that can communicate and taking smart actions based on situations without human help. It can be used in automation in home, traffic control, monitoring and management in railway, smart cities, river monitoring and all kinds of water resources management. There are different types of smart sensors are making for the security purpose. Smart water management that includes monitoring of flow of water, valves management, faults in valves and data analysis from different water meters is only possible with the help of IoT. In conventional method man power required but in case of IoT, it can be possible by automation without any human help. At present government working on smart city projects. We have seen that the application of IoT grow very fast across civil engineering field also, it will make more advanced to the industry. The IoT tools and sensors collect all the real time information required for the execution of work and then report to the system. That system finds the error and communicates the required information to the parties. Real time solution

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8. AUTHOR: Poonam Bagora- Enhancing Monsoon Predictions for The Upper Chambal Catchment Through Temporal and Spatial Downscaling of Predicted Future Precipitation

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Enhancing Monsoon Predictions for the Upper Chambal Catchment Through Temporal and Spatial Downscaling of Predicted Future Precipitation

CASE STUDY | Published: 06 July 2024
Volume 105, pages 703–717, (2024) Cite this article

Poonam Bagora & Sandeep Narulkar

118 Accesses Explore all metrics →

Abstract

From all kinds of scientific investigations and research it is said that the climate change impact will strongly affect the monsoon and the rainfall patterns in India. A catchment wise assessment is needed to understand the real impact on water management aspects related to water availability and floods. The study has been undertaken to gauge the forthcoming patterns of precipitation variability across upper Chambal River catchment area up to Gandhi Sagar Dam. The SDSM was harnessed to refine the results from GCMs spanning three projected timeframes: (2006–2036), (2037–2067), and (2068–2098) for

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9. Author: Shanu Sharma- Exploring IoT Integration for Innovative Advancements in Civil Engineering

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Exploring IoT Integration for Innovative Advancements in Civil Engineering

***Poonam Bagora, Shanu Sharma**
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*Corresponding Author E-mail: poonambagora86@gmail.com

Abstract: *Civil engineering developments have allocation with the recent trends of integration with IoT technologies and devices. This technology significantly improves automation and remote monitoring for various tasks in the construction process, building maintenance and safety, allowing operators to remain remote free ever than before. IoT is simply the connection of several devices to the internet as per the need. The real implication of IoT is beyond and complex than this. The IoT is means to signify the establishment of entire networks of devices which are connected to the internet and with each other. Various sensors and monitors recognize the conditions, communicate them to online network or app, and transmit relevant information to your phone automatically. Internet of Things (IoT) is the technology that transforming construction industries, automate processes and improves construction area and other relevant fields in civil like Global Positioning System (GPS), Water Resources Management and Water Supply, Smart Construction, Water & Waste Water Treatment, Traffic Management and Control, Waste Management, Concrete Technology, Environmental Impact Assessment & Monitoring and Smart Lighting System. This research paper covers implementation of IoT in all these fields of civil engineering and updating the current scenario. IoT is potentially used to increase the productivity, on-site safety, and operational efficiency. Through the placement of low-power sensors, managers can improve worksite visibility at every stage of a project in real-time, from planning to construction, and even task post-construction. The construction industry is bringing real-time information into processes that are long-standing. Internet of Things (IoT) devices and sensors are collecting job site data in a more affordable, efficient and effective way than can ever previously imagined. This latest technology represents exciting bikes forward in the civil engineering world. Foremost principles among these are integrated in this study for Internet of Things with the world of civil engineering.*

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10. Author: Mukesh Patidar- An Ultra-Dense and Cost-Efficient Coplanar RAM Cell Design in Quantum-Dot Cellular Automata Technology

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An ultra-dense and cost-efficient coplanar RAM cell design in quantum-dot cellular automata technology

Published: 01 November 2023
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Mukesh Patidar ✉, Ankit Jain, Keshav Patidar, Surendra Kumar Shukla, Ali H. Majeed, Namit Gupta & Nilesh Patidar

212 Accesses 1 Citation Explore all metrics →

Abstract

The quantum-dot cellular automata (QCA) are an alternative nanotechnology for overcoming the drawbacks of traditional CMOS technology. QCA is one of the alternative transistors-less nanotechnologies for the implementation of computational circuits. It can also be used for implementation in molecular and nanoscale structures. In this paper, ultradense and quantum-cost-efficient random access memory (RAM) cell designs have been proposed, which are critical for designing large memory circuits. A novel loop-based RAM cell design using a proposed 2:1 multiplexer (MUX) and a three-input majority gate has been implemented on different quantum-dot cell sizes such as 14 × 14 nm^2, 16 × 16

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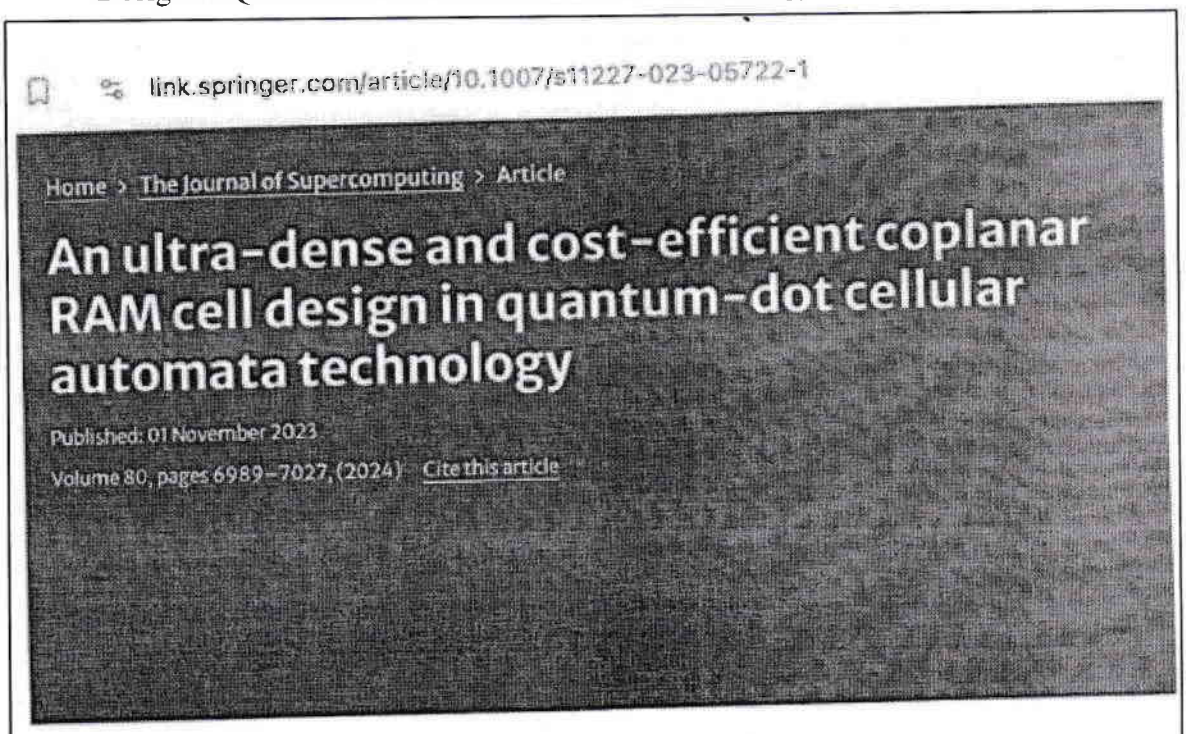
11. Author: Keshav Patidar- An Ultra-Dense and Cost-Efficient Coplanar RAM Cell Design in Quantum-Dot Cellular Automata Technology



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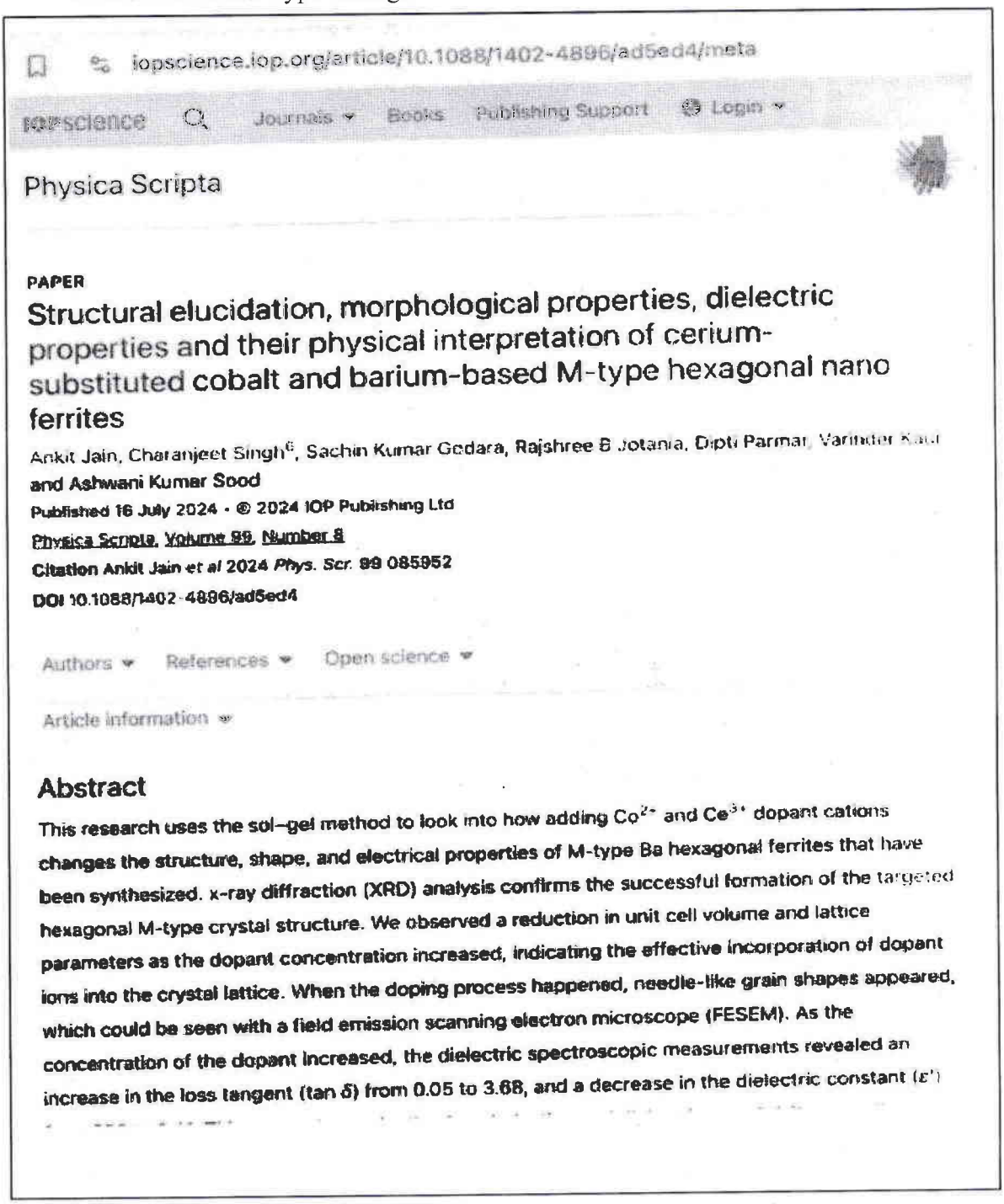
Saturday, December 21, 2024

13. Author: Ankit Jain- Structural Elucidation, Morphological Properties, Dielectric Properties and Their Physical Interpretation of Cerium-Substituted Cobalt and Barium-Based M-Type Hexagonal Nano Ferrites



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Physica Scripta

PAPER

Structural elucidation, morphological properties, dielectric properties and their physical interpretation of cerium-substituted cobalt and barium-based M-type hexagonal nano ferrites

Ankit Jain, Charanjeet Singh[6], Sachin Kumar Godara, Rajshree B Jotania, Dipti Parmar, Varinder Kaur and Ashwani Kumar Sood

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Physica Scripta, Volume 99, Number 8

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Authors References Open science

Article information

Abstract

This research uses the sol–gel method to look into how adding Co^{2+} and Ce^{3+} dopant cations changes the structure, shape, and electrical properties of M-type Ba hexagonal ferrites that have been synthesized. x-ray diffraction (XRD) analysis confirms the successful formation of the targeted hexagonal M-type crystal structure. We observed a reduction in unit cell volume and lattice parameters as the dopant concentration increased, indicating the effective incorporation of dopant ions into the crystal lattice. When the doping process happened, needle-like grain shapes appeared, which could be seen with a field emission scanning electron microscope (FESEM). As the concentration of the dopant increased, the dielectric spectroscopic measurements revealed an increase in the loss tangent (tan δ) from 0.05 to 3.68, and a decrease in the dielectric constant (ε')

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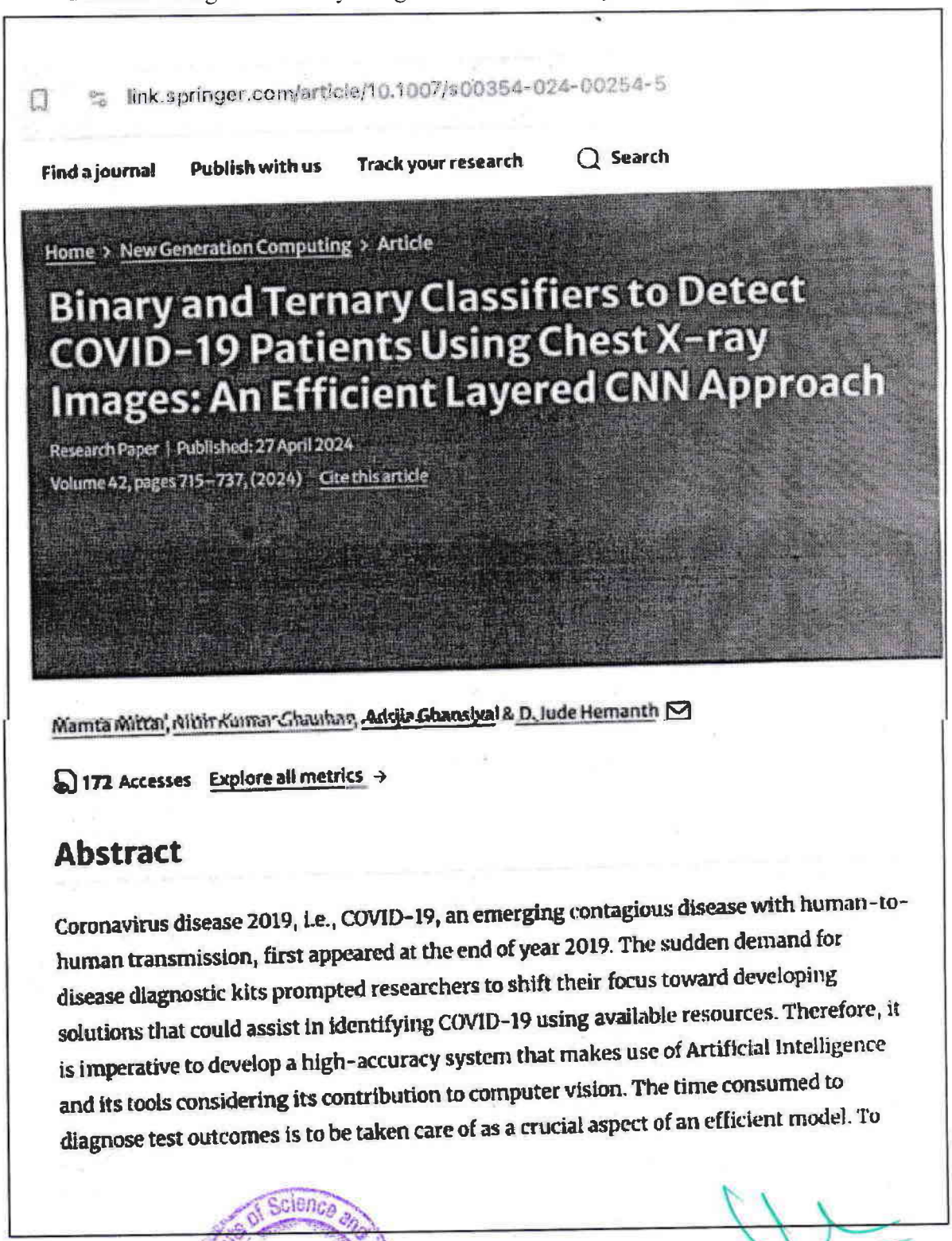
14. Author: Nitin Kumar Chauhan- Binary and Ternary Classifiers to Detect COVID-19 Patients Using Chest X-ray Images: An Efficient Layered CNN Approach



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Binary and Ternary Classifiers to Detect COVID-19 Patients Using Chest X-ray Images: An Efficient Layered CNN Approach

Research Paper | Published: 27 April 2024

Volume 42, pages 715–737, (2024) Cite this article

Mamta Mittal, Nitin Kumar Chauhan, Adcjia Ghansiyal & D. Jude Hemanth

172 Accesses Explore all metrics →

Abstract

Coronavirus disease 2019, i.e., COVID-19, an emerging contagious disease with human-to-human transmission, first appeared at the end of year 2019. The sudden demand for disease diagnostic kits prompted researchers to shift their focus toward developing solutions that could assist in identifying COVID-19 using available resources. Therefore, it is imperative to develop a high-accuracy system that makes use of Artificial Intelligence and its tools considering its contribution to computer vision. The time consumed to diagnose test outcomes is to be taken care of as a crucial aspect of an efficient model. To

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15. Author: Devendra Singh Mandloi- Energy Meter and Electricity Theft Detection using IOT and ESP32

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ISSN 2583-8911
Vol. 2, pp. 15-20

Energy Meter and Electricity Theft Detection using IOT and ESP32

Devendra Singh Mandloi[1], Rushika Diwekar[2], Ritika Diwekar[3], Ankit Maley[4]
[1-4] Indore Institute of Science and Technology, Indore, M.P. 453331

ABSTRACT

An obvious issue with electric power networks is power theft, which results in significant financial losses and erratic electricity delivery. In a nutshell, power theft is the use of energy without the supplier's knowledge. It is illegal and has grown to be a big issue in India. India has suffered the most losses overall, at $16.2 billion. Power theft may occur in a variety of ways. One such method involves a registered customer either fiddling with the meter to make it read less or no usage or circumventing the meter by hooking around it to a live cable on the business side. It is necessary to identify power theft to eliminate it.In this paper, we minimize the involvement of humans in energy conservation. Customer costs are raised by electrical theft. Thus, the purpose of this program is to identify stealing. The upper- and lower-meters' readings are tested by ESP32. When theft happens, a notice will appear on Thing speak if there is a power differential between a large meter connection and a lower meter connection.

1. INTRODUCTION

One of the most significant issues facing the globe today is the energy crisis. By keeping a close eye on how we utilize our energy and preventing waste, we may somewhat mitigate the energy issue. Power companies must deal with several issues, including power theft. The cost of an electricity bill may rise because of electricity theft. Power theft will be easily detected by this technique. The ESP32, which has an integrated WiFi module for IOT connections, and the Thing Speak app, which we will use to verify the sensor values and provide information to users, make up this IOT electricity theft detection system.

For many nations, load shedding, or power outages, is a regular issue. It can be decreased to a certain extent by keeping an accurate eye on power usage and preventing electric energy waste. The main difficulty is that users are unable to monitor their power usage, which makes it difficult to continue inspection or energy monitoring quickly. Only the area units on the bills issued by the electricity distribution authority will receive a consumption plan. Throughout this period, customers have always been kept in the dark about their energy usage, and these bills are only sent out once a month. This technique needs to be used often to quickly manage the amount of energy used in each month. Occasionally, a consumer refuses to pay many invoices because they don't understand why they received them. As a result, the power distribution authority turns off the power since the client hasn't paid. This causes the consumer to suffer for several months, and sometimes it takes a long time to fix the problem.

One of the biggest issues facing the globe today is power-related. It is also acknowledged as a critical issue due to the industry and reliance on technology. There are many kinds of power supply, distribution, and energy consumption issues in this planet. In the modern generation, efficient use of energy is crucial. Energy can only be transformed from one form into another; it cannot be created or destroyed. Therefore, the best course of action is to closely monitor all energy usage and prevent power wasting. However, energy monitoring cannot effectively prevent power theft by individuals; the expenses incurred by a distributor to investigate consumer electricity theft exceed the costs incurred by the business.When a supplier's customer reports suspected power theft, the supplier may be held accountable for generation, network, and balancing expenses linked to the customer's entrance into the settlement system and entry into estimations of electricity creep.

The primary cause of the theft is the failure to identify and apprehend the customer who stole the electricity, jeopardizing all power supply security measures. The main causes of this issue are an inadequate electrical distribution system and a lack of mechanisms.

2. KEY CONTRIBUTION OF THIS PAPER

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16. Author: Ankit Saxena- Simulation and Analysis of the code Domain NOMA with UFMC for 5G Wireless Networks

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Simulation and Analysis of the Code Domain NOMA with UFMC for 5G Wireless Networks

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Ravi Sindal (*Professor, IET, DAVV, Indore, India*)
Ankit Saxena (*Associate Professor, Indore Institute of Science and Technology, Indore, India*)

***Abstract* – In fifth generation (5G) wireless networks, radio access techniques and multi-carrier waveforms play a vital role in meeting the diversified demands of ultra-low latency, massive connectivity, and higher throughput. Multi-access schemes used conventionally in 4G system was Orthogonal Multiple Access (OMA) technique. The OMA techniques suffer from inefficient spectrum utilization, high latency, and supports a limited number of users. Next-generation networks, Non-Orthogonal Multiple Access (NOMA), has a great potential, in which multiple users are simultaneously served using the same time, frequency, or code resource increasing the throughput. Code domain-NOMA (CD-NOMA) is the key technique implemented in the system design where multiple users are distinguished based on unique user-specific spreading codes. The NOMA system could significantly benefit from Universal Filtered Multi-Carrier (UFMC) modulation waveform in terms of flexibility, spectral efficiency, compatibility with Multiple Input Multiple Output (MIMO) technique, and relaxed synchronization requirements. The novel integrated system proposed in the paper is CD-NOMA-UFMC with convolutional codes. The major outcome of the paper is that the combination of UFMC air interface modulation technique with CD-NOMA access method can be the most effective way to meet the growing demands of 5G.**

***Keywords* – CD-NOMA, convolutional codes, UFMC.**

I. INTRODUCTION

The next-generation mobile communication networks must deliver advanced services like augmented reality (AR) and virtual reality (VR) with efficient bandwidth usage to support them. Major 5G use cases need to support ultra-dense networks with diverse end-to-end connectivity. The heterogeneous needs like extremely high speed, reliability, user fairness, and low latency are to be addressed in system design [1]. The use cases in 5G are enhanced mobile broadband (eMBB) to provide a high data rate at gigabits per second, ultra-reliable low latency communications (URLLC) to optimize throughput and delay with latency less than 1 ms [2]–[4]. Another use case is massive machine-type communications (mMTC), where huge number of devices with small data packets is connected [5]. It is very challenging to facilitate all these requirements and design an optimized system in the context of spectrum utilization and throughput.

In the view of spectrum scarcity, it becomes crucial to identify the techniques focused on efficient spectrum management to meet the massive device connectivity and huge data rate. Effective utilization of the available spectrum needs to enhance the network architecture with some emerging technologies proposed in [6]. As seeing the limited spectrum, multiple access (MA) schemes are to be applied for efficient radio resource management. MA schemes mainly serve the users by sharing the radio resources and discriminating the user channels based on time, frequency, or code [7]. In Orthogonal Multiple Access (OMA) schemes, resource blocks orthogonal either in time, frequency, or code domains are allocated to users [8]. The OMA is effective when the number of active users is less than the number of block resources. Non-orthogonal multiple access (NOMA) is a promising technique and envisioned as a key component in 5G mobile systems to serve a larger number of active users with efficient utilization of available resources [9]. In NOMA, non-orthogonal resource blocks are allocated to serve multiple users. The NOMA scheme allows the Next Generation Node B (gNB) to simultaneously serve all users by using the entire bandwidth to transmit data. To deal with interference at the receiver side, different users are detected based on the difference of power or spreading codes, leading to two main corresponding approaches: power-domain NOMA (PD-NOMA) and code-domain NOMA (CD-NOMA). The concept of NOMA emerged from PD-NOMA, so let us understand the concept of PD-NOMA and its limitations, which further leads to CD-NOMA.

In PD-NOMA, different signals generated by different users at the same time or frequency block are combined using superposition coding (SC) at the BS. The superposition is done with different allocated power coefficients to all mobile users. Power coefficients of users are allocated according to their channel conditions, in an inversely proportional manner. The SC is a technique of simultaneously communicating information to several receivers by a single source [10], [11]. In downlink PD-NOMA network, for decoding, the user with a stronger channel gain uses successive interference cancellation (SIC). The process involved in decoding the superimposed messages is analysed mathematically in [12], to decode its signal free of interference. The user with weaker channel gain treats the signals of the stronger users as noise [13]. To achieve the superior spectral efficiency of NOMA, energy efficiency

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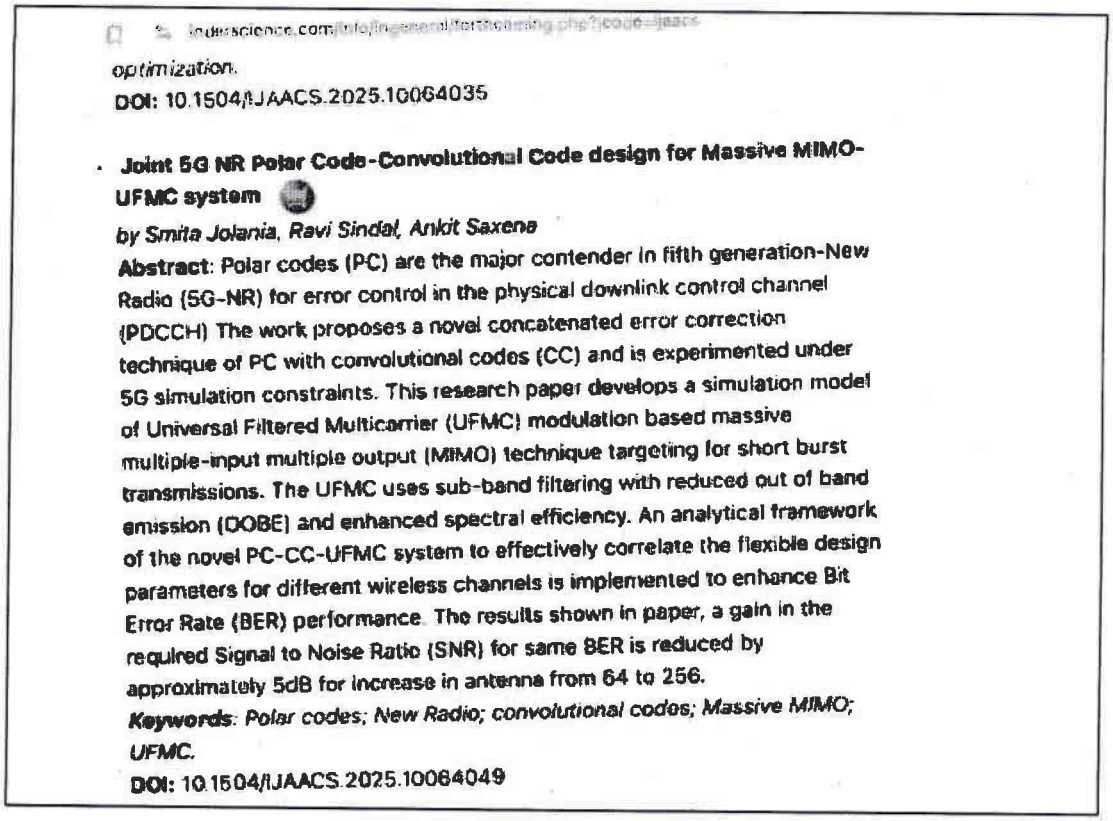
17. Author: Ankit Saxena- Joint 5G NR Code-Convolutional Code Design for Massive MIMIO- UFMC System



optimization.
DOI: 10.1504/IJAACS.2025.10064035

- **Joint 5G NR Polar Code-Convolutional Code design for Massive MIMO-UFMC system**
by Smita Jolania, Ravi Sindal, Ankit Saxena
Abstract: Polar codes (PC) are the major contender in fifth generation-New Radio (5G-NR) for error control in the physical downlink control channel (PDCCH) The work proposes a novel concatenated error correction technique of PC with convolutional codes (CC) and is experimented under 5G simulation constraints. This research paper develops a simulation model of Universal Filtered Multicarrier (UFMC) modulation based massive multiple-input multiple output (MIMO) technique targeting for short burst transmissions. The UFMC uses sub-band filtering with reduced out of band emission (OOBE) and enhanced spectral efficiency. An analytical framework of the novel PC-CC-UFMC system to effectively correlate the flexible design parameters for different wireless channels is implemented to enhance Bit Error Rate (BER) performance. The results shown in paper, a gain in the required Signal to Noise Ratio (SNR) for same BER is reduced by approximately 5dB for increase in antenna from 64 to 256.
Keywords: *Polar codes; New Radio; convolutional codes; Massive MIMO; UFMC.*
DOI: 10.1504/IJAACS.2025.10064049

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18. Author: Namrata Kaushal- Some Generalized Continuous Mapping on Intuitionistic Fuzzy Bitopological Space

Indian Journal of Mathematics
Volume 65, No. 3, 2023

CONTENTS

Vijayakumar S. Muni, Kallu Vetty Muhammed Rafeek, Gudala Janardhana Reddy, and Raju K. George
OBSERVABILITY OF MULTI-AGENT NETWORKS OVER RANDOM-WALK NORMALISED LAPLACIAN DYNAMICS 295-322

Abstract: This work considers the consensus of multi-agent networks, wherein agents' states agree on the dynamics governed by the random-walk normalised Laplacian matrix. The interaction topology of the network is assumed to be time-invariant, undirected, with communication link weights set to unity. The dynamics are defined over a continuous time interval. Within the network, certain agents are designated as sensors, possessing a complete priori known states. The rest of the agents are non-sensors, with entirely unknown states. The objective of this study is to investigate the accurate retrieval of complete internal states of non-sensors, a challenge known as the observability problem. We propose a range of necessary and sufficient conditions based on spectral characterisation, including matrix-rank criteria, for evaluating observability. While some presented results are necessary but not sufficient for observability, others are sufficient but not necessary. Our analysis employs tools from algebraic graph theory and spectral techniques. Proposed findings are validated through illustrative examples. Inference diagrams elucidate the communication flow between sensors and non-sensors, offering deeper insights into observability analysis. We provide an illustrative example of a network where after verifying its observability behaviour, we accurately recollected the complete internal states of its non-sensors. This example also highlights the general observation that using partial knowledge of sensors' states may lead to inaccurate non-sensors' states recovery. Furthermore, we derive a formula to compute the minimum number of sensors required to ensure network observability. In essence, this work contributes to understanding observability challenges and underscores the crucial role of sensor distribution in multi-agent network dynamics.

A Aasma and P.N. Natarajan
MATRIX TRANSFORMS BETWEEN SUBSPACES OF SUMMABILITY DOMAINS OF MATRICES DETERMINED BY SPEED OF CONVERGENCE 323-341

Abstract: Let X, Y be two subspaces of summability domains of matrices with real or complex entries defined by speeds of convergence, i.e. by monotonically increasing positive sequences λ and μ. In this paper, we define the notion of absolute summability with speed, and give necessary and sufficient conditions for a matrix M (with real or complex entries) to map X into Y, where X is the subspace of summability domain of

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19. Author: Neena Thacker- IMPACT OF INTERNAL & EXTERNAL COMMUNICATION ON THEEFFECTIVENESS OF PUBLIC SPEAKING

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IMPACT OF INTERNAL & EXTERNAL COMMUNICATION ON THE EFFECTIVENESS OF PUBLIC SPEAKING

DR. NEENA THACKER,
Assistant professor in English,
IIST, Indore

ABSTRACT

Every human being spends a major part of the day in communicating with others he or she is reading or writing, speaking, or listening, viewing or drawing. When a child is born his or her first out is crying to tell the people around that he or she is born alive. Before he or she learns to speak, the child demands water or milk or for change of napkin. Then the child learns to speak and write. The child often engaged in listening the parents, teachers, and others or in watching television, reading books, poems etc. later, the person started to communicate in the office or the working place or other places. Death to the person wants to talk to his family members before breathing his last. In this way communication is essential throughout life. Communication mostly breaks down, not in relaxed situations among friends, but in stress condition such as job interviews, arrests, counseling interviews, or other similar situations. These situations have been called "gate keeping encounters." At these times, an individual is unaware of why problem exists and try to attempt on the situation that might make matters worse. Communication is not always successful due to certain barriers. Miscommunication can originate at the level of transmitter, of the medium or of the receiver. A proper recognition of these communication barriers and the methods of overcoming them are essential for proper communication flow. It is essential to deal and cope up with these communication barriers so as to ensure smooth and effective communication in the academic as well as in the working place.

"The ability to communicate is the primary factor that distinguishes human beings from animals, and it is the ability to communicate well that distinguishes one individual from another."

Introduction

Every human being spends a major part of the day in communicating with others he or she is reading or writing, speaking, or listening, viewing or drawing. When a child is born his or her first out is crying to tell the people around that he or she is born alive. Before he or she learns to speak, the child demands water or milk or for change of napkin. Then the child learns to speak and write. The child often engaged in listening the parents, teachers, and others or in watching television, reading books, poems etc. later, the person started to communicate in the office or the working place or other places. Death to the person wants to talk to his family members before breathing his last. In this way communication is essential throughout life.

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(Dedicated to Professor V. P. Saxena on His 80th Birth Anniversary Celebrations)

ON COMPLEX VALUED FUZZY b - METRIC SPACE

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Abstract

In this paper, the notion of complex-valued fuzzy b-metric space is introduced. In this newly developed structure, we have established a sufficient condition for a sequence to be Cauchy. Moreover, under suitable conditions of contractive type, the existence and uniqueness of fixed points of self-maps are established in this structure. To demonstrate the validity of the hypothesis and the degree of generality of our results, some examples are also furnished.

2020 Mathematical Sciences Classification: 47H10, 54H25
Keywords and Phrases: Complex valued fuzzy metric, complex valued fuzzy b-metric space, b-norm, Cauchys sequence, fixed point.

1 Introduction

In 1965, Zadeh [17] introduced the concept of fuzzy sets. Due to the widespread use of this concept in various fields, numerious authors have expansively developed the theory of fuzzy sets and its applications in variety of domain. Using the concept of fuzziness, Kramosil and Mechalek [9] introduced the notion of fuzzy metric space by generalizing the concept of probabilistic metric space. Grabiec [7] extended the well-known fixed point theorem of Banach[4] in complete fuzzy metric space in the sense of Kramosil and Michalek. In a paper, George and Vermani [6] modified the concept of fuzzy metric space and defined Hausdroff topology on fuzzy metric space. By observing weaker conditions of the triangle inequality, Bakhtin [2] and Czerwik [5] introduced the structure of b-metric space and generalized the Banach contraction principle. In this sequence, a relation between b-metric and fuzzy metric spaces has been studied by Hasanzadeh et al.[8]. On the other hand Sedghi et al.[15] introduced the notion of b-fuzzy metric spaces by weakening the triangle inequality. The concept of fuzzy b-metric space was first developed by Nadaban [11]. Recently, Mehmood et al. introduced the concept of extended fuzzy b-metric space [10].

In a paper, Buckley [3] introduced the fuzzy complex numbers and fuzzy complex analysis. After that many authors initiated work in fuzzy complex number by acknowledging the Buckleys work. In this series Ramot et al.[12] established the innovative concept of complex fuzzy sets. In this context, the range of membership function of complex fuzzy set is not limited to $[0, 1]$ as the membership function of traditional fuzzy set but, it extended to the unit circle in the complex plane. Then, here we see that the range of membership function of crisp set $\{0, 1\}$ is extended to the range of membership function of fuzzy set $[0, 1]$ and the range of membership function of fuzzy set $[0, 1]$ is extended the range of membership function of complex fuzzy set to the unit circle in complex plane.

In 2011, Azam et al.[1] defined a partial order $\precsim$ on set of complex numbers $\mathbb{C}$ for comparing the two complex numbers and introduced the concept of complex valued metric spaces. Also they obtained sufficient conditions for the existence of common fixed points of a pair of mappings satisfying contractive type conditions.

Recognizing the notion of complex valued fuzzy set of Ramot et al.[12], Sigh et al.[14] developed the structure of complex valued fuzzy metric spaces. They also established the complex valued fuzzy version of Banach contraction principle.

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EXPLORING VOLUME POLYNOMIAL: REVEALING M-CONVEXITY IN MATROID THEORY

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ABSTRACT

This study delves into the multifaceted role of volume polynomials in encoding graded Poincare duality algebras and matroid theory. Volume polynomials (VPA) not only quantify degrees of ample divisors in algebraic geometry but also provide a combinatorial lens on transversals in bipartite graphs through the dragon marriage theorem. Demonstrating their resilience under multiplication and linear transformations, the research establishes the Lorentzian property of volume polynomials within the realm of matroids. Moreover, it offers a new perspective on combinatorial structures by revisiting the Hall-Rado formula. This research leads to a deeper understanding of the interaction among algebra, combinatorial and geometric models, demonstrating the unifying power of volume polynomials in many areas of mathematics.

Mathematics Subject Classification: 52B35, 52B45, 13A70, 14T15

Keywords: Combinatorial, Log concavity, Lorentzian polynomials, M-convexity, volume polynomials.

1. INTRODUCTION

Matroid theory, a vibrant branch of combinatorial mathematics, offers a flexible and powerful framework for investigating diverse mathematical structures. The concept of M-convexity, introduced by K. Adiprasito et. al. in [1] extends the classical theory of convex sets into the realm of matroids. This notion is further explored by various researchers to offer a fresh perspective on the combinatorial structure of matroids and their polytopes (see [2], [3], [5], [16]). As we delve into the depths of matroid theory and its connections to various mathematical disciplines, we embark on a journey to unravel new perspectives and deepen our understanding of this fascinating area of mathematics.

The volume polynomial, as studied by F. Ardila, et. al. [5] in their seminal work served as a potent algebraic tool. It encapsulates essential information about the structure of a matroid and its associated polytope, providing insights into the geometric properties of matroids and their connections with convex geometry. Moreover, M. Aguiar and F. Ardila's [2] research laid the groundwork for understanding algebraic structures relevant to matroids enriching our comprehension of the underlying mathematics.

Lorentzian polynomials are associated to matroid theory and negative dependence properties. P. Branden & J. Huh [9] developed a theory around Lorentzian polynomials and proved that the multivariate

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