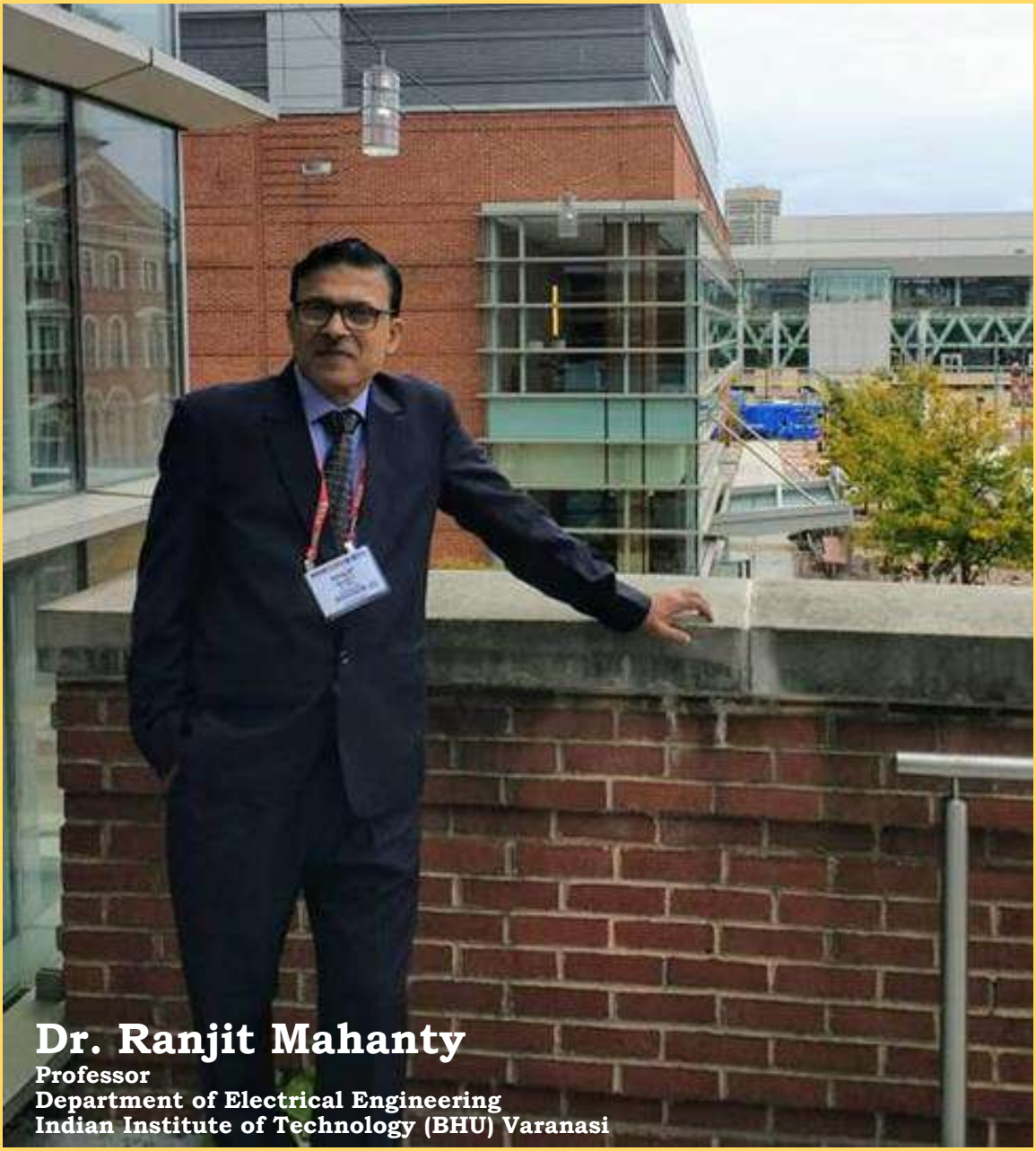
June 2023

Vol No. 6

अनुसंधान

(KIET Research Magazine)



Dr. Ranjit Mahanty
Professor
Department of Electrical Engineering
Indian Institute of Technology (BHU) Varanasi

Research and Development
KIET Group of Institution
Delhi-NCR, Ghaziabad, Uttar Pradesh, India-201206

KIET – A GLANCE

Overview

KIET Group of Institutions (KIET) was established in 1998 at Ghaziabad (Delhi-NCR) with an annual intake of 180 students. It is an AICTE-approved Institution affiliated to Dr. A.P.J Abdul Kalam Technical University (AKTU), Lucknow (formerly UPTU). KIET offers UG & PG courses in four disciplines i.e., Engineering, MBA, MCA & Pharmacy. With the glorious legacy of 25 years, the Institute now has 6800+ students and is empowered with 350+ highly qualified full-time faculty to nurture our students. Institute credentials & Centers of Excellence can be viewed @ our website www.kiet.edu.

The Institute has NAAC accreditation status with an 'A+' Grade & all its eligible programs are NBA accredited. The effort of the institute in imparting technical education has been recognized in terms of achieving 88th rank in the Pharmacy discipline, Rank Band (151-200) for Engineering and Innovation (51-100) Rank band in the National Institutional Ranking Framework (NIRF) - India Ranking 2023 released by Ministry of Education, GOI. The Institute has to its credit QS-I GAUGE 'Diamond' rating and Scientific and Industrial Research Organization (SIRO) recognition by the Department of Scientific and Industrial Research (DSIR) etc. The Institute also has Technology Business Incubator (TBI) set up in association with NSTEDB, DST, Govt. of India to promote Innovation & Entrepreneurship in the Institute and the adjoining areas. Since its inception 125 incubate companies have established their venture in KIET-TBI. At present 36 numbers of incubate are operational.

With a rich alumni base of 19000+ students spread in all the nooks and corners of the world, the KIET Group of Institutions is moving efficiently towards its vision of shaping young minds with skill-oriented & value-based education as these alumni serve the dual purpose of mentoring the present students, as well as opening new doors for them.

Assistant Dean, Research Data Management

Dr. Abhishek Sharma

Associate Prof. (ECE)

Assistant Dean, Promotion & Implementation of Sustainable Development in Research

Dr. Minakshi Karwal

Associate Prof. (AS)

Assistant Dean, Student Research Promotion in KIET

Dr. Shubham Shukla

Associate Prof. (ECE)

Assistant Dean, Research Quality Assurance

Dr. Himanshu Chaudhary

Assistant Prof. (ECE)

Assistant Dean, Industrial & Academia Research Collaboration & Promotion

Dr. Brijesh Singh

Associate Prof. (EN)

Member Secretary (Intellectual Property Right Committee, Research Data Management)

Dr. Shivani

Assistant Prof. (ECE)

Member Secretary (Intellectual Property Right Committee, Research Data Management)

Dr. Richa Goel

Associate Prof. (KSOP)

KIET Collaborative Research and Development Committee (CRDC)

Chairman

Dr. Vibhav Kumar Sachan

Prof. & HoD (ECE)

Vice – Chairman

Dr. Vipin Kumar

Prof. & Addl. HoD (AS)

Member-Secretary

Dr. Brijesh Singh

Associate Professor (EEE)

Departmental Research Committee

Associate Heads

Dr. Vipin Kumar, Prof. & Addl. HoD (AS)

Dr. Ashu Mittal, Prof., KIET School of Pharmacy

Dr. Arunesh Chandra, Prof., Mechanical Engineering

Dr. Sanjeev Singh, Prof., Civil Engineering

Dr. Dilkeshwar Pandey, Prof., Computer Science Engineering

Dr. Vikas Goel, Prof. & Addl. HoD, Information Technology

Dr. Sapna Juneja, Prof., Computer Science

Assistant Heads

Dr. Varun Gupta, Associate Prof., Electrical and Electronics Engineering

Dr. Meenakshi Tyagi, Associate Prof., School of Management

Dr. Amit Gupta, Associate Prof., School of Computer Applications

Dr. Parvin Kr Kaushik, Associate Prof., Electronics and Communication Engineering

Ms. Garima Singh, Assistant Prof., Computer Science, and Information Technology

Ms. Richa Singh, Assistant Prof., Computer Science Engineering (AI and AIML)

CONTENTS

***

Message from the Face of Cover Page

Dear Readers,

It is my pleasure to wish the contributors of the monthly Research Magazine, "अनुसंधान (KIET Research Magazine)". As an educator and a fellow researcher, I understand the dedication and passion required to move forward on the noble path of knowledge exploration. Your commitment to pushing the frontiers of research and contributing to the collective wealth of human understanding is truly commendable. I would like to begin by congratulating the team KIET R&D for their extraordinary efforts in creating an environment that fosters an excellent research culture. Developing a vibrant research ecosystem within an institution is important for fostering innovation and new ideas. The fact that KIET has managed to achieve this is a testimony to the collective vision and dedication of the entire research community at the Institute. Please accept my sincere appreciation for creating a space where ideas can flourish, and researchers can move forward. The research progress at KIET is indeed remarkable and deserves praise. The diverse fields of study and depth of inquiry displayed in the research projects are testimony to the dedication and expertise of the researchers. It is inspiring to see the tangible impact of KIET's research in various fields.

KIET's research progress is commendable, and in this sequence, I would like to suggest something for the future. As we move towards an increasingly interconnected world, it is essential to build strong relationships with industries and focus on industry-oriented research. Collaborative ventures with industries can open new avenues for research and innovation, providing valuable insights into real-world problems and potential solutions. Industry-oriented research not only enhances the relevance of your work but also opens opportunities for technology transfer and commercialization. By engaging with industries, you can create a feedback loop that enables your research to be integrated into practical applications, thus contributing to economic growth and development. Furthermore, collaboration with industries exposes you to emerging challenges and trends, allowing you to tailor your research to meet current and future demands.

I would like to convey my heartiest congratulations to KIET Research Magazine for its successful promotion and presence in the research community. The platform will serve as a window to the remarkable research being done at KIET, showcasing the intellectual expertise and ingenuity of the researchers. I have no doubt that this journal will become a valuable resource for researchers, academicians, and industry professionals, fostering collaboration and the exchange of knowledge. In conclusion, I wish all the researchers at KIET continued success and perfection in their scholarly pursuits. May your dedication to research, your spirit of inquiry, and your commitment to excellence continue to push the boundaries of human knowledge and contribute to a brighter and more prosperous future for all of us.

With the warmest congratulations and best wishes.

Dr. Ranjit Mahanty,
Professor
Department of Electrical Engineering
Indian Institute of Technology (BHU) Varanasi

Message from Chief Patron

Dear Members of the Research Community,

As the Director of the KIET Group of Institutions, I am pleased to introduce our latest research endeavours and their possibilities for shaping the future. Our vision is to push the boundaries of knowledge and innovation, and through the tireless efforts of our dedicated researchers, we can achieve this goal.

In the coming months, we will focus on various cutting-edge research topics, including artificial intelligence, biotechnology, and renewable energy. We aim to use these fields to address the most pressing challenges faced by society today, such as climate change, disease, and poverty.

We believe that by fostering an environment of collaboration and open communication, we can make significant progress in these areas. Our researchers will work closely with industry partners, government agencies, and other academic institutions to share their findings and develop new technologies and solutions.

We are excited about our research's possibilities and look forward to sharing our progress with the community. We expect our work to lead to breakthroughs and technologies that will positively impact society, and we are committed to making our research accessible to all who can benefit from it.

Finally, I would like to extend my warmest wishes to all our researchers and partners. Their hard work and dedication make our institute a leading force in the research community, and we are honoured to have you on board. Together, we can achieve remarkable things.

Dr. (Col) A Garg

Director

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Message from Patron

Dear All,

It gives me great pleasure, in my capacity as Joint Director at the KIET Group of Institutions, to introduce this research magazine that focuses on the work that is being done at our institute and its future perspectives on knowledge and innovation. Our goal is to expand the horizons of both knowledge and innovation, and we have confidence that our researchers will unfold every stone and reach new heights.

By encouraging teamwork and open communication, we will be able to make progress in these areas. Our researchers will collaborate with industrial partners, government organizations, and other academic institutions to develop new technologies and solutions, share their findings, and disseminate their findings.

Our studies will ultimately result in scientific discoveries and technological advancements that are beneficial to society, and we intend to share these with anybody who could make use of them.

In closing, please accept my warmest regards for our researchers and partners. We are grateful for all the hard work and dedication you have shown in making our Institute a pioneer in research. Together, we can accomplish incredible things.

Dr. Manoj Goel

Joint Director KIET

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Message from Editor-In-Chief

Dear Colleagues and Friends,

As Dean of Research and Development KIET, I am honoured to share the latest research and development activities with you. Our dedicated team of researchers, students, and faculties continue to progress significantly in various fields, from basic science to applied technology.

One of our major achievements this year has been the development of a new treatment for a rare genetic disorder. Our team discovered a novel therapeutic approach that has shown promising results in preclinical trials. We are now working to bring this treatment to the clinic and help patients suffering from this debilitating condition. It is a true example of how our research is not just limited to the lab but also can potentially make a real-world impact.

Another area where we have made significant progress is in the field of renewable energy. Our researchers have developed a new type of solar cell that has the potential to increase the efficiency and cost-effectiveness of solar energy significantly. This technology has already attracted the attention of several major companies, and we are currently transferring it to the industry for further development. It not only helps in protecting the environment but also in creating new job opportunities and economic growth. In addition to these specific achievements, KIET has progressed in several other areas. Our researchers have published numerous articles in top-tier journals, presented their work at international conferences, and received numerous grants and awards. It can showcase the quality of our research and our team's dedication and hard work. In addition to our ongoing research activities, we have also launched several new initiatives to support and promote research at our institute. We have also created a new seed funding program to support innovative and high-risk research projects that have the potential to make a significant impact. These initiatives help our researchers not just conduct research but also in developing their skills and knowledge.

I would also like to take this opportunity to express my gratitude to our researchers, scientists, engineers, and staff, who have worked tirelessly to make our institute a leader in research and development. Their dedication, passion, and hard work have been instrumental in our achievements, progress, and initiatives. I also want to thank our funding partners, collaborators, and supporters for their ongoing support and contribution.

Lastly, I would like to extend my best wishes and blessings to all of you, your families, and your friends. May the upcoming year be prosperous, happy, and in good health. With our collective efforts, we will be able to continue making a positive impact on the world through our research and development activities.

Dr. Vibhav Kumar Sachan

Dean (Research and Development)

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Foreword

Academic research and development related to the scientific investigation and experimentation undertaken by colleges, universities, and other higher education institutions aim to further enhance knowledge in a subject. Natural sciences, social sciences, and humanities are subjects in which academic academics can engage in research. Academic research and development aim to add to the corpus of knowledge and educate the next generation of scholars. Today, academic research collaboration may bring scholars from many institutions, fields, and nations to collaborate towards a single aim. Collaboration can take numerous forms, including co-authoring research articles, submitting joint funding applications, and conducting interdisciplinary research initiatives. Collaboration may give researchers access to new resources, such as specialized equipment or data sets, and the opportunity to share knowledge and get fresh views on a research subject. Collaboration also boosts the impact and exposure of research by enabling academics to reach new audiences and get acknowledgement for their work. In this sequence, research magazines play a significant role in academic research and development by providing a forum for scholars to disseminate their results to a larger audience. These periodicals focus on specialized disciplines of study, such as fundamental engineering, computer science, mathematics, and physics, and publish articles authored by subject matter experts. Technical journals may be an essential source of knowledge for researchers, presenting them with the most recent advancements and trends in their area. These publications can also act as a method for researchers to gain feedback from their peers. These periodicals are also excellent resources for students and scholars interested in recent advancements in their respective fields of study.

According to the above-mentioned factors, the publication "KIET Research Magazine" is being produced. It is envisaged that after reading this Magazine, a student or researcher will be aware of current research in his/her relevant subject and be able to identify a suitable partner if necessary. Most of the Magazine's material is drawn from KIET's research and development efforts.

The publication has endeavoured to provide as many study results as feasible while prioritizing reporting clarity. This publication is to report on KIET's research and endeavours, therefore increasing the global exposure of KIET's work. We are grateful to our colleagues for allowing us to present the mentioned research activity and their results in this publication. As appropriate, the names of each of these fellows are included in various sections of the Magazine.

We are deeply grateful to the Institute's Management, Director, Joint Director, Dean R&D, Heads, and all the associates for their support, blessings, and cooperation in publishing this multidisciplinary research magazine “अनुसंधान” .

Dr. Brijesh Singh

Editor

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Foreword

"Sharing knowledge is a charity of knowledge that constitutes the ways of a beautiful life" — Ehsan Sehgal

To enhance the beauty of the research domain, the KIET research magazine plays a vital role through the knowledge sharing of different domains, which may enhance the quality of research at inter and intra-departmental scales in the KIET Group of institutions. The awareness and acknowledgment in the outer niche may enhance the collaborative research among the various disciplines like environment, sustainability, energy, chemistry, modelling, mechanical, management, pharmacy, etc. This initiation is also likely to give positive outcomes in collaborative research publications, joint project submissions, joint work on patents, technical bulletins, etc. The holistic growth in the social, economic, and ecological pillars of society may be achieved through sharing of the scientific research and incorporation of the same through research institutes. It gives me great pleasure to introduce this supplement dedicated to research upgrowth. Filling such gaps may lead to a paradigm shift in research networking and upliftment in the research domain.

We heartily thank our management, the Director, the Joint Director, the Dean of R&D, and the entire KIET family for their unconditional guidance and support.

Dr. Minakshi Karwal
Associate Editor
KIET Group of Institutions
Delhi-NCR, Ghaziabad

"Research is something that everyone can do, and everyone ought to do. It is simply collecting information and thinking systematically about it" - Raewyn Connell

The KIET research magazine contributes significantly to inspiring young researchers to augment knowledge and innovation. The magazine also disseminates awareness about technical innovation in the field of science, technology, and management to faculty and students.

The highlights of the notable research activities conducted by our institute over the past month are included in this magazine issue. This would help the research activities to get a better reach and new dimensions in terms of collaborative publications, research articles, project proposal submissions, patent filing, etc.

To achieve the goal of the KIET Institute to observe the year 2023 as an innovation and start-up year, we are confident that KIET Research Magazine will continue to contribute significantly to the inner and outer specialization for greater scientific research and innovation.

We would like to extend our deepest gratitude to the Research and Development Team of the KIET Group of Institutions for their tireless work in ensuring the success of all research initiatives.

We are extremely grateful to the leadership of the KIET Group of Institutions, the Director, the Joint Director, the Dean of R&D, and the entire KIET family for their generous support and leadership over the years.

Dr. Himanshu Chaudhary
Associate Editor
KIET Group of Institutions
Delhi-NCR, Ghaziabad

Overview of the Research and Development

Rapid growth in scientific knowledge is an indication of the quest for discovery and has a substantial impact on economic and societal development. Science, technology, and innovation are often initiated in an Institution's research environment. Research and developmental activities create and disseminate new knowledge in different fields, promote innovation, and motivate better learning and teaching among faculty members and students at our Institute, as these are often incorporated into the courses. Research is the foundation of knowledge that brings new energy builds state-of-the-art facilities, promotes research publications, develops collaborations, and becomes part of an active community that shares common objectives. Moreover, there is good evidence that research supports and improves teaching and helps to build excellence in this dimension as well. Research can have salutary effects on faculty members, on the nature of their teaching, and the undergraduate and postgraduate students.

Evidence is accumulating that students do benefit in significant ways from having researchers as instructors if, the institution balances resources spent, and rewards assigned between research and teaching. This positive view, which has been consistently detected in recent studies, sees the benefits of 'research-led teaching.' In this approach, the experience of the researcher is integrated into teaching.

Vision

To achieve excellence in research and create an outstanding climate of support for researchers, broadly enabling research advances to meet National and International needs.

Mission

- To motivate faculty members to concentrate on research-related activities, in addition to teaching, to publish research articles in reputed journals.
- To pursue efforts to write books and monographs for publication by – International and National publishers of repute.
- To evince interest among the faculty members so that they take efforts to establish collaborative research projects with their counterparts in reputed National and International Universities.
- To encourage faculty members to submit proposals and secure funded research projects from various funding agencies in India and Abroad.
- To undertake consultancy projects sponsored by the Government as well as Private, Industrial, and other organizations.

Contact
Office of Dean (R&D)
Department of Electronics & Communication Engineering
KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India-201206
e-mail: dean_rnd_office@kiet.edu, Contact No. +919718907912 (O)

Glimpses of Month

On June 17, 2023, esteemed scholars visited the Department of Electrical & Electronics Engineering, KIET Group of Institutions, Ghaziabad, for a brainstorming session to explore innovative approaches for student engagement, the integration of real-world applications, and the development of critical thinking skills.

Dr. Ashwani Kumar Sharma, the Professor and Head of NIT Kurukshetra, Dr. Ravinder Kumar, the Director (DPARO&M) at DRDO New Delhi, Dr. Akash Saxena, a Professor from Central University of Haryana, Dr. Anand Kumar, the Senior Manager-Lead Methodology at Cognition Analytics India Private Limited, Mr. Abhishek Kumar, the CEO of Drone Power Pvt. Ltd., Delhi, and Mr. Manish Bhardwaj, the CEO of Jack Volt, Noida, collaborated for a productive session alongside the internal experts' team.

Dr. Neeraj Kumar Gupta, the Head of the Department, expressed gratitude to all attendees for their active participation and valuable contributions. Their input is crucial in shaping the proposed syllabus to align it with industry standards. The committee members agreed to refine the syllabus based on the productive discussions held during the meeting, with the goal of creating a comprehensive and industry-relevant curriculum for the autonomous program.

KIET Group of Institutions and LinkedIn have come together to foster academic excellence and unlock promising career opportunities through a momentous Memorandum of Understanding signed on 15 June 2023.

This successful MOU Signing Ceremony between KIET and LinkedIn marks a significant milestone in our shared mission to empower students and bridge the gap between academia and industry. Through this collaborative effort, we are committed to providing state-of-the-art training and education on emerging technologies, facilitating connections between KIET's talented individuals and global leaders, and paving the way for unparalleled growth and development.

We would like to express our heartfelt gratitude to Dr. A. Garg, the esteemed Director of KIET, and Ms. Saba Karim, the India A&G Head of LinkedIn, for their visionary leadership in driving this initiative.

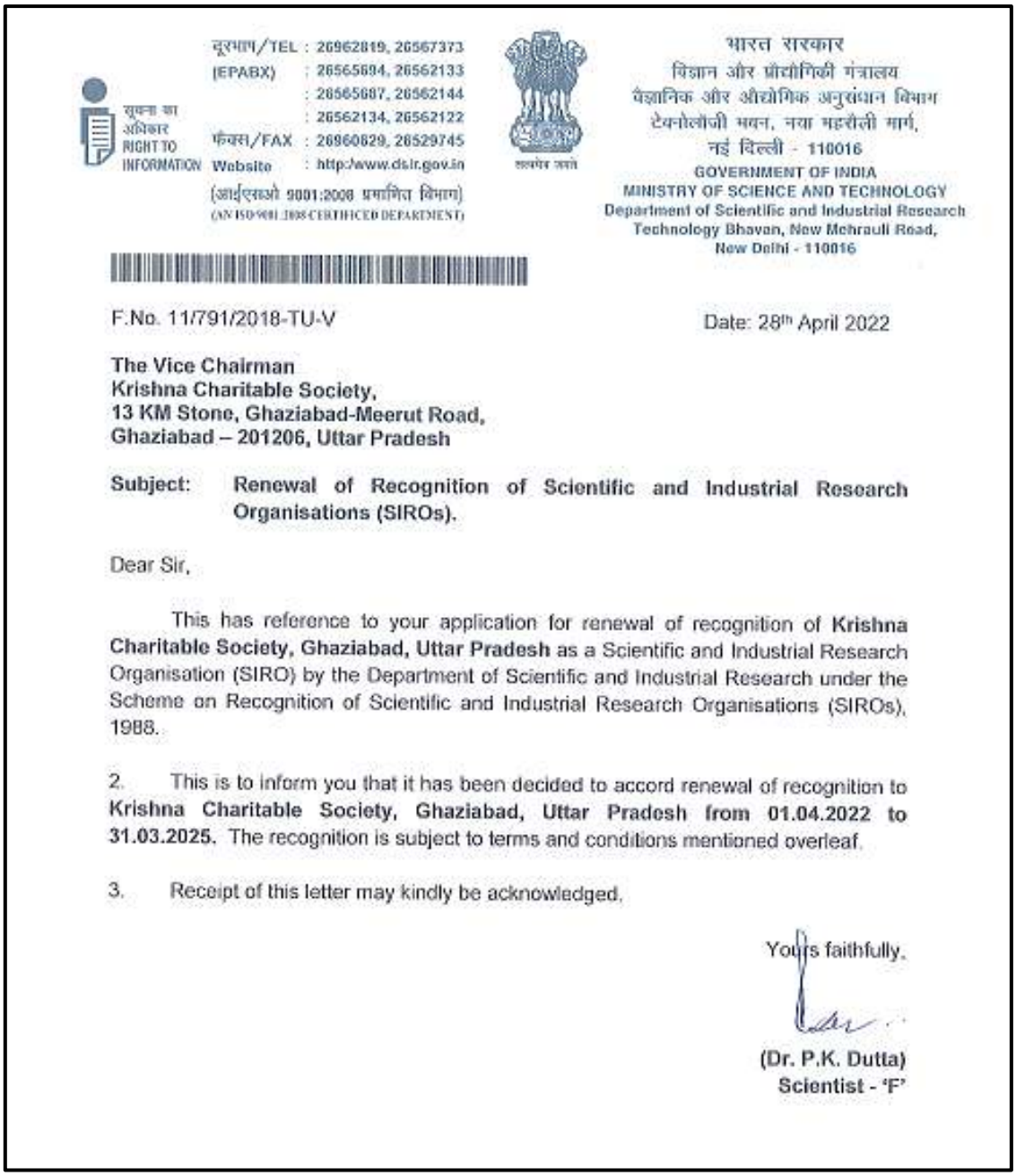
Centre for Automotive Mechatronics successfully conducted a 20-hour workshop named "BMW Drivetrain (N-47 & Somic ZF 8 HP)" for B.Tech 2nd, 3rd & 4th year.

The Department of Computer Science invited Mr. Arpit Kumar Singh (Proud Alumni 1999-2003; SoC Design Engineer, Intel Technology India Pvt Ltd.) for an 'Expert Alumni Talk' on “Insights to Microprocessor”.

Statistics of KIET Research and Development Activities

Rankings & Accreditations

- **NAAC - Grade 'A+' (Cycle 2 Assessment) - Accredited for 5 years till 03 Jan 2027.**
- **NIRF 2023 (Pharmacy – Rank 88 & Engineering - Rank Band (151-200).**
- **NIRF 2023 Innovation Rank Band (51-100).**
- **QS-IGAUGE - 'Diamond' College Rating (till Feb 2024) & 'Institution of Happiness' Award.**
- **Innovation Hub, AKTU – Hon'ble VC AKTU Appointed KIET as Nodal Regional Centre**
- **NBA Accreditation - All eligible programs are NBA accredited.**
- **KIET Group of Institutions, Delhi-NCR, Ghaziabad (UP) recognized by the Scientific and Industrial Research Organization (SIROs) under Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India. (Till 31 Mar 2025)**



सूचना का अधिकार RIGHT TO INFORMATION

दूरभाष/TEL : 26962819, 26567373
(EPABX) : 26565694, 26562133
: 26565687, 26562144
: 26562134, 26562122
फैक्स/FAX : 26960829, 26529745
Website : http:/www.dsir.gov.in
(आईएसओ 9001:2008 प्रमाणित विभाग)
(AN ISO 9001:2008 CERTIFIED DEPARTMENT)

सत्यमेव जयते

भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
वैज्ञानिक और औद्योगिक अनुसंधान विभाग
टेक्नोलॉजी भवन, नया महरौली मार्ग,
नई दिल्ली - 110016
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
Department of Scientific and Industrial Research
Technology Bhavan, New Mehrauli Road,
New Delhi - 110016

F.No. 11/791/2018-TU-V

Date: 28th April 2022

The Vice Chairman
Krishna Charitable Society,
13 KM Stone, Ghaziabad-Meerut Road,
Ghaziabad – 201206, Uttar Pradesh

Subject: **Renewal of Recognition of Scientific and Industrial Research Organisations (SIROs).**

Dear Sir,

This has reference to your application for renewal of recognition of **Krishna Charitable Society, Ghaziabad, Uttar Pradesh** as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research under the Scheme on Recognition of Scientific and Industrial Research Organisations (SIROs), 1988.

2. This is to inform you that it has been decided to accord renewal of recognition to **Krishna Charitable Society, Ghaziabad, Uttar Pradesh from 01.04.2022 to 31.03.2025.** The recognition is subject to terms and conditions mentioned overleaf.

3. Receipt of this letter may kindly be acknowledged.

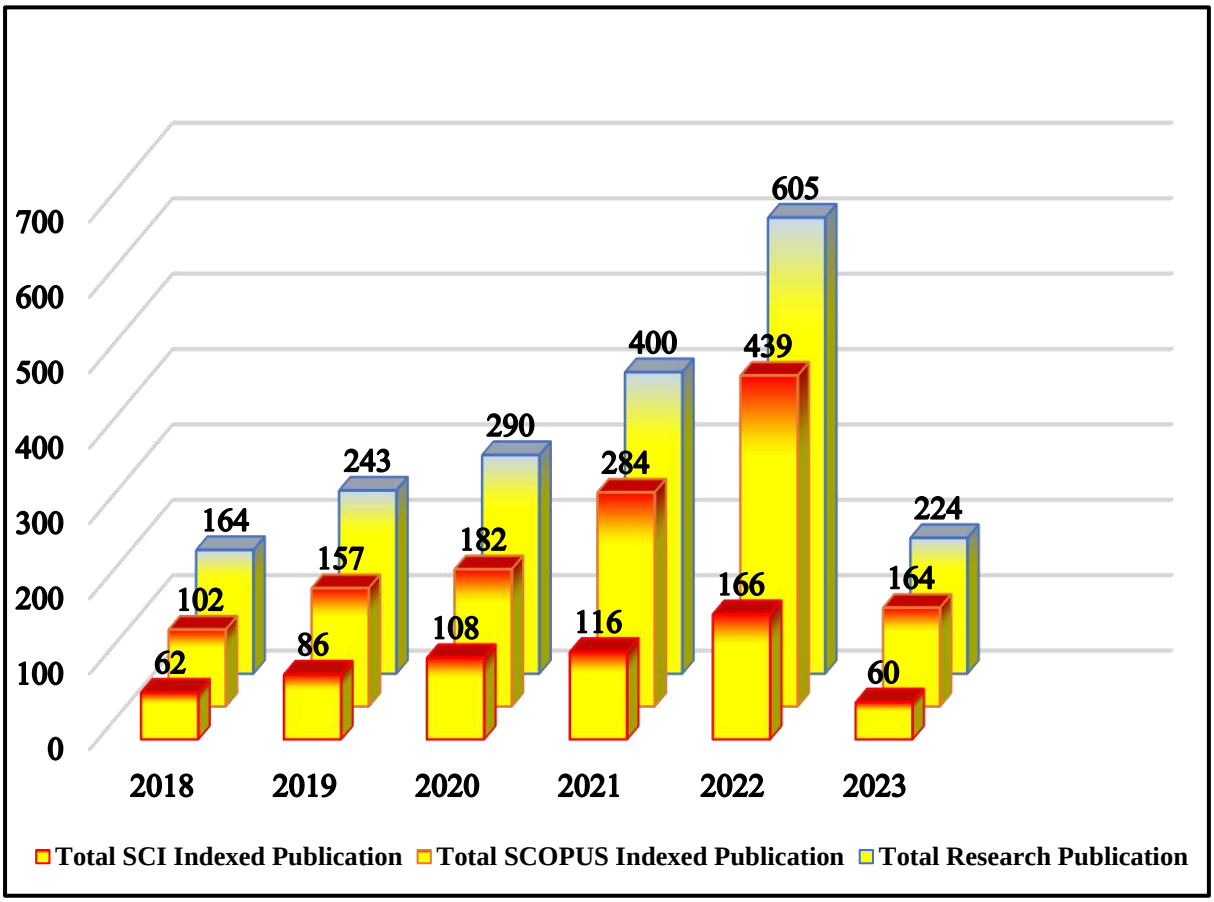
Yours faithfully,

(Dr. P.K. Dutta)
Scientist - 'F'

KIET Research Credentials

A total of 598 SCI Research Publications and 1328 Scopus Indexed Research Publications with an affiliation of KIET Group of Institutions, Delhi-NCR, Ghaziabad are listed in Web of Science and in Scopus Database till June 2023.

Year	Total Number of SCI Indexed Publications	Total Number of SCOPUS Indexed Publications	Total Number of Research Publications
2018	62	102	164
2019	86	157	243
2020	108	182	290
2021	116	284	400
2022	166	439	605
2023	60	164	224
Total	598	1328	1926



Category	Number of Publication for May 2023	Number of Publication for June 2023
SCOPUS Publications	31	33
Web of Science Publication	12	11

Details of Patents Published/Granted

Title of the Invention: **System and Method for Recommendation System**

Application Number: 202311009157 A (Indian Patent Office)

Applicant(s): Prof. Nishu Gupta and team

Date of Filing: 12-02-2023

Date of Publishing: 02-06-2023

Field of the Invention: The invention is related to the field of Computer Science where Machine Learning algorithms are applied to do recommendations on various domains.

Objects of the Invention: An object of the present disclosure is to recommend things to the users. In this document, a system and method for recommendation system using a machine learning model. The system of claim 1, carries the following methods to be used under claims: Data classification, Clustering of the pre-processed inputs, Selection of parameters, Dealing with outliers and interest matching and Suggestion /Recommendation

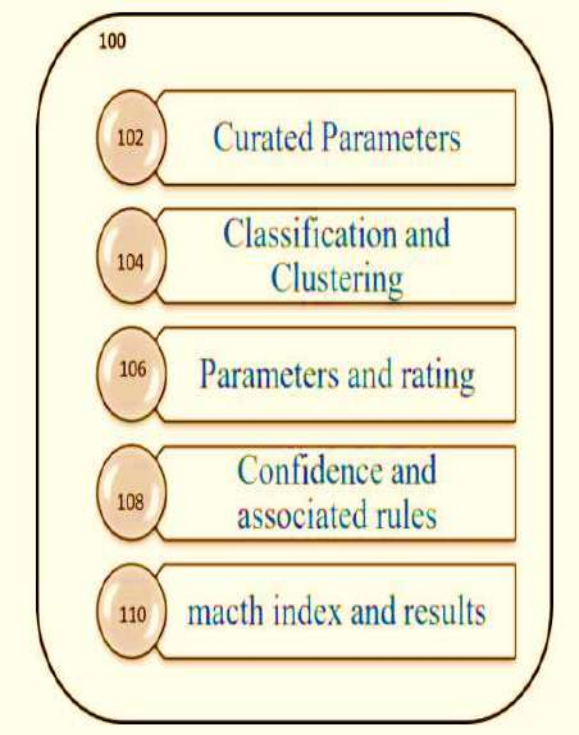


Figure 1: Flow graph of the present invention, in accordance with embodiments of the present disclosure

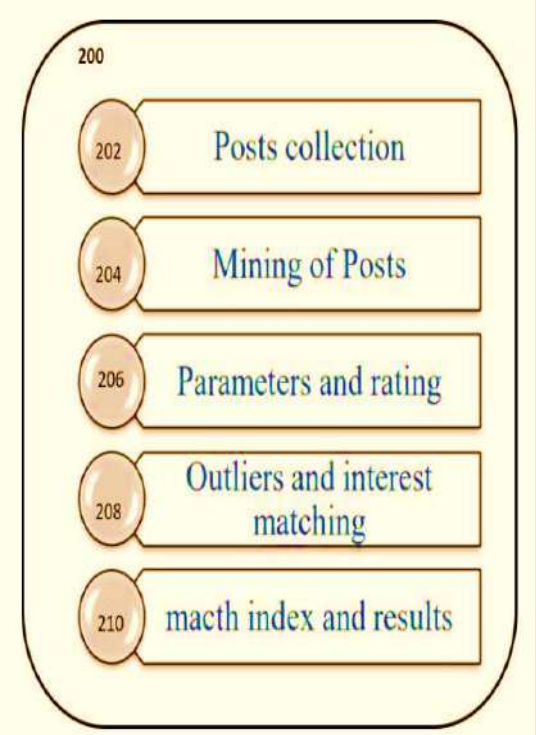


Figure 2: Flow chart of the post's recommendation–in accordance with embodiments of the present disclosure.

Title of the Invention: Development and testing of a mucoadhesive herbal buccal tablet for the treatment of aphthous ulcers

Application Number: 202311032870 A (Indian Patent Office)

Applicant(S): KIET Group of Institutions (KIET School of Pharmacy)

Date Of Filing: 09-05-2023

Date Of Publishing: 23-06-2023

Field of the Invention: The aim of the study is to formulate a bucco adhesive tablet with selected herbal active ingredients which will provide an increased contact time as well as the desired antibacterial, analgesic, and anti-inflammatory effects. Two natural active ingredients were selected based on the literature. The dosages used for active ingredients i.e., Yashtimadhu and d-limonene, were based on literature as well as the dosages of products already on the market. The compatibility of Yashtimadhu plant extract with selected pharmaceutical excipients was assessed using DSC. During compatibility studies, the natural active ingredients and excipients were mixed in 1:1 ratio.

The DSC thermograms of the 1:1 mixture was then compared with the thermograms of the pure active ingredients. Changes in the thermal patterns were then studied. Emergence or disappearance in peaks and shifts in peak temperatures greater than 15 °C were considered indicators of a significant drug interaction. To access the compatibility of d-limonene with excipients and Yashtimadhu extract, FTIR studies were conducted. The selected natural active ingredients were compatible with each other as well as with carbopol971P, microcrystalline cellulose, aspartame, talc, and magnesium stearate according to DSC analysis and FTIR studies.

Several polymers with documented mucoadhesive properties were selected. Powder flow properties and compressibility were assessed using the angle of repose and Carr's index. The flow properties of the powder blend were improved by the addition of talc and magnesium stearate. Aspartame was added to improve the tablet's aesthetic properties. Small pilot-scale tablet batches, each containing a different mucoadhesive polymer were manufactured by direct compression method. The tablets were assessed for mass variation, friability, hardness, diameter, and thickness. After the initial characterization of the physicochemical properties of the tablets, dissolution studies were carried out to obtain the release profile of the formulation.

Tablet component	Function	Quantity
Liquorice extract	Active	30 mg
d-limonene	Active	3.5 mg
Mucoadhesive polymer	Mucoadhesion	115 mg
Microcrystalline cellulose	Anti-adherent	5 mg
Aspartame	Sweetener	3 mg
Talc	Glidant	2 mg
Magnesium stearate	Lubricant	1.5 mg
Total		**160 mg**

The mucoadhesive performance of the product was studied using the wash-off test. Carbopol 971P demonstrated optimal mucoadhesive strength and was used in the final formulation. This study proved that it is possible to formulate natural active ingredients into a stable mucoadhesive tablet.

Title of the Invention: Smart Job Portal for Uneducated and Unemployed Ones

Application Number: 202311035968 A (Indian Patent Office)

Applicant(S): Prof. Shambhavi Singh and team (KIET Group of Institutions)

Date of Filing: 24-05-2023

Date of Publishing: 30-06-2023

Field of the Invention: The present invention is related to the field of computer science domain, where programming is used to make web applications.

Objects of the Invention: The objective of developing the present invention are:

• To minimize the impact of unemployment on our economy.

• To build a website to allow the users to register their profile based on whether they need a job or want to provide a job.

• To properly use the opportunities available in the job market for skillful as well as those jobs which don't require any specific skills.

• The objective of a job portal for uneducated individuals is to provide them with increased employment opportunities, encourage skill development, promote economic stability, reduce unemployment rates, and create a level playing field for employment.

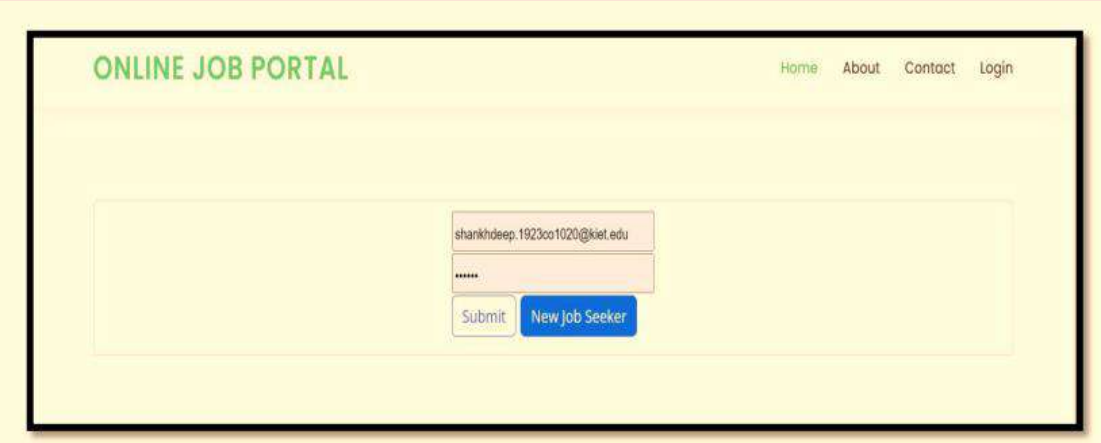


Fig. 1: Interface

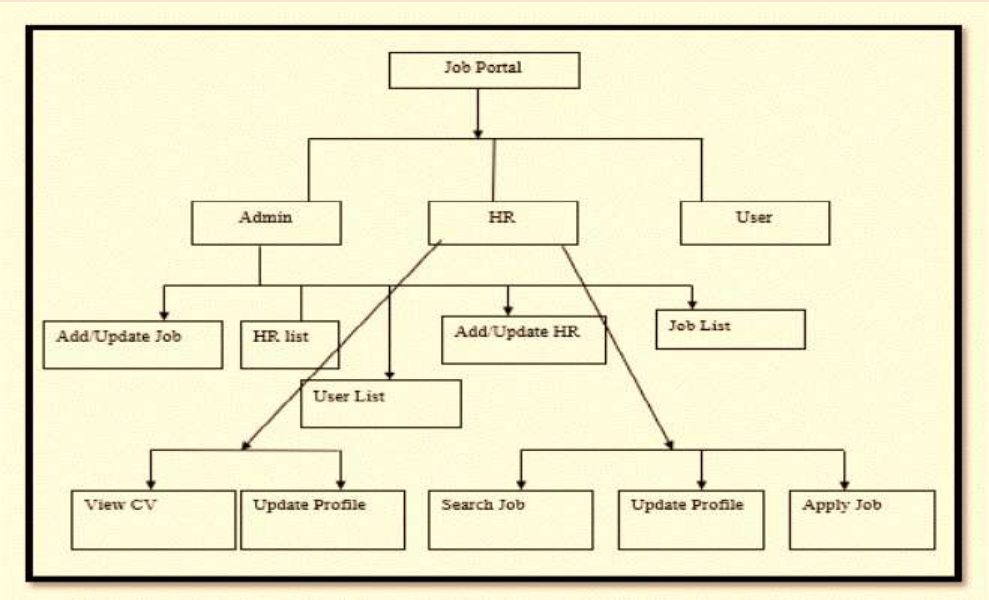


Fig. 2: Flow diagram

Title of the Invention: Design and Comparison of different Tracking Algorithms in OPENCV

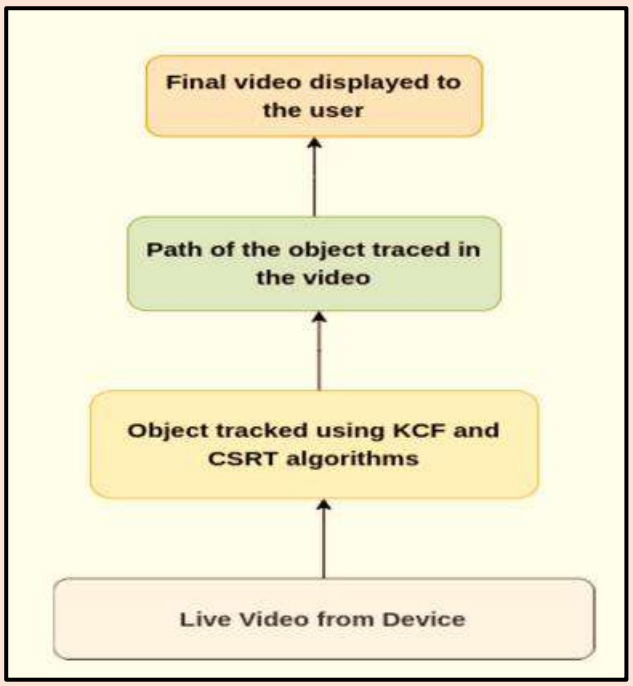
Application Number: 202311036063 A (Indian Patent Office)

Applicant(S): Dr. Manish Bhardwaj and team (KIET Group of Institutions)

Date of Filing: 24-05-2023

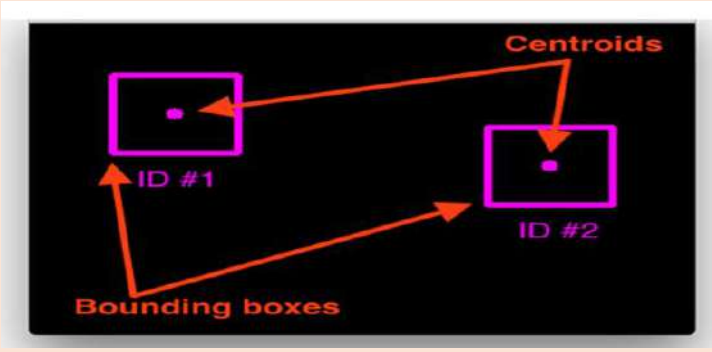
Date of Publishing: 30-06-2023

Field of the Invention: The present invention relates to the field of Tracking Algorithms. It relates to the interdisciplinary engineering work including electronics, designing, creating, and integrating modules giving a solution to maintain Tracking in OPEN CV related particulars. The present invention relates Different Tracking algorithms of OPEN CV. More particularly, the present invention is given enough effort to be secure as well as user-friendly.



OBJECTS OF THE INVENTION: The objective of developing the present invention are:

- Develop a Platform for the comparison of different Tracking Algorithms for OPENCV.
- Finding an object in consecutive frames of a video is called object tracking. It is implemented by estimating the state of concerned objects present in the scene from prior information. Objects are tracked to the current frame, so you can see how they have moved. Simply put, the parameters of the model are known. A motion model indicates the speed and direction of an object's motion from the previous frame. In this research paper we are comparing different tracking algorithm which are Channel and Spatial Reliability Tracker (CSRT) and Kernel Correlation Filter (KCF) and implementing both the algorithm together for better result. Fig. 1. shows the architectural design of the proposed model. Fig. 2. Accept the bounding box coordinates and compute the centroid.



Title of the Invention: Machine Learning-Based User Age Detection System: A Patent for Advanced Age Recognition Technology

Application Number: 202311036807 A (Indian Patent Office)

Applicant(S): Prof. Harsh Vardhan and team (KIET Group of Institutions)

Date of Filing: 28-05-2023

Date of Publishing: 30-06-2023

Field of the Invention: The present invention is related to the Convolutional Neural Network of Computer science field.

Objects of the Invention: The objective of the present invention is to detect the age of the user. the objective is to detect the age of each user on desktop application based on image processing obtained from camera. The objective is to decide whether the user will be allowed for registration or not using deep learning algorithm.

Technology Used:

• Python
• Jupyter notebook
• Tensorflow
• keras
• MERN stack
• Github

Hardware • Processor: intel i3/i5/i7 • RAM: 4/8 GB

End users: All social media platforms.

The advantage of the present system is:

1. No external device is used
2. Free of cost operation
3. High accuracy
4. Easy accessibility

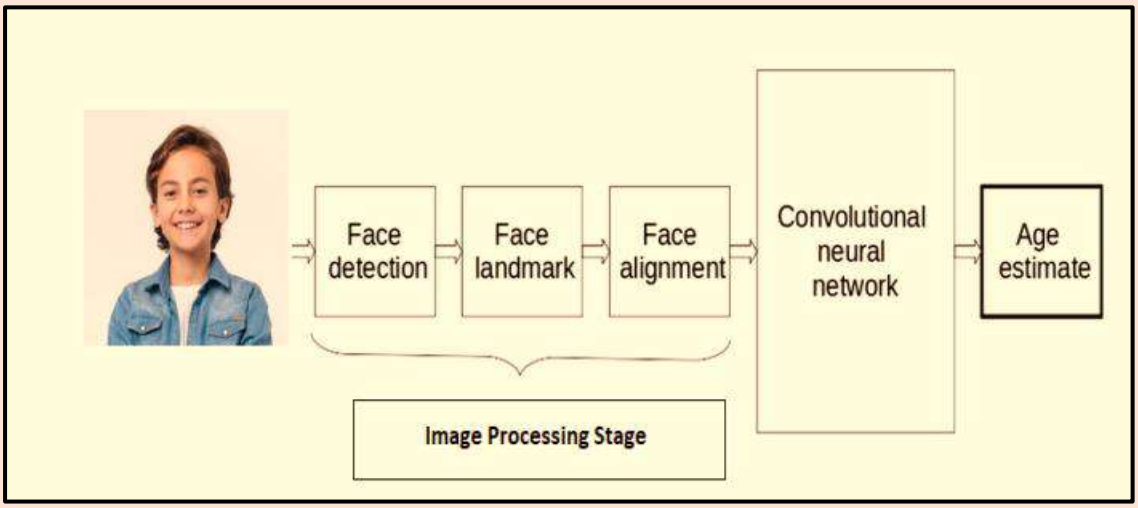


Fig. Block diagram of Machine Learning-Based User Age Detection System

PATENTS Published – May - June 2023

S. No.	Title Of Patent	Dept.	Name Of Applicant	Date Of Publication	Status
1.	Machine Learning Based Drowsiness Detection System for Accurate Alertness Analysis	CS, CSIT	Anshula Gupta, Rimjhim, Sanya Singh, Sakshi Khandelwal, Prince Gupta, Swasti Singhal, Ashima Arya, Rahul Kumar, Geetika Singh, Shivani	19.05.2023	Published
2.	Intelligent Travel Planner: A System and Method for Optimizing Travel Itineraries Based on Personal Preferences and Real-Time Data using Machine Learning	CS, CSIT	Akash Goel, Suryansh Raghuvanshi, Anuj Kumar Tripathi, Shivam Jaiswal,Arti Pandey, Dr. Youddha Beer Singh, Dr. Aditya Dev Mishra,Pardeep Tyagi, Rahul Kumar, Vinay Kumar	19.05.2023	Published
3.	System and Method for Twitter Sentiment Analysis	CS	Vijay Kumar, Utkarsh Tiwari, Harsh Khatter,Raj Kumar	19.05.2023	Published
4.	System and Method for Automation Using Zigbee	CS	Harsh khatter, Keshav Bhardwaj Manvendra Pratap Singh,Pallavi Sharma	19.05.2023	Published
5.	System for avoiding fraud financial Losses in Multiple Payment Platforms Using Artificial Intelligence & Machine Learning	CS	Manish Bhardwaj	19.05.2023	Published
6.	Sentiment analysis by attention feeder using multivariate functions	CS, IT	Mrs. Arti Sharma, Saurabh	19.05.2023	Published
7.	AR Museum: A Virtual Museum using Marker-less	EEE, CSE, CS-AI, CSIT	Dr. Jyoti Srivastava, Dr. Seema Maitrey,	19.05.2023	Published

	Augmented Reality system for Mobile Devices		Dr. Ruchika Singh, D. Blandina Miracle, Arika Singh, Nagesh Sharma,) Dr. Ajeet Pratap Singh, Vinay Kumar		
8.	Automated Expense Tracking System and Method for Web-Based Applications using Artificial Intelligence	CS, CSE, CSIT	Shivani, Narendra Kumar Singh, Mukul Kumar Sahu, Neha Dingra, Umang Rastogi, Dr. Sushil Kumar, Amit Kumar Singh Sanger, Garima Singh, Pushpendra Kumar, Anshula Gupta	19.05.2023	Published
9.	System and Method for Resume Making based on User Profile	CS	Sreesh Gaur, Fatima Parveen, Hardik Wadhwa, Ekta Kumari, Akash Goel, Pawan Kumar Pal, Harsh Khatter	19.05.2023	Published
10.	UVC-Based currency sterilization machine	EEE	Dr. Sourav Diwania	19.05.2023	Indian Design
11.	A Servo Amplifier Control Device	CS	Prashant Agrawal	19.05.2023	Indian Design
12.	A Novel System for Loan Eligibility Based on Informal Financial Transactions Information Without User Credit Score	AI&ML	Prof. (Dr.) Rekha Kashyap, Dr. Manish Bhardwaj, Dr. Pallavi Sharma, Dr. Sushil Kumar, Ms. Bharti	26.05.2023	Published
13.	A Method and System for the Detection of Sleep Deprivation In Individual Users	KSOP	Mr Sanjeev Kumar Chauhan,	26.05.2023	Published
14.	Smart Transportation System for School and Colleges Using Mobile Application And IOT	MCA	Mr. Alok Singh, Ms. Unnati Rastogi, Dr. Amit Kumar, Ms. Shweta Singh, Dr. Akash Rajak, Dr. Manish Bhardwaj, Ms. Jyoti Sharma, Dr Rahat Ullah	26.05.2023	Published

			Khan, Dr Surendra Kumar Tripathi, Vinay Kumar		
15.	Utilising Machine Learning, Emergency Road-Side Assistance for Smart Highways	MCA	Dr. Arun Kumar Tripathi, Ms. Supriya Dubey, Dr. Manish Bhardwaj, Ms. Shweta Singh, Mr. Analp Pathak, Ms. Punjika Rathi, Ms. Jyoti Sharma, Mr. R. N. Panda, Dr. Akash Rajak, Mr. Amit Kumar Goyal	26.05.2023	Published
16.	Mental Health Disorder Diagnoses Using Sentiment Analysis	MBA	Punjika Rathi, Dr Arunima Mishra, Arti Sharma	26.05.2023	Published
17.	Design and Implementation of Innovative Health Card for Patient Data Manipulation and Decision Making	CSE	Ashish Bhatnagar, Aastha Bisht, Ananya Garg, Dr. Manish Bhardwaj	26.05.2023	Published
18.	An Air Filter Unit for Two-Wheeler Vehicle	CE	Ayush Kumar, Ankush Chaudhary	26.05.2023	Indian Design
19.	Self watering flower Pot	KSOP	Kiran Sharma	26.05.2023	Indian Design
20.	A Room Environmental Condition Monitoring Device	KSOP	Dr. Abhay Bhardwaj, Mr. Anuj Pathak, Dr. K Nagarajan	26.05.2023	Indian Design
21.	Speedometer	MCA	Neelam Rawat	26.05.2023	Indian Design
22.	Tablet Dissolution Apparatus	KSOP	Prof. (Dr.) N. G. Raghavendra Rao	26.05.2023	Indian Design
23.	Sentiment Analysis of a Psychology Class	CS, IT	Mrs. Arti Sharma, Dr. Ajay Kumar Agarwal,Mr. Mayank Tyagi, Mr. Saurabh, Mr. Sherish Johri, Mr. Prince Kumar ,Mr. Anurag Mishra	02.06.2023	Published
24.	System and Method for Recommendation System	CS	Nishu Gupta, Ajay Kumar, Puneeta Singh, Amit Kumar Singh	02.06.2023	Published

			Sanger, Deepak Vishwakarma, Vipin Deval, Dharmendra Kumar, Harsh Khatter		
25.	System and Method for Detecting Road Conditions on Highways Using IOT	CS	Dr. Gaurav Dubey	02.06.2023	Published
26.	Automated Security Management in Edge Computing Underlying Structure	IT	Mr. Saurabh, Mrs. Arti Sharma, Dr. Archana Sharma, Dr. Sartaj Ahmad, Mr. Anurag Mishra	02.06.2023	Published
27.	Heating Bucket	KSOP	Priya Bansal, Dr. Abhishek Kumar	02.06.2023	Indian Design
28.	Mobile Phone Holder	KSOP	Kiran Singh Sharma	02.06.2023	Indian Design
29.	Smart Street Lamp System Control Using 5g Internet of Things Communications	AS	Dr. Richa Agarwal	09.06.2023	Published
30.	Preparation And Characterization of Nutriose-Eudragit Coated Pellets Colon Therapeutic System of Nsaid	KSOP	Mr. Debaprasad Ghosh, Dr. Ashu Mittal, Ms. Anushka Jain, Ms. Anamika Rajput, Ms. Rajalika Tyagi	09.06.2023	Published
31.	System And Method for Equivariance Transition in Group Convolutional Neural Networks for Breast Cancer Classification	CS	Harsh Khatter	09.06.2023	Published

Details of Research Incentives for Journals

S. No.	Name of Faculty	Designation	Dept.	Title of Paper and Name of Journal	Impact Factor/Cite Score	Benefits/ Incentives	Index in Journal
1.	Dr. Gaurav Aggrawal	Assistant Professor	CSE	Multiprocessor task scheduling using multi-objective hybrid genetic Algorithm in Fog–cloud computing. **Knowledge-Based Systems**	8.14	21,000	SCIE
2.	Dr. Sapna Juneja	Professor	CS	Protein Subcellular Localization Prediction by Concatenation of Convolutional Blocks for Deep Features Extraction from Microscopic Images, **IEEE Access**	3.5	21,000	SCIE
3.	Ms. Shalini Kapoor	Assistant Professor	EN	An Adaptive Optimized Schizophrenia Electroencephalogram Disease Prediction Framework **Multimedia Tools and Applications**	2.06	11000	SCIE & Springer

Highlights of the Published Journal Articles

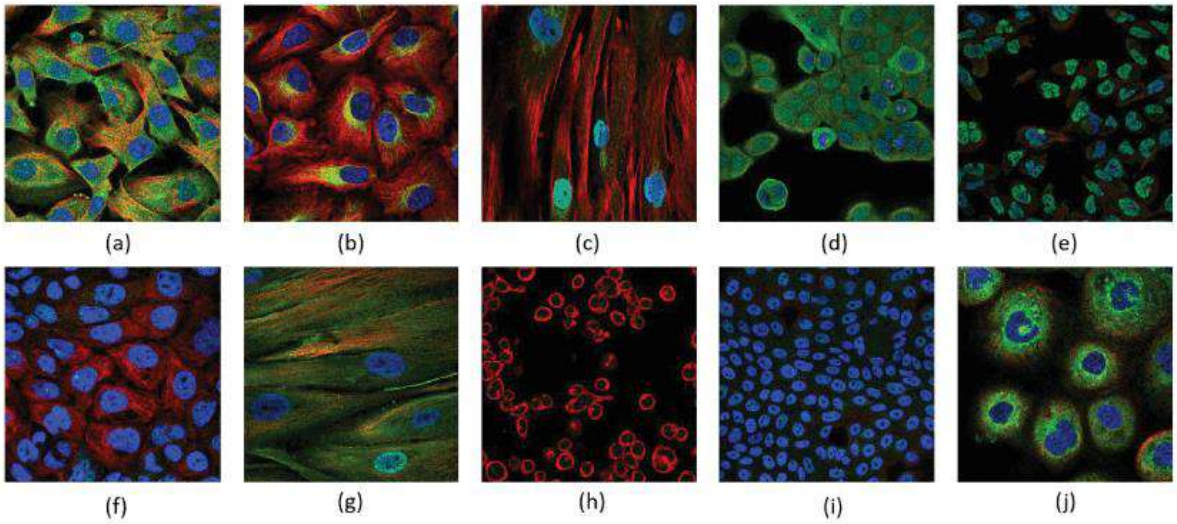
1. **Gaurav Agarwal, Sachi Gupta, Rakesh Ahuja, Atul Kumar Rai, "Multiprocessor task scheduling using multi-objective hybrid genetic Algorithm in Fog–cloud computing", Knowledge-Based Systems, Volume 272, 2023, 110563, ISSN 0950-7051, DOI: 10.1016/j.knosys.2023.110563.**

Multiprocessor task scheduling is an operation of processing more than two tasks simultaneously in the system. The Fog–cloud multiprocessor computing structures are the categories of exchanged collateral structures with great demand from its initiation. Like other networking systems, the existing fog–cloud system based on multiprocessor systems faces some challenges. Due to the availability of excess clients and various services, scheduling and energy consumption issues are challenging. The existing problems must be resolved with proper planning to reduce makespan and energy consumption. To obtain this, an optimal scheduling approach is required. The proposed approach presents a novel methodology called Hybrid Genetic Algorithm and Energy Conscious Scheduling for better scheduling tasks over

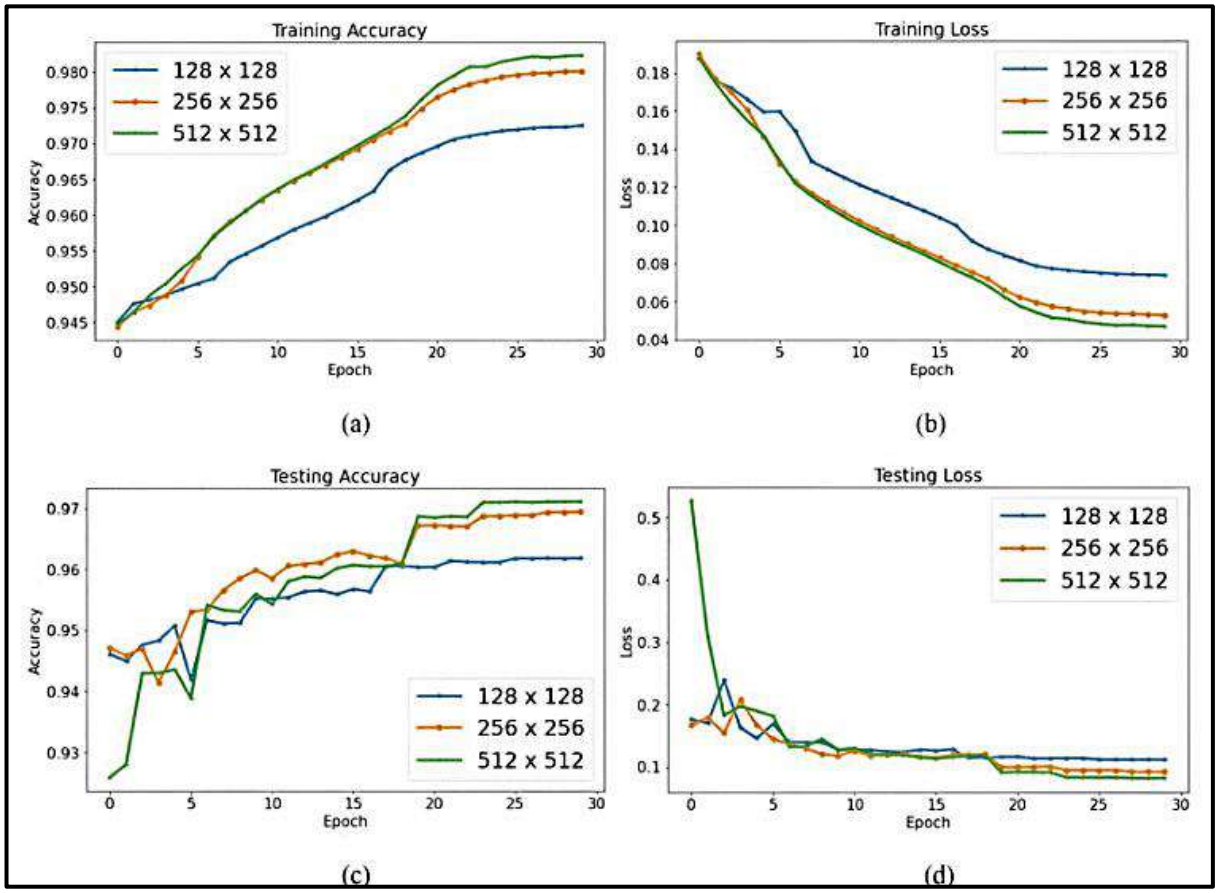
the processors. Here Genetic Algorithm and Energy conscious scheduling model are integrated. When only a Genetic Algorithm is chosen for the task scheduling approach, it becomes computationally expensive. Energy consumption becomes a huge challenge as it does not cope with complexity, making it extremely difficult to schedule appropriate tasks. When choosing the proposed hybrid Genetic algorithm, these issues can be overcome by considering optimal solutions with minimized makespan and consumed energy. A Genetic Algorithm is used to generate three primary chromosomes using priority approaches. The allocated resources are optimized through the Energy Conscious Scheduling model, and the proposed method is implemented using MATLAB. The existing methods, including genetic algorithm, particle swarm optimization, gravitational search algorithm, ant colony optimization and round robin models, are compared with the proposed method, proven comparatively better than existing models.

2. **S. Aggarwal, S. Juneja, J. Rashid, D. Gupta, S. Gupta and J. Kim, "Protein Subcellular Localization Prediction by Concatenation of Convolutional Blocks for Deep Features Extraction From Microscopic Images," in IEEE Access, vol. 11, pp. 1057-1073, 2023, DOI: 10.1109/ACCESS.2022.3232564.**

Understanding where proteins are located within the cells is essential for proteomics research. Knowledge of protein subcellular location aids in early disease detection and drug-targeting treatments. Incorrect localization of proteins can interfere with the functioning of cells and leads to illnesses like cancer. Technological advances have enabled computational methods to detect protein's subcellular location in living organisms. The advent of high-quality microscopy has led to the development of image-based prediction algorithms for protein subcellular localization. Confocal microscopy, which is used by the Human Protein Atlas (HPA), is a great tool for locating proteins. The HPA database comprises millions of images that have been procured using confocal microscopy and are annotated with single as well as multi-labels. However, the multi-instance nature of the classification task and the low quality of the images make image-based prediction an extremely difficult problem. There are probably just a few algorithms for automatically predicting protein localization, and most of them are limited to single-label classification. Therefore, it is important to develop a satisfactory automatic multi-label HPA recognition system. The aim of this research is to design a model based on deep learning for an automatic recognition system for classifying multi-label HPA. Specifically, a novel Convolutional Neural Network design for classifying protein distribution across 28 subcellular compartments has been presented in this paper. Extensive experiments have been done on the proposed model to achieve the best results for multilabel classification. With the proposed CNN framework an F1-score of 0.77 was achieved which outperformed the latest approaches.



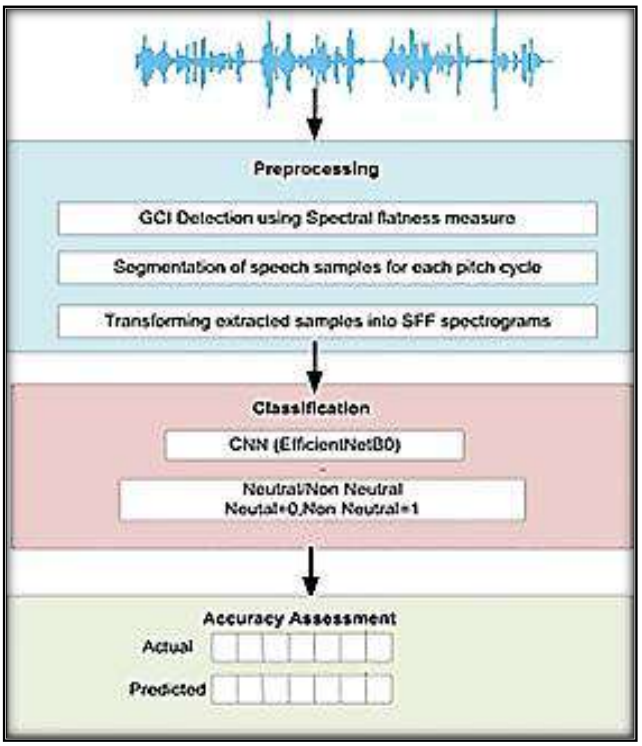
Sample images of multi-label or single-label from HPA dataset. Labels present in each image are: (a) Cytosol, nuclear membrane, plasma membrane, (b) Intermediate filaments, (c) Golgi apparatus, nucleoplasm, (d) Cytosol, plasma membrane, (e) Nucleoplasm, plasma membrane, (f) Nuclear bodies, (g) Actin filaments, cytosol, nucleoplasm, (h) Nucleoli, (i) Nucleoplasm, cytosol and (j) Endoplasmic reticulum.



Accuracy and loss plots obtained during training of the proposed CNN model when applied with different input image sizes (a) Training accuracy, (b) Training loss, (c) Testing accuracy and (d) Testing loss. Maximum accuracy and minimum loss have been obtained when the network was fed with image size of 512 ×512 .

3. **Kapoor, S., Kumar, T. A novel approach to detect instant emotion change through spectral variation in single frequency filtering spectrogram of each pitch cycle. Multimedia Tools Appl 82, 9413–9429 (2023). DOI: 10.1007/s11042-022-13731-0**

The intelligent human-computer interface should not only provide automatic emotion inference, but it should also provide information about emotion change. The former has generated promising results, while the later is currently being researched. Emotional transformation, or a quick change in one's emotional state, is a normal part of life that can be triggered by mental stress, ongoing situations, or people we connect with. To better control these emotions, it's vital to recognize triggers and early warning signs of imminent emotional swings. The Single frequency filtering (SFF) spectrogram is a visual representation of voice that captures both temporal and frequency resolutions at the same time. In this study, the convolutional neural network (CNN) EfficientNetB0 is used to study patterns in the SFF spectrogram for localizing the instants of emotion change. The process used in detecting the instant of emotional change detection could be broken into two stages. First stage deals with the construction of SFF spectrograms from speech samples belonging to each pitch cycle. The second stage deals with predicting the time when emotional changes occur. The performance of the proposed method is evaluated using parameters binary accuracy (BAC), binary cross-entropy loss (BECL), binary error (BError), and F1-Score. The proposed method obtains an accuracy of 0.95 and 0.952 on the datasets used. The experimental results obtained using the proposed method on Interactive emotional dyadic motion capture (IEMOCAP) and Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS) datasets establish the supremacy of the proposed method on existing methods and other CNN architectures.



Reimbursement of Conference Registration Fee

S. No	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Benefits/ Incentives	Published By
1.	Aalind Singh (Student)	Student	ECE (IV Year)	PIECON 2023 Organized by Dept. of Electrical Engg. Aligarh Muslim University, Aligarh	Image Captioning Using Python	1770	IEEE Conference
2.	Harsh Khatter	Astt. Prof.	CS	International Conference, G L Bajaj Institute of Technology & Mgmt. Jan 2023.	Smart Virological Modelling of YouTube Videos	7000 + TA of Rs. 980.37	IEEE Conference
3.	Nitin Kumar Saxena	Prof.	EEE	International Conference, Chitkara University, Chandigarh	Fuzzy Rule Based Collaborative Peer Learning Methodology and Gradual Learning Engineering Students	7200	IEEE Conference
4.	Vikas Kamra	Asst. Prof.	CS	International Conference, Chitkara University, Chandigarh	A Novel Online Quizzing System for Blind People by implementing Modern Voice Recognition Techniques	10000	IEEE Conference
5.	Umang Rastogi	Asst. Prof.	CSE	International Conference, G.L.A. University, Mathura on 3-4 March, 2023.	Skin Segmentation and SVM for Identification and Spotlighting of Hand Gestures for Indian sign language recognition system	5000	IEEE Conference
6.	Tanushree Sanwal	Asst. Prof.	KSOM	International Conference, Chitkara University, Chandigarh Punjab on 24-26 Feb 2023.	Social Media and Networking Applications in the Education Sector- "A Case of Delhi NCR."	3600	IEEE Conference

7.	Chirag Arora	Associate Prof.	ECE	International Conference, Shri Vishnu, Engineering College for Women, (Autonomous) Bhimavaram, (A.P) on 22 & 23 July 2022	Dual Band Microstrip Patch Antenna with Annulated Circular Ring	7000	Conference
8.	Animesh Sindhu	Student	CS (IV Year)	International Conference, Innovative Practices in Technology and Mgmt. (ICIPTM 2023) at Amity University Noida.	Mech Service: Recommendation system for Auto care	4174	Conference
9.	Sarthak Kesarwani	Student	CS (IV Year)	International Conference, Trends in Electronics, and Informatics (ICOEI-2023)	"Student Chatbot System: A Review on Educational Chatbot."	3250	Conference

Highlights of the Published Conference Articles

1. A. Singh et al., "Image Captioning Using Python," 2023 International Conference on Power, Instrumentation, Energy and Control (PIECON), Aligarh, India, 2023, pp. 1-5, DOI: 10.1109/PIECON56912.2023.10085724.

In the last few years, the problem of recognizing the objects and the context of the image has gained a rising interest. Image Captioning is the task of recognizing the context of the image and then generating a caption for it with proper grammar structure. Generating captions automatically will be helpful for visually impaired people to understand the picture better. To achieve this task a hybrid model is defined in this paper which uses CNN (Convolutional Neural Network) and LSTM (Long Short-Term Memory). The model will be trained using Flickr8K data sets with containing 8000 images and 5 captions for each image.

2. H. Khatter, N. Aggrawal, V. Upadhyaya, M. Aggarwal and P. Gupta, "Smart Virological Modelling of YouTube Videos," *2023 International Conference on Artificial Intelligence and Smart Communication (AISC)*, Greater Noida, India, 2023, pp. 1373-1378, DOI: 10.1109/AISC56616.2023.10085370

It takes a few hours for a new topic to be uploaded to social media and it spread like a forest fire. So, it is important to study the flow of content in social media. YouTube is one of the most growing social media platforms, so the aim lies in the fact which content uploaded on YouTube is likely to be viewed and which is likely to flow. So, it would be really a task of interest that if we are able to figure out the common underlying dimensions from a whole bunch of dimensions on which the viewing factors depend, we could know how to change

values to get a better view count. Social media platforms lack or somewhere deviate to provide quality features and accessibility like them. This paper brings in the concept of a complete integrated system that works on YouTube and lets the user get complete assistance on his/her content.

3. N. K. Saxena, P. Kumar Tyagi and N. K. Gupta, "Fuzzy Rule Based Collaborative Peer Learning Methodology for Gradual Learning Engineering Students," *2023 2nd Edition of IEEE Delhi Section Flagship Conference (DELCON)*, Rajpura, India, 2023, pp. 1-5, DOI: 10.1109/DELCON57910.2023.10127246.

In a centralized education system, end-semester university examinations are conduct for all affiliating institutes together under a common umbrella of a state university. However, every institute conducts internal examinations on its own to assess students' performance from time to time. The student scoring low marks can be termed a gradual learner requiring extra attention. Institutes and departments develop different policies for helping such gradual learners. Subject teachers also give their best and restless efforts to such students so that they can score at least passing marks in end-semester university examinations. However, these students hesitate to interact with their subject teacher beyond regular classes due to their introverted and shy attitudes. Compared with teachers, students feel comfortable interacting with classmates and so, the average or good marks scoring students can help such gradual learners. This paper explains a case study done for gradual learning engineering students. The collaborative teaching pedagogy is used in which gradual learning category students can discuss their subject doubts with their peer students. The highlights of this proposed approach are; (i) to achieve zero carryover paper in the subject, (ii) to develop confidence in gradual learning category students, (iii) to prepare the students as a leader who can work with their team members, and (iv) to understand and bridge the gap in teaching pedagogy for several students' clusters based on their learning capabilities, (v) validation of the result using the fuzzy rule-based model.

4. V. Kamra, A. Singh, P. Sharma, and R. Yadav, "A Novel Online Quizzing System for Blind People by implementing Modern Voice Recognition Techniques," *2023 2nd Edition of IEEE Delhi Section Flagship Conference (DELCON)*, Rajpura, India, 2023, pp. 1-4, DOI: 10.1109/DELCON57910.2023.10127578.

Online assessment of students is a new challenge to the old education system. It is even more difficult to track the daily progress made by an individual student in the online learning environment. To solve this problem, we need a novel approach to online assessments. "Quizi for Malvoyant" is a web-based application that not only provides a solution to the above problem but also provides a platform that can also be used by visually impaired students. The increasing use of online systems in our educational environment and the lack of proper monitoring in student's progress is a big threat to the education system. Moreover, the existing online modes cannot be easily accessed by any visually impaired student which is a prominent gap in online mode of learning. "Quizi for Malvoyant" is a web-based application that can be used by a normal person or a visually impaired person. To use the proposed platform, a user can simply log in to be able to create and join quizzes by sharing the quiz code. For blind students, there will be some speech commands that can be followed for the

smooth conduction of online quizzes. This system will do automated marking which helps teachers by saving their time. Teachers can also set up quizzes that will auto-grade itself. Students can answer the quiz from any location and get immediate results. This research paper will provide a unique web-based approach for online quizzing and assessment work which is implemented on MERN STACK technology.

5. U. Rastogi, A. Pandey and V. Kumar, "Skin Segmentation and SVM for Identification and Spotlighting of Hand Gesture for ISLR System," *2023 6th International Conference on Information Systems and Computer Networks (ISCON)*, Mathura, India, 2023, pp. 1-5, DOI: 10.1109/ISCON57294.2023.10112063.

People who have hearing loss utilize sign language to communicate. It enables gestures and speaks language to communicate with one another by connecting letters, words, and phrases. The hearing-impaired community could benefit from a machine that can translate spoken language into sign language English, allowing them to interact with the general public. They will be helped to improve their skills and become more conscious of what they can do to advance humanity. In this study, we attempted to create an automated system that could identify sign language in challenging environments. It is possible to extract the part of the signer's hand that matches their skin tone from a video of them signing. From the hand image, Extractive and categorical features that can identify the sign are used. A support vector machine is used for the categorization. India is diverse in terms of religion, culture, and language. There is no recognised sign language in India. There are numerous ISL dialects with verbal variations spoken in India. There are numerous varieties of sign language, even in Kerala, a small state. To recognize the signs unique to our region, we are working to construct a SLR system.

6. Arora, C. (2023). Dual Band Microstrip Patch Antenna with Annulated Circular Ring. In: Chakravarthy, V., Bhateja, V., Flores Fuentes, W., Anguera, J., Vasavi, K.P. (eds) Advances in Signal Processing, Embedded Systems and IoT. Lecture Notes in Electrical Engineering, vol 992. Springer, Singapore. DOI: 10.1007/978-981-19-8865-328

In this article, the authors have designed a slotted microstrip patch antenna comprising of a circular ring embedded at the centre. Initially, the designed conventional patch antenna operates at 2.45 GHz. However, when two slots are etched on both ends of the patch, an additional resonant frequency band is obtained at 5.8 GHz, which reduces to 5 GHz when an annular ring is inserted between these two slots. The gain and bandwidth of the designed antenna are 4 dBi and 400 MHz at 5 GHz and 8 dBi and 270 MHz at 2.45 GHz. Thus, the proposed antenna can accommodate both IEEE 802.11a Wi-Fi bands operating at 2.45 and 5 GHz. This dual-band antenna is designed on 1.48 mm thick FR-4 substrate with a dielectric constant of 4.3 and a loss tangent of 0.01. The designed structure is excited by a SMA coaxial connector of 50-Ω. High Frequency Structure Simulator software (HFSS) is used for designing and simulating this antenna. This commercially available software is based on the finite element method.

7. A. Sindhu, A. Gupta, and A. K. Shrivastava, "MechService: Recommendation System for Auto care," *2023 3rd International Conference on Innovative Practices in*

***Technology and Management (ICIPTM)*, Uttar Pradesh, India, 2023, pp. 1-5, DOI: 10.1109/ICIPTM57143.2023.10118077**.

The recommendation system has been rapidly developed due to web technology that provides a new way for the technician to get the customer's requirements. However, recommendation systems provide customers with enough information to decide whether to recommend a technician, and they do analyse recommended information. The existing available systems also lack feedback mechanisms for customers, which would diminish their zeal. We created a database recommendation system to address these issues. When customers cannot find the technician, they are looking for, they will be directed to the recommended pages. Recommended pages contain all the essential and extension information that customers can refer to. Furthermore, customers can make recommendations by providing a rating according to the service provided by the technician, and the recommendation system will examine the recommended data to make a rational buying choice.

8. **Shivani, H. Vardhan, A. Gupta, D. Goswami, M. Zubair and L. Mangal, "Experimental analysis of Disease Prediction using Machine Learning," *2023 International Conference on Artificial Intelligence and Smart Communication (AISC)*, Greater Noida, India, 2023, pp. 1363-1367**, **DOI: 10.1109/AISC56616.2023.10084972.**

With the technological advancement in the field of medical health care, we need a best possible health care system that can predict the disease only based on symptoms. In this study, we applied various machine learning algorithms including KNN, support vector machine, decision tree, Naïve Bayes, and logistic regression on various disease dataset to find the most accurate algorithm on a particular disease. The objective of this study is to provide a fast and efficient machine learning algorithm that will help doctors to choose the best-suited algorithm for the disease.

9. **S. Kesarwani, Titiksha and S. Juneja, "Student Chatbot System: A Review on Educational Chatbot," *2023 7th International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli, India, 2023, pp. 1578-1583, DOI: 10.1109/ICOEI56765.2023.10125876.**

A chatbot is an automated system that talks with the client and answers the client's questions according to the input provided by humans. While the user is chatting with the computer, it appears as if they are chatting with a human being. With the chatbot, students can find out about college activities anytime, anywhere with an internet connection. Marketing, support systems, education, healthcare, cultural heritage, and entertainment are just a few of the industries that chatbots have supplanted in recent years. In a student's life, a chatbot can have a huge impact on the student's life because it can resolve a great deal of academic difficulties, placement preparations, and extracurricular activities in college, and saving a great deal of time by providing answers to students' questions within seconds. It is not only a way for educators to stay informed, but it also makes it easy for students to get their questions answered. As a result of this chatbot system, departments can reduce the amount of work they have to do by providing the required information to students and this reduces their workload to keep on answering all the queries from students.

Collaborative Research and Development Presentations

S. No.	Name of Presenter	Name of Department / School	Topic of Presenter	Dated of Presentation
1.	Dr. Prarthana Srivastava	**AS**	Analysis of water quality	10.06.2023
2.	Mr. Akash Goel	**CS**	Git and its applications	10.06.2023
3.	Ms Bhawna	**CSE(AI)/CSE(AI&ML)**	Data Analytics and Machine Learning	10.06.2023
4.	Ms Seema Chauhan	**CSE(AI)/CSE(AI&ML)**	Data Analytics and Machine Learning	10.06.2023
5.	NAVEEN CHAUHAN	**CSE**	Efficient data caching in IoT network	10.06.2023
6.	Himanshi Chaudhary	**CSE**	IOT Security	10.06.2023
7.	Dr. Rajeev Kumar	**EEE**	Power system stability enhancement by damping and control of Sub-synchronous torsional oscillations using Whale optimization algorithm-based Type-2 wind turbines	10.06.2023
8.	Dr. Ruchika Singh	**EEE**	Image Processing	10.06.2023
9.	Prof. Arika Singh	**EEE**	Power System	10.06.2023
10.	Dr Shardendu Kumar Mishra	**KSOP**	Galangal- A Promising Herb in Ayurvedic Formulations	10.06.2023
11.	Mr. Praveen Kr. Gupta	**MCA**	Authentication Techniques in ML	10.06.2023
12.	Ms. Neelam	**MCA**	Survey on Software Defect Prediction Using Machine Learning Techniques	10.06.2023
13.	Mr. Prashant Agarwal	**MCA**	ML applications	10.06.2023
14.	Dr. Gaurav	**ME**	Constitutive behaviour of a homogenized AT61 magnesium alloy under different strain rate and temperature: An	10.06.2023

			experimental and numerical investigation.	
15.	Dr. Sapna Yadav	**KSOM**	Impact of Advertising on Shopping Behaviour: A Study of Mobile Phones.	10.06.2023
16.	Dr. Puja Roshani	**KSOM**	Controlling and Balance Score Card	10.06.2023
17.	Mr. Sharad Gupta	**ECE**	Recent Trends of ECE	10.06.2023
18.	Mr. Rochak Bajpai	**ECE**	Recent Trends of ECE	10.06.2023
19.	Dr. Priyanka Rai	**AS**	Nanomaterial for water purification	24.06.2023
20.	Dr. Deepti Chaudhary	**AS**	Nanomaterials for their practical applications	24.06.2023
21.	Mr. Sreesh Gaur	**CS**	Challenges in WSN	24.06.2023
22.	Umang Rastogi	**CSE**	feature extraction in arabic sign language	24.06.2023
23.	Dr. Rahat U. Khan	**EEE**	Advance pmdc machine for solar PV systems	24.06.2023
24.	Ms. Latika Sharma	**CSIT**	"Applying ML algorithms for detecting mental disorders."	24.06.2023
25.	Prof. Kapil Gandhi	**EEE**	Development of operational strategies and electricity market structure in Microgrid	24.06.2023
26.	Dr. Jyoti Srivastava	**EEE**	Power System and Electrical Circuits	24.06.2023
27.	Prof. Anubha	**IT**	Related to data Analytics	24.06.2023
28.	Prof. Pramod Nath	**IT**	Amalgamation of Blockchain and Machine Learning in Healthcare	24.06.2023
29.	Mr. Rajesh Patel	**ME**	Recent Trends of ME	24.06.2023
30.	Ms. Ragini Sharma	**ECE**	Recent Trends of ECE	24.06.2023

CRDC Presentation Series

Activity Report June 2023

Collaborative Research and Development (CRD) Presentations 2022-23 (Even)

Presentation Topic

Early Diagnosis of Alzheimer's Disease using Machine Learning Techniques

Details of Presenter

Ms. Latika Sharma, Assistant Professor Department of Computer Science and Information Technology

Date of Presentation Session: 24th June 2023

Scope for Future Research Outcome

Research Paper (Journals/ Conferences/ Book Chapters etc.)

About Presentation:

This study is based on the comparison and evaluation of recent work done in the prognosis and prediction of Alzheimer's disease using machine learning methods.

1. It is obvious that machine learning tends to improve the prediction accuracy especially when compared to standard statistical tools.
2. The proposed method deals with pathologically proven data and overcomes the class imbalance and overtraining issues.
3. The proposed model is based on a single modality to overcome the increased cost of computing and combining different modalities. We believe that pathologically proven data may increase accuracy and validity, while a balanced class will help the classifiers to give accurate results.
4. This model can help to improve the prediction performance by physicians and cover the limitations pointed out in the previous research.

About Presenter:

Area of Research: Machine Learning

Pursuing Ph. D. from DIT University, Dehradun

Description of Topic: The area of my research is Implementation of Machine Learning/ Deep Learning Techniques in early prediction of brain disease. This research topic can be a big support for those patients who are suffering from brain disease and facing every day various challenges in their lives because of the disease. If early prediction of the problem, can be done then it can cure some of the symptoms in patients and they can live a normal life.

Presentation Topic: Data Analytics and Machine Learning

Details of Presenter : Ms. Seema Chauhan
Department – CSE- AI&ML
email Id - seema.chauhan@kiet.edu
Qualification - M.Tech (NIT Durgapur)
Specialization - Data Optimization, Machine Learning

Scope for Future Research Outcome

Research Paper (Journals/ Conferences/ Book Chapters etc.)

About Presentation

Tableau is a powerful data visualization tool that has several applications in research. Some ways in which Tableau can be relevant for research.

Exploratory Data Analysis:

Tableau allows researchers to visually explore and analyze data sets quickly and effectively. Its interactive and intuitive interface makes it easy to discover patterns, trends, and relationships within the data.

Data Visualization:

Tableau provides a wide range of visualizations, including charts, graphs, maps, and dashboards.

Data Integration:

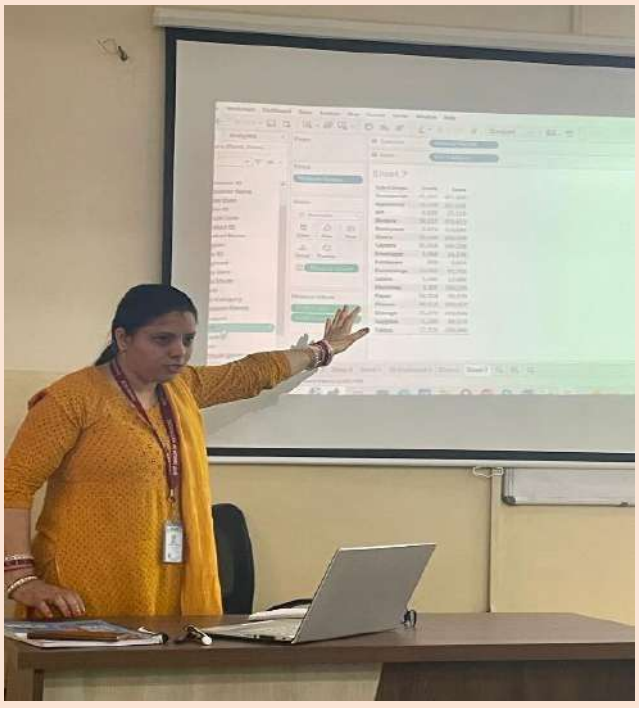
Tableau has the capability to connect to a variety of data sources, including databases, spreadsheets, and online platforms. Researchers can integrate multiple data sets from different sources and combine them to perform comprehensive analyses.

Collaboration and Sharing:

Tableau offers collaboration and sharing features that allow researchers to work together on data analysis projects.

Real-time Data Analysis:

Tableau has the capability to connect to live data sources, enabling researchers to perform real-time data analysis. Tableau is a tool for data visualization and analysis, and its relevance in research depends on the specific research goals and data requirements.



Presentation Topic: MIMO antenna with Substrate integrated circuits

Details of Presenter

Ms. Ragini Sharma,

Assistant Professor

Electronics and Communication Engineering

Date of Presentation Session: 24-06-2023

Time of Presentation Session: 10:00:00 AM

Scope for Future Research Outcome

Research Paper (Journals/ Conferences/ Book Chapters etc.)

About Presentation:

Integration of hybrid planar and non-planar circuit is quite difficult. Various techniques have been proposed and developed that effectively combine the planar circuits and the non-radiating dielectric (NRD) waveguide. Subsequently, we have developed the concept of a new generation of high-frequency integrated circuits called “substrate integrated circuits – SICs”. This new concept has unified the hybrid and monolithic integrations of various planar and non-planar circuits that are made in single substrate and/or multilayer platforms. This presentation demonstrates the proposed substrate integrated circuits (SICs) architecture and its integration with MIMO antenna.

Presentation Topic: Synthesis and Mechanical Behaviour Of Aluminium Foams

Details of Presenter

Dr. Kunwar Laiq Ahmad Khan,
Professor
Mechanical Engineering
Date of Presentation Session: 24th June 2023
Time of Presentation Session: 1:00:00 PM

Scope for Future Research Outcome

Research Paper (Journals/ Conferences/ Book Chapters etc.)

About Presentation

A talk on Synthesis and Mechanical Behaviour of Aluminium Foams was delivered by Prof. Kunwar Laiq Ahmad Khan to the Faculty members of the Mechanical Engineering Department on 24th June 2023 at the CAD Lab (ME).

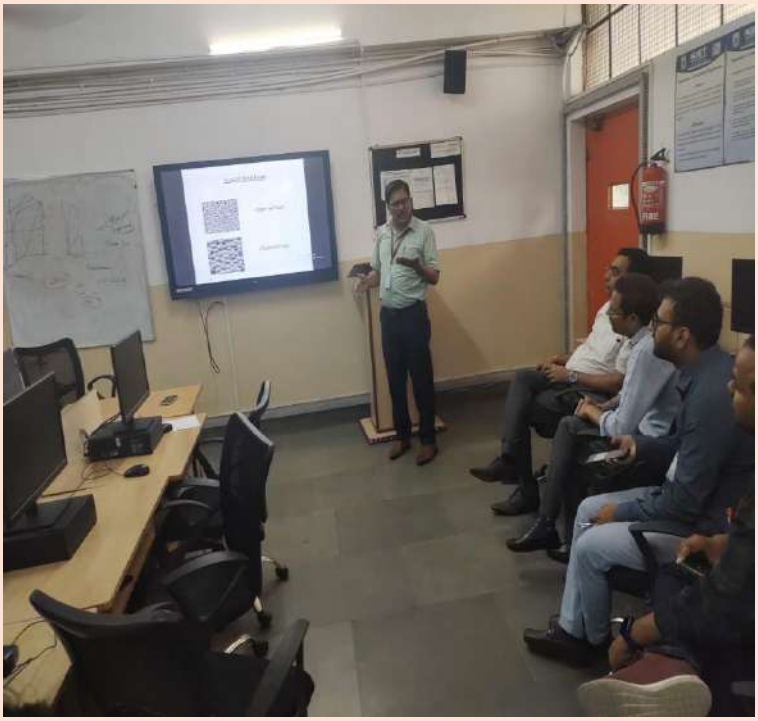
Metal Foam is a newer class of material having unique characteristics such as mechanical, electrical, acoustic, thermal management, and structural. The Metal foam found applications in the areas of

a) Structural: Automobile industry, aerospace industry, ship building, sporting equipment, biomedical industry, etc.
b) Functional: Filtration, heat exchangers, fluid flow control, battery electrodes, acoustic control, etc.

About Presenter

Prof. (Dr.) Kunwar Laiq Ahmad is a professor in the Department of Mechanical Engineering having more than 27 years of teaching, research, and administration. Prof. Khan is also Dean of IEC and working on the development of an ecosystem for innovation, entrepreneurship & consultancy activities in the Institute.

The area of expertise of Prof. Khan is metal foam, composites, and friction stir processing.



Presentation Topic: To study the fault behaviour of PMSG-based WECS under symmetrical fault.

Details of Presenter

Ms. Arika Singh,

Assistant Professor

Electrical and Electronics Engineering

Scope for Future Research Outcome

Research Paper (Journals/ Conferences/ Book Chapters etc.)

About Presentation:

Maintaining the WECS connected to the grid during short-term faults has been a major demand from the grid operators especially in the wake of higher penetration of wind into the power grids. The wind farms are now required to participate actively in fulfilling the grid integration requirements by an appropriate generation control. Further work is therefore aimed at bringing the complete analysis and simulation of PMSG-based variable speed WECS under faulty grid conditions and suggesting methodologies to achieve fault ride-through (FRT) capabilities. An increase in DC link voltage and generator speed due to the power imbalance, an increase in converter currents due to the reduction in grid voltage, and the requirement of reactive power for the speedy recovery of the system are observed as some of the common traits during grid faults.

A review on various strategies to enhance the FRT capabilities of WECS with FRCs has been further explored to develop a coordinated control of the generator and the power converters to achieve FRT capability. The analysis and simulation of a PMSG based WECS is now developed for normal working conditions as well as for fault conditions. The unique features of the model include de-loading of the generator via machine side converter, active and reactive power control through grid side converter to support voltage control during fault. The simulation results prove the capability of the system to harness maximum power during normal conditions and to achieve FRT during grid disturbances.

Faculty Articles

How Electronics Engineering and Semiconductors are Reshaping the Future of India

The semiconductor sector plays a vital role in the development of the economy. It generates new markets, new employment opportunities, and new income streams by encouraging and facilitating innovation and technological progress across a wide range of industries. India's local and international economies will benefit from the country's growing prominence in the semiconductor production and design industries. Modern technologies like AI, the IoT, robots, and renewable energy rely heavily on electronics, particularly semiconductors. India may make great gains in solving social concerns including healthcare, agriculture, education, and urbanization if it prioritizes research and development in these areas. Professionals in the semiconductor business need advanced knowledge and abilities in areas such as chip design, fabrication, and system integration. India may gain an edge in this field by investing in its human capital via education and training programs that produce a talented and creative labour force. Make in India and the Production-Linked Incentive (PLI) Scheme are just two of India's many programs designed to boost the country's electronics manufacturing sector. India can boost its economy, generate employment, and improve its position in the global supply chain by expanding local manufacturing of electronic products and decreasing reliance on imports. The semiconductor sector will play a crucial role in supplying the required components for infrastructure development as India moves toward a digitally inclusive society. To guarantee that all individuals have access to and can make use of modern technologies like smartphones, PCs, and 5G networks, a healthy semiconductor ecosystem is required. When it comes to advocating for green technologies and sustainable practices, the electronics industry is just as important as any other. India can lessen its carbon footprint and aid international efforts to address climate change if it promotes the creation and use of energy-efficient gadgets and renewable energy alternatives.

Start-ups with a focus on developing new technologies have proliferated as a result of the merging of electrical and technological fields. The growth of India's semiconductor sector has the potential to inspire a new wave of business innovation and entrepreneurship in the country. India may get access to cutting-edge technology, skilled labour, and new markets by forming strategic alliances with major players in the global semiconductor and electronics industries. India can establish itself as a major role on the world technological scene if it promotes international cooperation. The semiconductor and electronics industries hold great promise for the economic and social development of future India capitalizing on these sectors, India may accelerate its path to become a world power in terms of GDP, technical innovation, and social progress. However, sustained funding, government backing, and a focus on research, innovation, and skill development are essential to accomplishing these objectives.

Dr Shubham Shukla

Associate Professor & Assistant Dean R&D

Department of Electronics and Communication Engineering

SDG Goals and Indian Philosophy regarding Environmental Conservation

Indian philosophy has always talked about harmony in nature, which can be achieved by respecting the coexistence approach of the ecosystem. In the Hindu scriptures, it has been mentioned that the human body is made up of 5 elements of nature namely earth, water, fire, air, and sky. These 5 elements are required to stay in balance to sustain the health of living species as well as harmony in the self-sustaining ecosystem. With the green revolution, the facilitation of chemical fertilizers, and chemical pesticides improved food production, which enabled to reduce the food hunger and famine. However, for many decades the excess application of agrochemicals has led to the soil's health degradation, which resulted in an increase in the demand for chemical fertilizers for every successive year. This brought an imbalance of the soil's physical, chemical, and biological characteristics and a loss of rejuvenating capacity of the respective element of nature as well. The entire world is focussing on SDG goals achievement and the Indian scriptures "Yajur Veda" itself mentioned the philosophy towards sustainability like "Dehi Me. Dadami Te" which means whatever we will put inside the 5 elements it is going to come back to us, later the same wisdom was illustrated through the scientific phenomenon of biomagnification.

At present it seems challenging to achieve one of the UNGA SDG Goals namely SDG-2 to end the world's hunger by 2030. SDG-2 aims to achieve food security, improve nutrition and promote sustainable agriculture while creating a world free of hunger by 2030. We have reached a high time to come back to the natural farming system using organic manure in spite of chemical fertilizers and amend the contaminated agricultural land to achieve SDG goal-2. So, to achieve any of the SDG goals we need to see and learn how our ancients use to stay in harmony with themselves and with nature and need to develop an eco-centric attitude rather than a human-centric attitude.

Dr. Minakshi Karwal

Associate Professor, Applied Sciences

Assistant Dean of R&D

Innovation Spotlights of the Month

Integrated AI system improves machine diagnosis of lung Diseases

To get the right diagnosis, doctors draw from a broad suite of useful indicators, from observations and scans to blood and genetics tests. All this clinical information, however, comes in different formats. This difference poses a problem for machine learning approaches in medicine. Artificial intelligence (AI) typically has a hard time comparing and cross-referencing these multiple data sources, potentially hindering an accurate diagnosis.

A new study from AI researchers in China shows how this obstacle can be overcome—at least for sets of patients with lung conditions such as lung cancer or pneumonia. Published in *Nature Biomedical Engineering*, the research uses a machine learning system to simultaneously assess X-ray images, statements from the patient, and blood test results.

In trials with real patient data and outcomes, the new system could identify diseases and predict patient outcomes better than existing AI models that analyze the different data sources separately. In principle, this system could help streamline the triaging of patients, the researchers say, particularly in parts of the world without access to medical expertise.

"AI systems can be trained to analyze vast amounts of medical data, including patient records, symptoms, test results, and medical literature, far more quickly and comprehensively than humans," says Yizhou Yu, a co-author on the paper and a computer scientist at the University of Hong Kong. "By leveraging telemedicine and AI-powered diagnostic tools, individuals can receive preliminary assessments and guidance remotely, bridging the gap in healthcare disparities."

The new study looked at how well an AI system called IRENE could diagnose eight pulmonary diseases. For more than 50,000 patients, IRENE carried out a combined assessment of chest X-ray, notes on the patient's complaint, medical history, demographics, and the results of dozens of lab tests, including body temperature, 24-hour urine volume, and blood oxygen content.

Existing AI systems would be forced to separately analyze each of these different data sources and then combine the individual outcomes to offer a diagnosis. But such systems— called fusion models—cannot use clues from one data source (medical history, for example) to help interpret another (such as blood test results).

IRENE is a unified model, based around a core unit called a multimodal diagnostic transformer (MDT). The MDT can identify and encode relevant interconnections among the different data sources, such as keywords in the patient statement and specific image regions in radiographs. Using this technique, IRENE was nine percent better at identifying cases of pulmonary disease than fusion models. "To the best of our knowledge, our system achieves much better performance than existing techniques in the context of pulmonary disease identification," Yu says.

The group's system also outperformed the fusion models in a second test. It was seven percent better at predicting adverse effects in COVID-19 patients, including death and ICU admission,

based on a combined analysis of largely text-based information that consisted of demographics, comorbidities, symptoms, and lab test results.

Source: *https://www.pnas.org/post/journal-club/integrated-ai-system-improves-machine-diagnosis-lung-diseases*

Illuminating IV Pumps

People in the medical profession need to be born multitaskers, but even with such skills, certain responsibilities may go missing. The Easy Find Infusion Bottle makes nurses' jobs a little easier, enabling them to go about their many duties without watching every patient's IV. This product, by Wang HongLi, Li Fu, and Huang Mingguang, is more of a hi-tech addition to an intravenous pump setup. It connects beneath the IV bag to help regulate the administering of medications and saline solutions through a person's cannula and into his bloodstream. When the clinician sets up the Easy Find, they can calibrate it with the volume of prescribed fluid. When this runs out, the container will immediately glow bright blue.

The Easy Find Infusion Bottle Notifies Nurses When Fluids Need Refilling

Trend Themes

1. Smart Medical Devices - The Easy Find Infusion Bottle demonstrates the trend of smart medical devices by using technology to streamline and improve the infusion process.

2. Remote Patient Monitoring - By notifying nurses when fluids need refilling, the Easy Find Infusion Bottle exemplifies the trend of remote patient monitoring, allowing healthcare professionals to monitor patients more efficiently.

3. Iot in Healthcare - The Easy Find Infusion Bottle incorporates IoT technology to automatically track fluid levels, highlighting the trend of IoT integration in the healthcare industry.

Industry Implications

1. Medical Devices - The Easy Find Infusion Bottle presents disruptive innovation opportunities in the medical devices industry by introducing a new feature to improve the IV administration process.

2. Healthcare Technology - The Easy Find Infusion Bottle contributes to disruptive innovation in healthcare technology by merging IoT and remote monitoring to enhance patient care.

3. Pharmaceuticals - The Easy Find Infusion Bottle poses potential disruptive innovation opportunities in the pharmaceutical industry by optimizing medication administration and reducing errors.

Source: https://www.trendhunter.com/slideshow/pharmaceutical-tech

Drones and lasers team up to detect greenhouse gas Leaks

Researchers at Princeton University have developed a laser-based sensing method that can locate and quantify greenhouse gas leaks, both big and small, localizing emission sources to within a meter for fast repairs. The team's method uses a retroreflector-equipped drone and gas sensors at a base station to locate and measure gas leaks by bouncing laser beams. Mounting gas sensors on drones have limitations due to weight and safety concerns in hazardous environments. The researchers used a mobile base station for gas sensing and a smaller drone with a mirror. This approach uses cheaper, longer-lasting drones to monitor entire natural gas facilities in one flight, bypassing drone limitations. The method could enable simultaneous measurement of multiple gases—a challenge in other drone-based approaches due to size and power restrictions.

The retroreflector mounted onto the drone (Credit: Bumper DeJesus, Princeton University)

Source: https://www.efymag.com/express/ - Page 12, electronics for you magazine

Robust flight navigation developed for complex vision based Tasks

Massachusetts Institute of Technology's (MIT's) Computer Science and Artificial Intelligence Laboratory (CSAIL) researchers have developed robust flight navigation agents for vision-based tasks in new and complex settings, inspired by organic brain adaptability. The researchers propose learning-based control for drone adaptability across different environments without extra training. Liquid neural networks offer a promising solution to traditional deep learning's inability to capture causality, hindering adaptation to new environments. The team trained their system on pilot data and tested navigation skill transfer to new environments with changing conditions. Liquid neural nets' parameters can adapt over time, making them more robust to unexpected or noisy data. Liquid neural networks empower autonomous air mobility drones for environmental monitoring, package delivery, autonomous vehicles, and robotic assistants. Robust learning and performance in out-of-distribution tasks are crucial for machine learning and autonomous robots in critical societal applications. *Makram Chahine, a PhD student in an MIT CSAIL affiliate, leads a drone used to test liquid neural networks* (Credit: Mike Grimmett/MIT CSAIL), *Source: https://www.efymag.com/express/ - Page 13, electronics for you magazine*

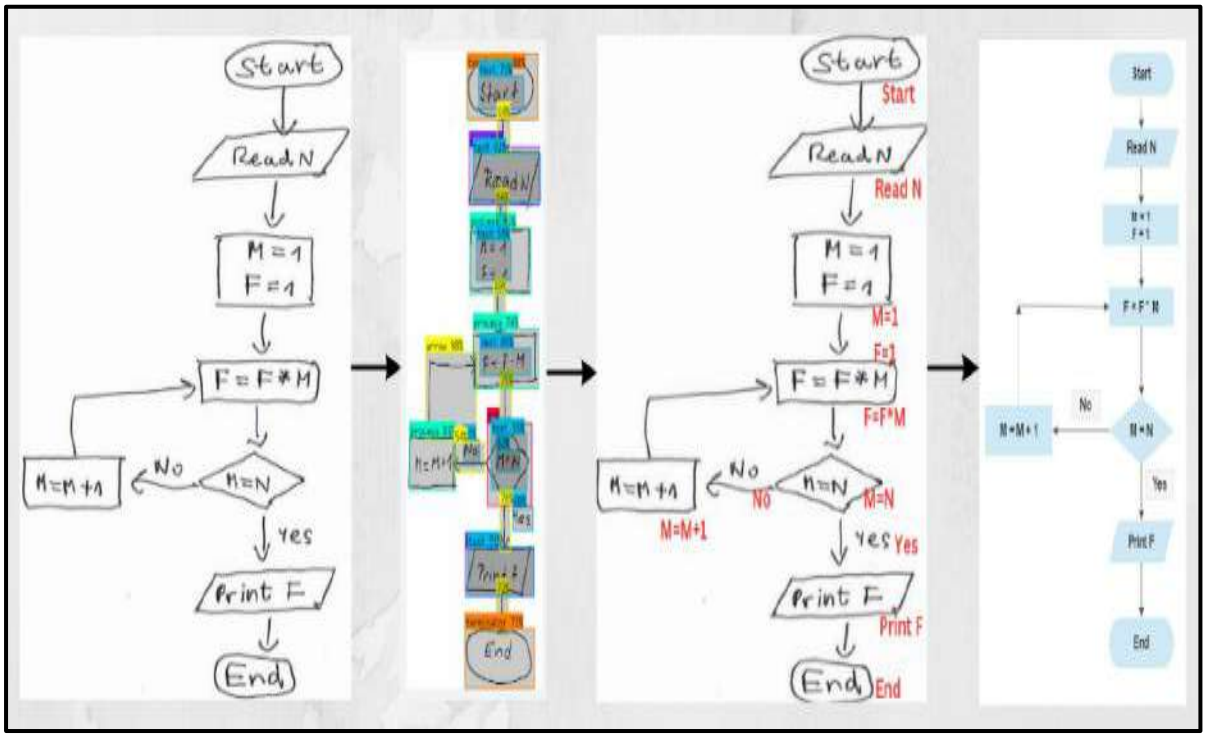
Student's Corner

This is the **fighting Robot** designed by team **DINOBOTS** (**Group of 15 Members led by Ms. Tanushika**) a Robotics club of the ECE Department from KIET. This Robot has been designed for the World Robotics Championship event called Technoxian going to be held at IIT Delhi from the 26th to the 1st of August 2023. Various robotics events will be organized from which our team Dinobots have taken part in Robowar. Our bot is completed within a span of one month and has numerous features like a super spinner for fighting wireless remote control, and impact sensors to detect the impact and make the bot secure a safe place during the war. It is equipped with high torque motors with variable speed control mechanisms, it can also be controlled with an Android mobile phone. The World Robotics Championship is one of the biggest robotics Championships in the field of Robotics which provides exposure to an international level.

Draw2Digital: Digitizing Hand-Drawn Diagrams Automatically

A Digital Conversion of hand-Drawn flowcharts that clearly explains the approach of a problem solver using Deep learning. Flowcharts, UML Models, Finite automata are key artifacts in Software engineers contexts. The availability of various tools over the Internet for drawing digital diagrams by joining various notations takes considerable time, effort, friction, and there may be no presence of a laptop/ desktop. These tools do not provide means for effective communication and collaboration that are required for creating diagrams. So, A developer must sketch or whiteboard or piece of paper. The paper on which the hand-drawn model was drawn may be lined, squared, or dotted. The paper adds numerous lines to drawing which may appear like lines used to denote notations. It, however, creates a need to transform model diagrams into digital counterparts that are processed by analysis tools. Hand-Drawn Flowcharts do not address the recognition of edges or textual labels.

Against this background, We developed a Draw2Digital with Prof. Deepika Kamboj (Professor IT Department) . It uses a neural network-based architecture to recognize notations, edges and textual labels of expressive flowcharts. Draw2Digital considerably improves upon existing works in terms of both recognition quality and scope. It provides comprehensive transformation of hand drawn flowcharts, including proper handling of textual labels and message flows. It reliably recognizes hand-drawn flowcharts from scanned images and hence removes undesirable friction in workflow.



Archi Mittal,
IT Branch,
4th Year

Dipanjali,
IT Branch,
4th Year

Anupam Tiwari,
IT Branch,
4th Year

Divya Aggrawal,
IT Branch,
4th Year

KIET (R&D) Policies

Research Incentives for Students for Journal Publication

- An incentive amount of rupees five thousand (Rs. 5,000/-) is applicable to student authors for publications in any SCI, non-paid journals.
- An incentive amount of rupees three thousand (Rs. 3,000/-) is applicable to student authors for publications in any Scopus, non-paid journals.
- Published papers must have "**KIET Group of Institutions, Delhi-NCR, Ghaziabad**" as the affiliation.
- The application with the relevant documents to be submitted to the Head of the Department once the research paper is published.
- The author needs to claim the incentive only after the volume number, issue number, and page number have been assigned to the research paper by the journal.
- Authors must also be aware of the KIET Ethics Policy for Students and Faculty Members on academic dishonesty and plagiarism **(Annexure I)**.
- A publication claim under the Research Incentive Schemes (RIS) of KIET must be made within a month of publication in the prescribed form to the Head of the Department (**Annexure II (a)**). The Head of the Department will send the file with recommendations to the Registrar office for further processing.

Presentation of Research Papers in Conferences in India

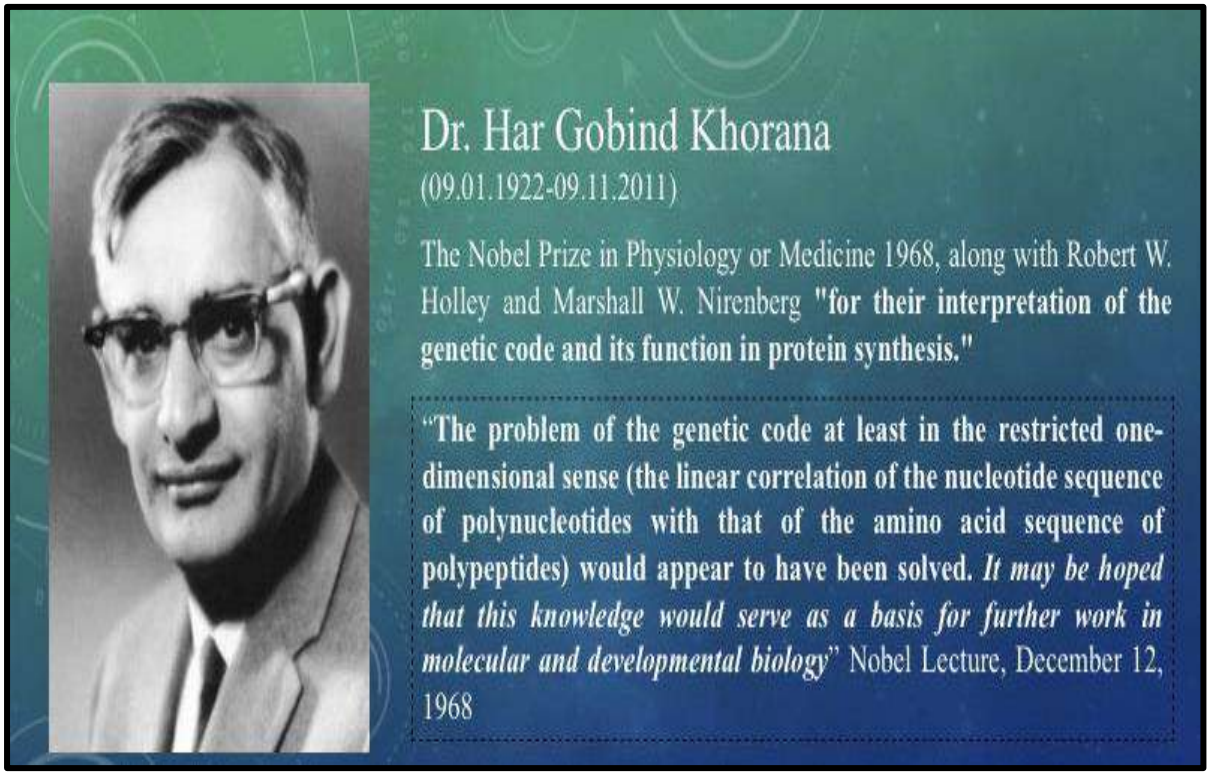
- The International/National conference must be of repute (viz. IEEE, Springer/Wiley/IPC etc.) and the hosting institutions must be of repute as well (IITs/IISc/NITs/IIITs/Universities/Deemed Universities etc.).
- For the Research paper Publication by students (based upon Final Year Project outcome as notified by Dean Academics) in Scopus Indexed Conference, the institute will reimburse 50% of the registration fee to each project group.
- For the Research paper Publication by students (other than Final Year Project outcome) in Scopus Indexed Conferences by student of I, II, II and IV years, the institute will reimburse Rs. 2,000/- or T.A (as per Institute policy) + registration fees whichever is less.
- Only one student may use the facility in the case of joint authorship.
- Authors must also be aware of the KIET Ethics Policy for Students on academic dishonesty and plagiarism (**Annexure I**).
- Published paper must have '**KIET Group of Institutions, Delhi-NCR, Ghaziabad**' as the affiliation.
- The application with the relevant documents to be submitted to the HoD once the research paper is published and is available online.
- A publication claim must be made within a month of the publication of a research paper in the prescribed form to the Head of the Department (**Annexure III (a)**). The Head of the Department will send the file with recommendations to the Registrar office for further processing.

Various Research Labs in KIET

S. No.	Research Lab/Centre of Excellence	Department
1	Centre of Robotics and Mechatronics	ECE
2	KIET NI LABVIEW Academy	ECE
3	Bio-Medical Instrumentation MBS	ECE
4	Space Technologies	ECE
5	Apple for iOS University Program	IT, CS, MCA
6	D-Link Global Center of Excellence	IT, CS, MCA
7	Centre for Automotive Mechatronics in association Mercedes Benz	ME
8	CAD/CAM Lab	ME
9	Material Science & Testing Lab	ME
10	IC Engine and Automobile Lab	ME
11	Maker's Space Innovation Lab	All Branches
12	Central Instrumentation Lab	Pharmacy
13	Pharmacology research Lab	Pharmacy
14	Center of Excellence for Renewable Energy based Power System for Electrical Power Supply and Transportation	EN
15	Centre of Excellence in latest art of structural analysis and design facilities viz. STAAD PRO, E-TABS, SAP, ANSYS, PLAXIS, Primavera etc.	CE
16	Centre of Excellence in Process Control and Industrial Automation	EN
17	Finance Lab	MBA


Centres of Excellence
KIET-MBS Research & Development Centre for Bio-Medical Instruments
Centre for Advanced Woodworking
Automotive Mechatronics Centre in Collaboration With Mercedes-Benz India Pvt. Ltd.


A Glimpse of Collaborative Research and Development Presentation
GPS Map Camera Lite
MBA DEPARTMENT, KIET GROUP OF INSTITUTIONS, Phase - I, Asalat Nagar, Uttar Pradesh 201206, India
Latitude 28.75255847°
Longitude 77.49888444°
Local 03:42:36 PM
Altitude 217 meters
GPS Map Camera
Muradnagar, Uttar Pradesh, India



KIET Group of Institutions

Delhi-NCR, Ghaziabad, Uttar Pradesh, India - 201206