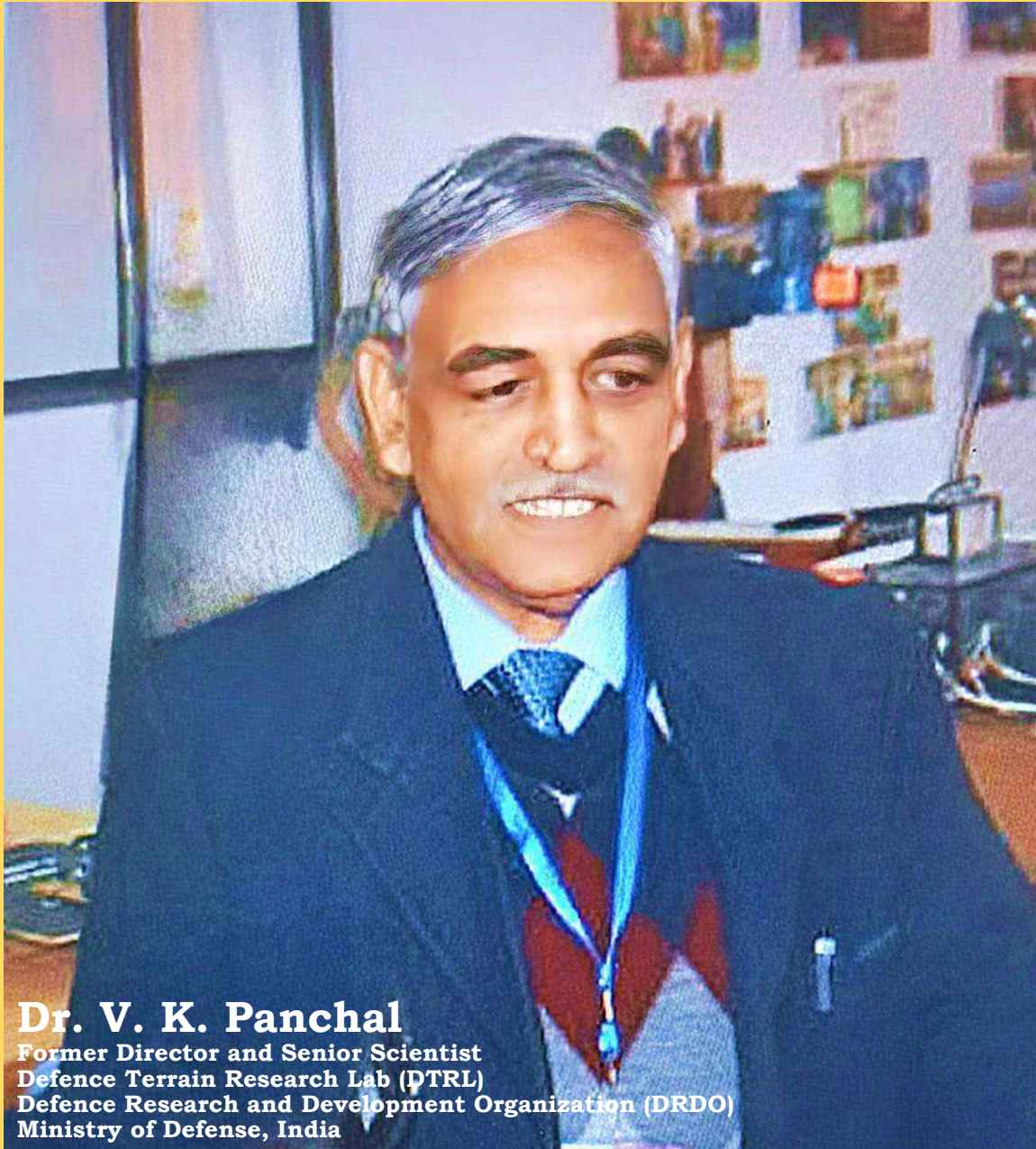


May 2023

Vol No. 5

# अनुसंधान

(KIET Research Magazine)



**Dr. V. K. Panchal**

Former Director and Senior Scientist  
Defence Terrain Research Lab (DTRL)  
Defence Research and Development Organization (DRDO)  
Ministry of Defense, India

**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](http://www.kiet.edu).

The Institute has NAAC accreditation status with '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 88<sup>th</sup> rank in Pharmacy discipline, Rank Band (151-200) for Engineering and Innovation (51-100) Rank band in 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 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. Presently 36 nos. 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.





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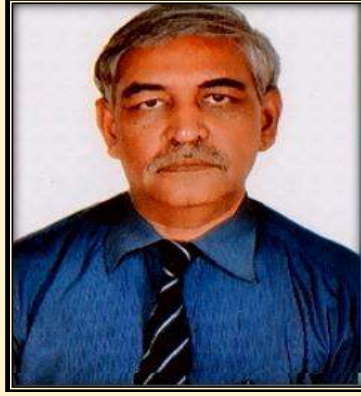
Ms. Richa Singh, Assistant Prof., Computer Science Engineering (AI and AIML)

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## Message from the Face of Cover Page



**Dear Readers,**

I hope the reader finds this message in good health and high spirits. As a Data Scientist at the Defense Research and Development Organization (DRDO), I am privileged to witness the transformative role that data plays in shaping our world. Today, I would like to share some insights on the incredible strides we are making through data-driven research and innovation.

I'm a former Data Scientist from DRDO (Defense Research and Development Organization) and I'll take you on a journey to explore the incredible potential of data science in the realm of defense research. I had the privilege of working in this dynamic field, I witnessed firsthand how data-driven approaches have revolutionized our ability to enhance national security and safeguard our interests. Join me as we delve into the fascinating world where data science meets defense.

Data science has become an indispensable tool in research, enabling us to make sense of the vast amounts of information at our disposal. From satellite imagery to sensor data, from intelligence reports to battlefield records, data provides us with invaluable insights and intelligence. By harnessing the power of data science, we can transform this raw information into actionable knowledge that drives strategic decisions.

In the world of data science, collaboration is key. Interdisciplinary collaboration between researchers, engineers, and domain experts fosters innovation and enables a holistic understanding of complex defense challenges. By bringing together experts from diverse fields such as data science, engineering, psychology, and social sciences, we can tap into a broad spectrum of knowledge and perspectives, driving breakthroughs and achieving synergistic outcomes.

From intelligence analysis to strategic planning, from technology development to operational effectiveness, data science empowers us to push the boundaries of what is possible. By harnessing the power of data and combining it with our expertise, creativity, and dedication, we can continue to innovate and safeguard our nation's security. Together, let us embark on this journey of knowledge, discovery, and impact as we unlock the full potential of data science in defense research.

In conclusion, I would like to express my deep admiration for the role you play as readers of research magazines. Your curiosity and passion for knowledge are the driving force behind our relentless pursuit of excellence. Together, let us embrace the power of data and forge a path towards a safer and more prosperous future.

**Dr. V. K. Panchal**

Former Director and Senior Scientist

Defence Terrain Research Lab (DTRL)

Defence Research and Development Organization (DRDO)

Ministry of Defense, India

## 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. As 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)

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e-mail: dean\_rnd\_office@kiet.edu, Contact No. +919718907912 (O)



## Glimpses of Month



A discussion on possibilities of industrial collaboration was held on 12<sup>th</sup> May'23 between Mr. Dayanand, Director, IDEX New Delhi, and Director A. Garg, KIET Group of Institutions, and KIET Innovation & Research Team.



A session with the Esteemed Guest Dr. A. G. Keskar (NBA Chairman, Expert, Professor (HGA), NIT Nagpur) was held on May 10-11, 2023.

**The agenda of the session was as follows:**

Presentation on the growth of research and development at KIET, including an overview of the research grants submitted by the institution and received the grants. This agenda provided an opportunity to discuss the status of research activities, funding sources, and the impact of research projects at KIET.

A discussion was done on the implementation of project-based learning (PBL) practices in research and development activities. This agenda point focused on exploring the benefits and challenges of incorporating PBL methodologies in research projects, sharing best practices, and seeking suggestions to enhance the effectiveness of PBL in promoting research and development outcomes.



A DRDO Academic Conclave held at DRDO Bhawan Rajaji Marg Delhi was attended by Dr. Parvin Kaushik, Dr. Shivani, and Dr. Himanshu Chaudhary. It was an incredibly insightful and enriching experience. The conclave provided a remarkable platform for academia-industry interaction and knowledge exchange. It was an honor for the team to meet and engage with experts from various fields, gaining invaluable insights into cutting-edge research and development initiatives. The team has interacted with numerous eminent scientists and professors and the discussion with the below-mentioned members was very comprehensive:

1. Dr. Satish Kumar, Chairman, ARMREB
2. Dr. Vikash Kumar Saxena, Chairman, AR&DB
3. Dr. Mini Thomas, Dean of Engineering, Jamia Millia Islamia
4. Dr. Hari Babu Srivastava, Director General, Technology Management, DRDO
5. Dr. Ravindra Singh, Director, Directorate of Parliamentary Affairs, DRDO

The knowledge gained and connections made during the event will undoubtedly help KIETians in their future research endeavour.






The Dean of the R&D office organized an interactive session on “Nanosatellite Application in Everyone’s Life”. The esteemed guest for the session was Shri Anil C. Mathur (Former Group Director of Space Application Centre, Ahmedabad).



## Statistics of KIET Research and Development Activities

### Rankings & Accreditations

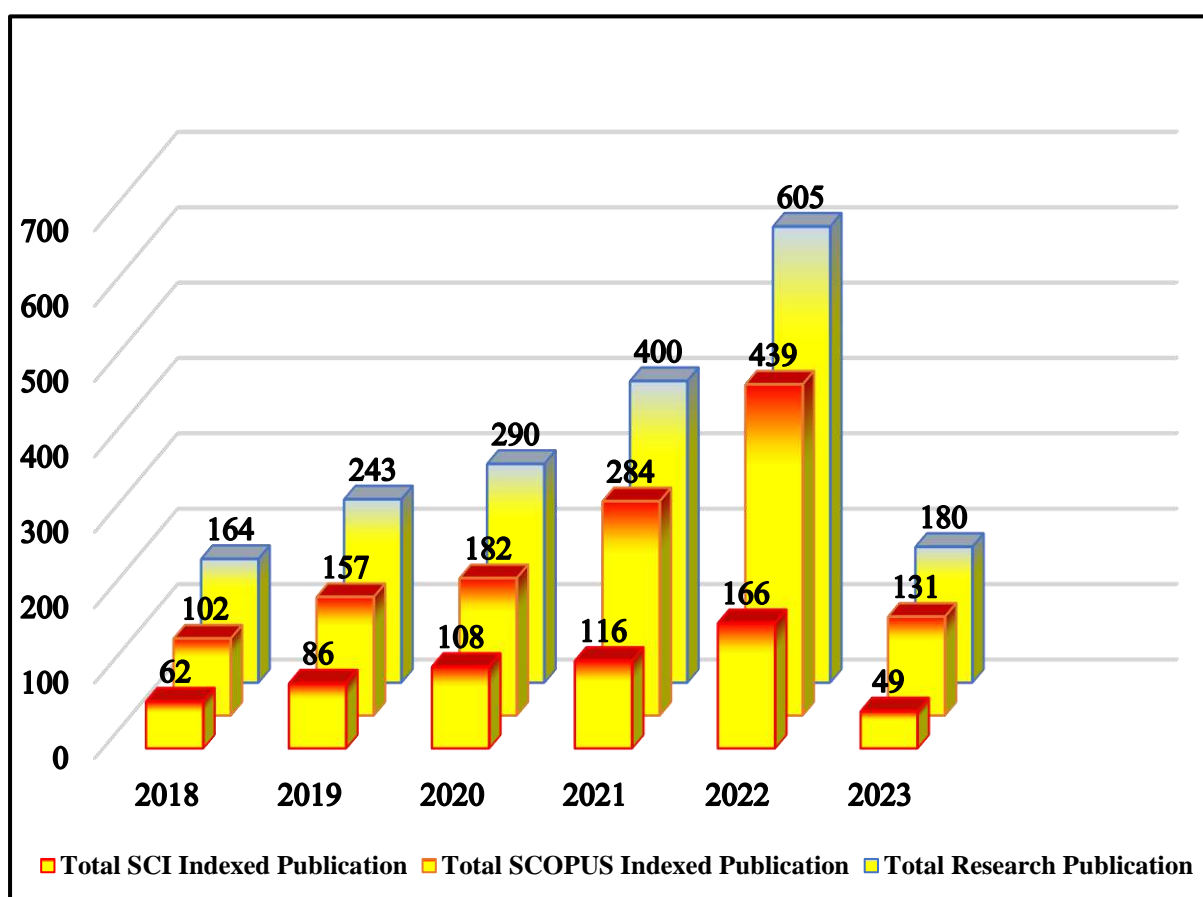
- NAAC - Grade 'A+' (Cycle 2 Assessment) - Accredited for 5 years till 03 Jan 2027.
- NIRF 2023 (Pharmacy – Rank 88 & Engineering - Rank Band (151-200)).
- NIRF 2023 Innovation Rank Band (51-100).
- QS-IGAUGE - 'Diamond' College Rating (till Feb 2024) & 'Institution of Happiness' Award.
- Innovation 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)

 <p>सूचना का अधिकार RIGHT TO INFORMATION</p>	<p>दूरभाष/TEL : 26962819, 26567373 (EPABX) : 26565894, 26562133 : 26565887, 26562144 : 26562134, 26562122 फैक्स/FAX : 26960629, 26529745 Website : <a href="http://www.dsir.gov.in">http://www.dsir.gov.in</a> (आयुर्विज्ञान 9001:2008 प्रमाणित विभाग) (AN ISO 9001:2008 CERTIFIED DEPARTMENT)</p>	 <p>सत्यमेव जयते</p>	<p>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</p>
			
F.No. 11/791/2018-TU-V		Date: 28 <sup>th</sup> April 2022	
<p>The Vice Chairman Krishna Charitable Society, 13 KM Stone, Ghaziabad-Meerut Road, Ghaziabad – 201206, Uttar Pradesh</p>			
<p>Subject: Renewal of Recognition of Scientific and Industrial Research Organisations (SIROs).</p>			
<p>Dear Sir,</p>			
<p>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.</p>			
<p>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.</p>			
<p>3. Receipt of this letter may kindly be acknowledged.</p>			
			<p>Yours faithfully,  (Dr. P.K. Dutta) Scientist - 'F'</p>

### KIET Research Credentials

A total of 566 SCI Research Publications and 1241 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 May 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	49	131	180
<b>Total</b>	<b>566</b>	<b>1241</b>	<b>1839</b>



Category	Number of Publication for April 2023	Number of Publication for May 2023
SCOPUS Publications	26	31
Web of Science Publication	10	12

## Details of Patents Published/Granted

**Title of The Invention:** **Machine Learning-Based Drowsiness Detection System for Accurate Alertness Analysis**

**Application Number:** 202311020878 A (Indian Patent Office)

**Applicant(s):** Ms. Anshula Gupta and team

**Date of Filing:** 24-03-2023

**Date of Publishing:** 19-05-2023

**Field of the Invention:** The present invention is related to the Computer Science field and particularly, machine learning.

**Objectives of the Invention:** In this System, we are providing real-time video capturing which will inform the driver driving the vehicle whether he is in an active and safe state to drive or is drowsy, which could be threatening. This system works in 4 stages basically, which comprise:

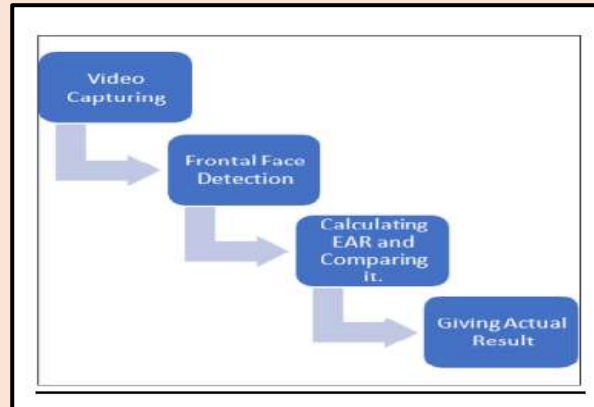


Figure 1: Working of the System

1. Video Capturing
2. Frontal Face Detection
3. Calculating EAR and comparing it.
4. Giving Results to the driver

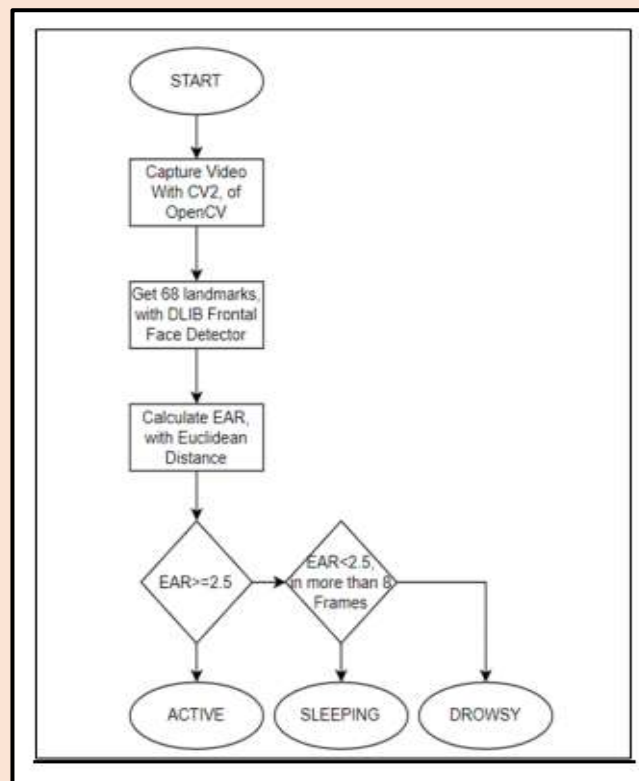


Figure 2: Flowchart of the procedure of the project



**Title of The Invention: AR Museum: A Virtual Museum Using Marker-less Augmented Reality System for Mobile Devices**

**Application Number:** 202311026446 A (Indian Patent Office)

**Applicant(S):** Dr. Jyoti Srivastava and team (KIET Group of Institutions)

**Date of Filing:** 06-04-2023

**Date of Publishing:** 19-05-2023

**Field of The Invention:** The technique of employing technology to superimpose images, text, or sounds on top of what a person can already see is known as augmented reality. It uses an application on a smartphone or tablet to make changes to an existing image. The user stands in front of a scene with their gadget held aloft. It will present them with a distorted view of reality. This patent describes an augmented reality (AR) application that covers computer-generated information in the actual world by digitizing museum objects and overlaying them over real life.

**Objectives of the Invention:**

**Marker-less Augmented Reality System:** The main object of the invention is that it allows users to view virtual exhibits without the need for physical markers.

**Virtual Exhibits:** These exhibits should be designed to provide an immersive and educational experience for users, allowing them to interact with historical artifacts and cultural exhibits in a unique and engaging way.

**User Interface:** The interface should be intuitive and provide users with a seamless experience, allowing them to focus on the exhibits without being distracted by complicated controls or menus.

**Content Creation Tools:** These tools should be accessible and easy to use, allowing non-technical staff to create content without requiring extensive training.

**Real-time Analytics:** This will allow museum staff to monitor user behaviour, track exhibit popularity, and identify areas for improvement in real time, enabling them to make data-driven decisions to improve the overall user experience.

**Gamification Features:** Gamification features could include leaderboards, badges, and rewards for completing certain tasks or exploring specific exhibits.

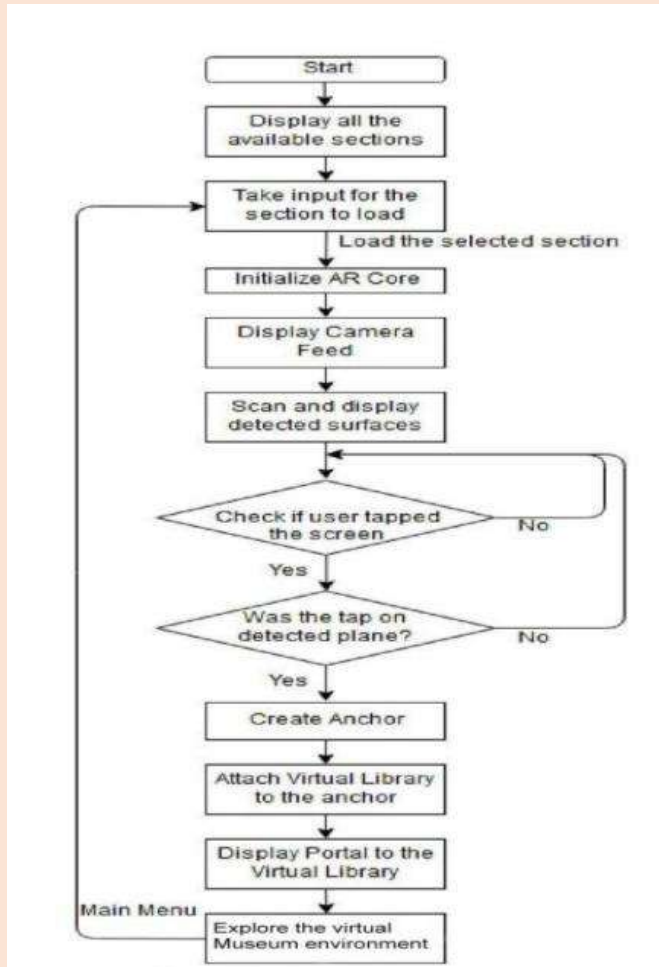


Figure 1: Flowchart for complete AR Museum App

**Social Sharing:** Users should be able to easily share their experiences on social media platforms, allowing others to learn about the museum and its exhibits and potentially attracting new visitors to the physical museum.

**Multi-language Support:** This will allow users to select their preferred language and ensure that exhibits and other content are available in multiple languages, making the museum more inclusive and welcoming to visitors from diverse backgrounds.

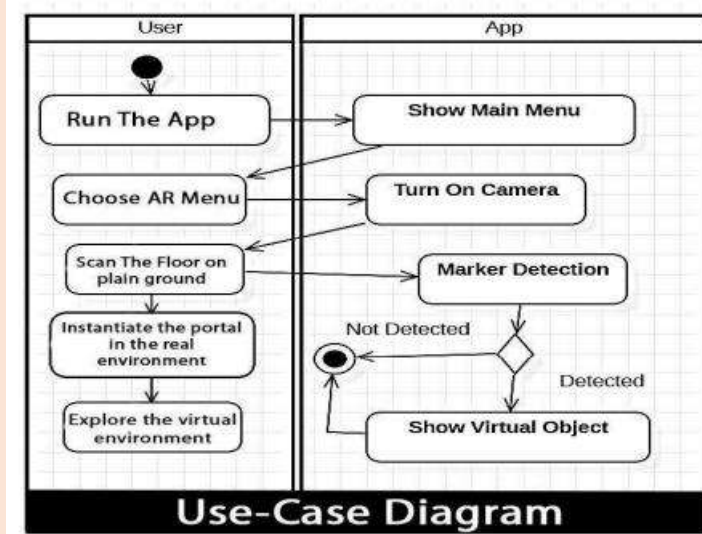


Figure. 2. Use-case Diagram for AR based Museum

**Title of the Invention: A Novel System for Loan Eligibility Based on Informal Financial Transactions Information without User Credit Score**

**Application Number:** 202311028851A (Indian Patent Office)

**Applicant(S):** Prof. (Dr.) Rekha Kashyap and team (KIET Group of Institutions)

**Date Of Filing:** 20-04-2023

**Date Of Publishing:** 26-05-2023

**Field of the Invention:** The field of micro-financed loans is relevant to the current invention. The answers provided by the current innovation apply to the field of Small Finance Regulatory

authorities. With a machine learning-based environment, the current invention connects lenders with the small need of finance and the small-cap financed companies for resolving the problem of loan eligibility. More specifically, the system that recognizes the eligibility criteria of finance companies and lenders need with its personal and financial transactions processes. The current invention thanks the small-cap financial companies for their efforts to fulfil the loan requirement of lenders having low low-levels.

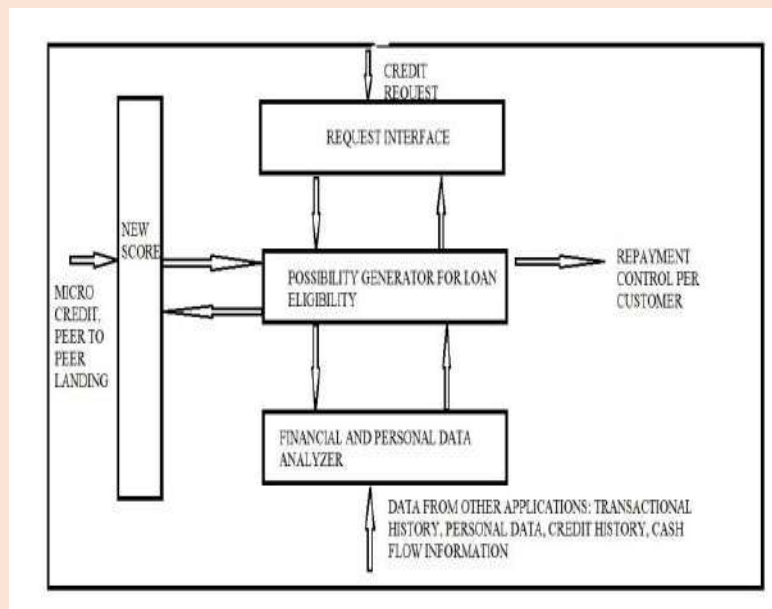


Figure 1: Machine Learning based Model of Loan Eligibility

**Objective of the Invention:** The idea behind the current invention is to create a Machine learning-based system that can generate the loan eligibility report of the lender. This would help the Micro financed companies to optimize the loan-providing process to eligible lenders.

**Title Of the Invention:** **A Room Environmental Condition Monitoring Device**

**Design Application Number:** 370996-001 (Indian Patent Office)

**Applicant(S):** KIET Group of Institutions

**Date Of Filing:** 17-09-2022

**Date Of Publishing:** 26-05-2023

**Class:** 10-04

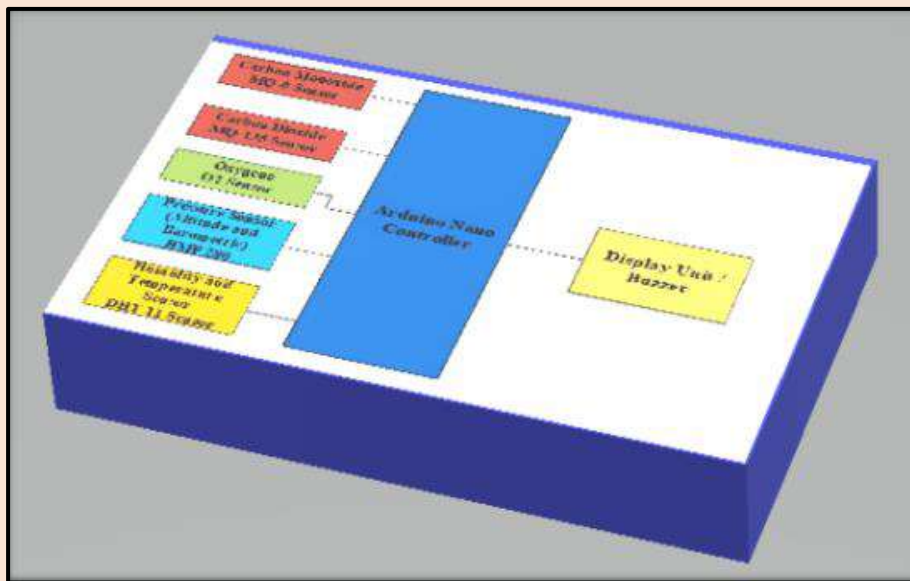


Figure 1: Perspective view

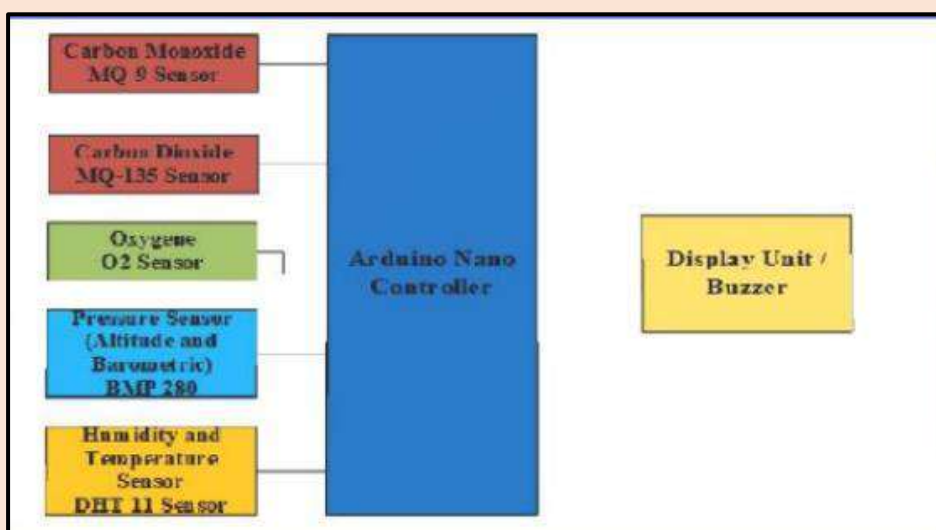


Figure 2: Top - view

**PATENTS Published - May 2023**

S. No.	Title Of Patent	Dept.	Name Of Applicant	Date Of Publication	Status
1.	A System for Enhancing Security With IOT-Enabled Road Obstacle Avoidance Robots for Safety	CS	Dr. Sangeeta Arora, Shikha Jain	12.05.2023	PUBLISHED
2.	The Impact of Using Automation is Transforming the Supply Chain Industry	Applied Science	Dr. Neelam Sharma	12.05.2023	PUBLISHED
3.	Deep Learning and Long Short-Term Memory Recurrent Neural Network Based Speedometer	CS	Ms. Neelam Rawat	12.05.2023	PUBLISHED
4.	IOT-Based System in Car to Avoid Collision on National Highway	KSOM	Ms. Tanushree Sanwal	12.05.2023	PUBLISHED
5.	A Systemic Approach for Resource Management in a Blockchain-Based IOT Network	EC, CE	Dr Chirag Arora, Dr. Ajeet Pratap Singh, Dr Jyoti Srivastava, Ms Shikha Tyagi, Mr Vikas Sharma, Dr Ruchika Singh	12.05.2023	PUBLISHED
6.	Assistance Device for Visually Impaired Users	ME	Dr. Ajay Kumar	12.05.2023	PUBLISHED

### Details of Research Incentives for Journals

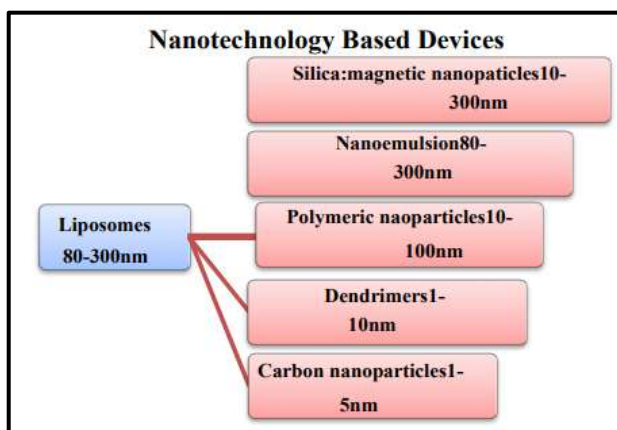
S. No.	Name of Faculty	Designation	Dept.	Title of Paper and Name of Journal	Impact Factor/ Cite Score	Benefits/ Incentives	Index in Journal
1.	Jaya Chaudhary (M.Pharm)	Student M.Pharm II Year	M. Pharm (Pharmaceutics) II year	Applications Of Nanomaterials In Improving The Traditional Diagnostic Approach <b>International Journal of Survey in Fisheries Sciences</b>	-	2000	Scopus
2.	Radhika Agarwal (M.Pharm)	Student M.Pharm II Year	M. Pharm (Pharmaceutical Quality Assurance) II	Exploring the Potential of Biodegradable polymers for Sustainable drug delivery applications <b>International Journal of European Chemical Bulletin</b>	-	2000	Scopus
3.	Varun Gupta	Associate Professor	EN	An Adaptive Optimized Schizophrenia Electroencephalogram Disease Prediction Framework <b>International Journal of Wireless Personal Communications</b>	2.01	11000	SCIE & Springer

### Highlights of the Published Journal Articles

1. **Anushka Tyagi, N.G. Raghavendra Rao, Deepak Yadav, Kunal Kanojia, “An Investigation Of Silver Nanoparticles With Its Toxicological Effects And Applications”, Vol. 10, No. 4S, Special Issue 4, 2023.**

DOI: [10.17762/sfs.v10i4S.898](https://doi.org/10.17762/sfs.v10i4S.898)

Researchers have been studying nanoparticles of silver due to their characteristic attributes (e.g., size, shape, bactericidal, and electrical characteristics). Nanoparticles of silver are one of the most important and fascinating nanoscale elements among the many nano-particles used for biological purposes. Nanoscience and nanotechnology, especially in biomedicine, rely heavily on nanoparticles of silver. The physical, chemical, and





biological production of silver nanoparticles is discussed in this paper. Majorly focusing on biological methods, as they are environmentally friendly and less toxic. We have discussed the characteristics of silver nanoparticles and various techniques for determining their qualities, concluding with their application in various fields. As a result, the main purpose of this review article is to focus on the current conditions and potential.

**Nanomaterials in Drug Delivery System obtain FDA approval**

**Table.3.0.** Nanomaterials in drug delivery system obtain FDA approved

Drug or therapeutic agent (tradenname)	Indication	Reference
Liposomal amphotericin B (Ambisome, Ablecet, Amphoteric)	Fungal infections, Leishmaniasis	Alder-Moore (1994)
PEG-adenosine deaminase (Pegademase)	Severe combined immunodeficiency disease	Bory et al. (1991)
PEG-stabilized liposomal doxorubicin(Doxil, Evacet)	Kaposi's sarcoma, refractory ovarian cancer	Muggia and Hamilton (2001),Northfelt et al.(1996)
liposomal cytosine arabinoside(DepoCyt)	Lymphomatous meningitis, neoplastic meningitis	Glantz et al. (1999a), Glantz et al. (1999b)
Interleukin 2-diphtheria toxin fusion protein (Denileikin Diffitox)	Cutaneous T -cell lymphoma	Olsen et al. (2001)
Liposomal verteporfin (Visudyne)	Wet macular degeneration	Bressler (2001)
PEG-interferon $\alpha$ -b(Pegasys)	Hepatitis c	Gule et al.(2000)
PEG-granulocyte colony-stimulating factor(Neulasta)	Chemotherapy associated neutropenia	Siena et al.(2003)
Protein bound paclitaxel (Abraxane)	Metastatic breast cancer	Nyman et al.(2005)
PEG L- asparaginase (Oncaspar)	Acute lymphocytic leukemia	Rosen et al.(2003)
PEG aptanib (Macugen)	Wet macular Degeneration	Lee et al.(2005a,b)
Pemetrexed (Alimta)	Malignant pleural mesothelioma	Ceresoli et al.(2006)

**2. Pankaj Bhatt, Harsh Rastogi, Ashok Kumar, Radhika Aggarwal, Shivani Sharma, Vasundhara Saxena, Vivek Barik, Bhakti Bhushan Barik, "Exploring the Potential of Biodegradable Polymers for Sustainable Drug Delivery Applications", European Chemical Bulletin, Vol 4, Special Issue-4, 2023.**

This article explores the potential of biodegradable polymers for sustainable drug delivery applications. Biodegradable polymers have attracted considerable attention in the field of drug delivery due to their ability to release drugs in a controlled manner, biocompatibility, and biodegradability. The article reviews the different types of biodegradable polymers, including natural and synthetic polymers, and their properties that make them suitable for drug delivery applications. The review also highlights the various drug delivery systems that can be developed using biodegradable polymers, such as microspheres, nanoparticles, and hydrogels. Finally, the article discusses the current challenges and future perspectives of biodegradable polymers in drug delivery applications, including the need for further research on the toxicity of these materials and the development of new biodegradable polymers with improved properties. Overall, the article emphasizes the potential of biodegradable polymers as a promising approach to sustainable drug delivery.

**Comparing the properties of biodegradable polymers with conventional polymers**

Property	Biodegradable Polymers	Conventional Polymers	References
Biocompatibility	High biocompatibility due to similarity to natural macromolecules and degradation products that are non-toxic and easily metabolized	Varies depending on the polymer and its degradation products, some may cause inflammation or toxicity	(Fan et al., 2021)
Biodegradability	Capable of undergoing enzymatic or hydrolytic degradation into non-toxic products, reducing long-term accumulation in the environment	Non-degradable or may take a very long time to degrade, leading to environmental pollution	(Pan et al., 2012)
Mechanical strength	May have lower mechanical strength compared to conventional polymers, but can be improved by blending with other polymers or additives	High mechanical strength, but may cause mechanical irritation or toxicity	(Shnyrova and Zimmerberg, 2009)
Drug loading capacity	Good drug loading capacity due to the presence of functional groups that can interact with drugs, and high surface area to volume ratio in nanoparticles	Limited drug loading capacity due to lack of functional groups, and limited surface area to volume ratio	(Eun Shin et al., 2023)

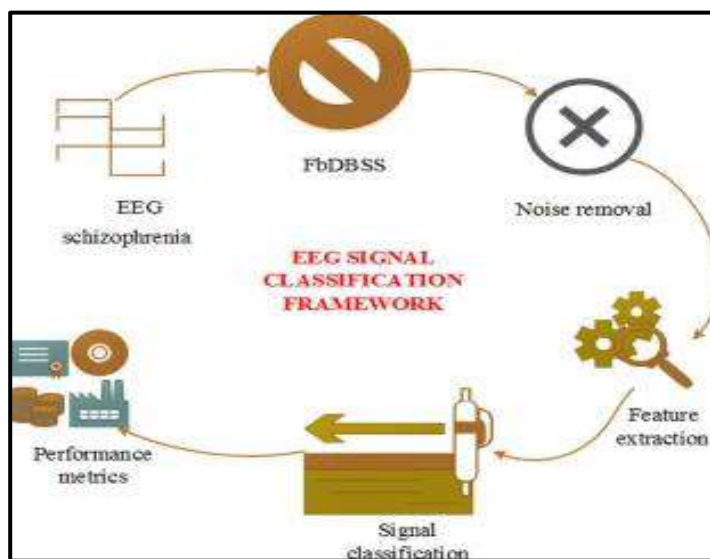
**3. Gupta, V., Kanungo, A., Saxena, N.K. et al. An Adaptive Optimized Schizophrenia Electroencephalogram Disease Prediction Framework. Wireless Pers Commun 130, 1191–1213 (2023). DOI: 10.1007/s11277-023-10326-2**

Electroencephalogram (EEG) signal analysis has become an interesting and required area in the medical industry to analyze brain function for different diseases. However, the EEG signal's noise features might degrade the signal prediction's exactness score. So, the presented article aims to develop a novel EEG signal analysis system named a novel Firefly-based Deep Belief Signal Specification (FbDBSS).

In addition, the disease signal considered in this research work is Schizophrenia (SZ) signal. Initially, the SZ signal with a normal EEG signal is trained to the system, and preprocessing function is performed.

Then the filtered signal is entered into the classification layer for the feature extraction and signal analysis function. Furthermore, the proposed design is executed in the python environment, and the robustness score has been measured in terms of accuracy, sensitivity, and error rate.

The chief parameter of the proposed FbDBSS design is compared with other models and has gained the finest 3% of improved signal analysis accuracy and sensitivity score.



### Reimbursement of Conference Registration Fee

S. No.	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Benefits/Incentives	Published By
1.	Smriti (Student)	Student	ECE (IV Year)	International Conference Power Instrumentation Energy and Control (PIECON 2023)	Smart Helmet and Bike Tracking System	1000	IEEE
2.	Gaurav Tripathi (Student)	Student	CS (IV Year)	International Conference Artificial Intelligence and Smart Communication	The Inception of Time Prudent Approach at Metro Stations.	1000	IEEE
3.	Himanshi Chaudhary	Assistant Prof.	CSE	International Conference	Comparative Analysis of Rainfall Prediction Using Machine Learning and Deep Learning Techniques.	8500	IEEE
4.	Manav Verma	Student	CS (IV Year)	International Conference, Artificial Intelligence and Smart Communication	Environment Quality Assessment Web Application.	1000	IEEE
5.	Ayushi Gupta	Student Passout	M.Tech (ECE) 2022	International Conference on Contemporary Computing (IC3- 2022)	Performance Investigation of MZM-based RoF Link by employing Digital and Analog data transmission.	1000	ACM
6.	Devansh Jha (Student)	Student	B.Tech (ECE) IV Year	International Conference On Information Systems and Computer Networks	Machine Learning-based Efficient Recommendation System	2500	
7.	Kushagra Srivastava Student	Student	B.Tech (CS) III Year	International Conference on Issues and Challenges in Intelligent	Comparative Analysis of Various Machine Learning Techniques to	1000	IEEE

				Computing (ICICT-2022)	predict Breast Cancer		
8.	Shivani	Assistant Prof.	CS	International Conference	Experimental Analysis of Disease Prediction using Machine Learning	8000	
9.	Arti Sharma	Assistant Prof.	CS	A review of Deterministic and Non Deterministic Load Balancing Mechanisms in SDN	Comparative Analysis of Different Algorithms in Link Prediction on Social Networks	8000	IEEE
10.	Sapna Juneja	Professor	CS	International Conference	IoT Enabled obstruction evasion Robots for enhancing system security	6300	
11.	Sachin Tyagi	Assistant Prof.	ECE	International Conference	A Review on Optional Modulator used in Radio Over Fiber (RoF) System for 6G IoT Applications.	8500	IEEE

### Highlights of the Published Conference Articles

1. **Smriti, V. Tiwari, R. Srivastava, and M. S. Sharma, "Smart Helmet and Bike Tracking System," 2023 International Conference on Power, Instrumentation, Energy and Control (PIECON), Aligarh, India, 2023, pp. 1-6, DOI: 10.1109/PIECON56912.2023.10085870.**

India is a country that is going to become the most populated country in the world in the coming years. It has a large population of youth. Today's youth enjoy riding bikes and often disregard safety precautions such as wearing a helmet. Because of these, two-wheelers accidents are increasing day by day, which causes deaths and several types of serious injuries. Significant causes of death are head injuries, which can be prevented by wearing a helmet and taking proper safety precautions. One can also see that drinking and driving have also increased, leading to road accidents. Over speeding is also one of the major factors. The increasing rate of road accidents made us develop a smart helmet using the internet of things, which reduces accidents and the risk of death. It has a feature where the bike starts only if the rider wears a helmet. If the rider is over-drunk or not wearing the helmet, the ignition will automatically switch off. If any accident occurs, the GSM modem and the GPS modem will send the message to the registered contact number by using a SIM card. In addition, if the bike or helmet is stolen, the owner can easily find out the exact location of the bike and the helmet using this device. This feature is necessary for a country like India, where bike theft cases are frequent and high.

2. **G. Tripathi, I. Singh and S. Juneja, "The Inception of Time Prudent Approach at Metro Stations," 2023 International Conference on Artificial Intelligence and Smart Communication (AISC), Greater Noida, India, 2023, pp. 1343-1348, DOI: 10.1109/AISC56616.2023.10085555.**



Metro systems are essential for meeting urban transportation requirements, particularly in large cities. The Automated Fare Collection (AFC) system used by the current metro systems is designed to simply keep track of single users. To be time-efficient, this article suggests the idea of a "Multiuser metro card" that would enable numerous people to utilize a single metro card. Card scanning, the number of passengers, and the destination are the only three inputs needed in the simple, three-step technique that is presented.

**3. H. Chaudhary, U. Mishra, A. Gupta and A. Singh, "Comparative Analysis of Rainfall Prediction Using Machine Learning and Deep Learning Techniques," 2022 3rd International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT), Ghaziabad, India, 2022, pp. 1-6, DOI: 10.1109/ICICT55121.2022.10064510.**

Since the previous decade, weather has changed rapidly, raising concerns about unpredictable rains. Humidity, pressure, wind, and temperature affect rainfall. Thus, studying such characteristics to predict rainfall is intriguing. Machine learning and deep learning have simplified rainfall prediction, which is still under development. This study implements machine learning and deep learning models trained on 145460 rows and 25 characteristics. These models are tested on a test dataset using measures like accuracy and PRF score to determine the best model for rainfall prediction. Tuning each model's hyper-parameters improves results. A comparative study examined how different factors affect rainfall. This study covers preprocessing, feature engineering, model selection, and implementation. This work aims to offer an acceptable and accurate model for predicting rainfall in a web-app. This study compares machine learning and deep learning methods and provides easy access to them.

**4. M. Verma, A. Kumar, M. Garg and S. Juneja, "Environment Quality Assessment Web Application," 2023 International Conference on Artificial Intelligence and Smart Communication (AISC), Greater Noida, India, 2023, pp. 1339-1342, DOI: 10.1109/AISC56616.2023.10085252.**

The full form of EQI is the environmental quality index. The three elements which are included in our study are the most precious naturally occurring elements on the Earth i.e., Soil, Water, and Air. These resources though are present in abundant quantity, the quality of these resources varies greatly over a small distance. The health of our body is dependent on these resources. The quality of all these resources must be checked before using them. The results of all these techniques help us to evaluate the quality of soil, water, and air results in single values of AQI, WQI, and SQI. These single values help in easily judging the quality of these natural resources. The quality of these resources helps in both economic and environmental aspects of life. This paper presents a detailed study on AQI, WQI, and SQI and focuses on the factors affecting these values. There is also a focus on precautions from the harmful levels of these factors and what should be done to protect ourselves.

**5. Ayushi Gupta, Parvin Kumar, Vibhav Kumar Sachan, Balram Tamrakar, "Performance investigation of MZM based RoF link by employing Digital and Analog data transmission", Proceedings of the 2022 Fourteenth International Conference on Contemporary Computing, Pages 660-665, August 2022, DOI: 10.1145/3549206.3549316**

In current scenario, need of effective wireless transmission increases rapidly, which can be fulfilled by Radio over Fiber (RoF) link. When an RoF link is designed to transmit both analog and digital data, the performance of the link is totally changed, providing optimum benefits in each transmission. In this paper, the performance of both digital and analog data transmission over different fiber lengths has been investigated in which digital signal is generated through NRZ line coding and analog signal is transmitted at 10 GHz frequency by employing Mach Zehnder Modulator (MZM). The performance of digital RoF link is analyzed through eye patterns which show Bit Error Rate (BER) and Quality factor (Q-factor) of the received signal. The findings of digital data transmission are obtained which shows that Q-factor varies from 22.04 dB to 21.23 dB for fiber length 1km to 30km. The performance of analog data transmission is analyzed through peak Signal-to-Noise Ratio (SNR) value and the



peak SNR value is obtained, which varies from -95.30 dB to -106.31 dB for fiber length 1km to 30km. The reduction in SNR has been found as 11.01 dB concerning the optical fiber impairments from 1km to 30km.

**6. M. Kommineni, P. Alekhya, T. M. Vyshnavi, V. Aparna, K. Swetha and V. Mounika, "Machine Learning based Efficient Recommendation System for Book Selection using User based Collaborative Filtering Algorithm," 2020 Fourth International Conference on Inventive Systems and Control (ICISC), Coimbatore, India, 2020, pp. 66-71, DOI: 10.1109/ICISC47916.2020.9171222.**

Recommender system is a new generation of internet tool that helps users to access the web and receive information about their preferences. Using an online recommender is comparatively an easy and faster procedure to purchase items and this is done quickly. Recommendation systems plays an indispensable role in ecommerce websites to help users in identifying the right goods. One of the best methods to increase profits and attract customers is a recommendation process. The existing methodologies allow the systems to collect the irrelevant data and lead to a downfall in attracting the users and completing their work in a quick and reliable way. This paper provides an overview of the Recommendation Systems that is currently employed in the operations of the online book shopping domain. This paper proposes a simple understandable system for book recommendations that help readers to suggest the right book, which is to be studied next. In recent years, information analysis challenge has been focused on for the administration recommendation system. For clients, network assets are completely linked and quickly developed. The proposed method works on training, feedback, management, reporting, configuration, and using it to offer useful information to the user in order to aid in decision-making and data item recommendations. We have used a User Based Collaborative Filtering (UBCF) approach and measured the performance of similarity measures in recommending books to a user. The proposed system's overall architecture is introduced, and its implementation is represented with a model design.

**7. K. Srivastava, P. Garg, V. Sharma and N. Gupta, "Comparative Analysis of Various Machine Learning Techniques to Predict Breast Cancer," 2022 3rd International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT), Ghaziabad, India, 2022, pp. 1-6, DOI: 10.1109/ICICT55121.2022.10064517.**

Medical sciences have developed a lot in previous years which has significantly boosted the average lifespan of Humans. Researchers have developed medications and therapies to cure many deadly diseases including Cancer. This has contributed to the healthcare sector as many 'common' deadly diseases like breast cancer have got effective treatment procedures. Advanced Technologies like Artificial Intelligence assist practitioners in the treatment of the same. Machine Learning and Neural Networks serve the purpose of predicting possible stages, symptoms, and patient-specific treatment of breast cancer. This manuscript suggests methods (algorithms) which can predict the type of breast cancer and categorize cases as Malignant or Benign. Also, it presents the comparison of the accuracy of different Algorithms over different Train-Test Ratios. Also, the accuracy of previously done research is compared with self-experimental results and reviewed for better accuracy.

**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 algorithm including KNN, support vector machine, decision tree, Naïve Bayes and logistic regression on various disease dataset to find the most accurate algorithm on particular disease. The objective of this study is to provide fast and efficient machine learning algorithm that will help doctors to choose the best suited algorithm for the disease.

**9. A. Sharma, N. Aggarwal, H. Khatter, Saurabh, A. Tripathi and S. Awasthi, "Comparative Analysis of Different Algorithms in Link Prediction on Social Networks," 2023 International Conference on Artificial Intelligence and Smart Communication (AISC), Greater Noida, India, 2023, pp. 1-5, DOI: 10.1109/AISC56616.2023.10085359.**

In today's world, the social-based online network systems are rapidly expanding, which results in large accumulation of data. When we try to examine this enormous amount of data that has been collected in these systems, we face new difficulties. The forecasting of user social relationships is one of the intensively researched topics. Link prediction locates broken links or forecasts the probability of new links. The problem of Link prediction is an extremely well-researched issue and has uses across a wide range of fields, some of which can frequently be observed in recommendation algorithms, like new connections (suggested friends/followers) on social networks or associated merchandise on online store. A lot of algorithms have already been presented in context for solving the link prediction problem. We selected three real-world social networks and seven most widely used link prediction algorithms. To the best of our knowledge, we conduct a survey of these Link Prediction approaches that are currently in use and compare them in this work.

**10. S. Juneja, S. Mudgil, S. Saini and A. Sharma, "IoT enabled obstruction evasion Robots for enhancing the security of the Systems," 2023 International Conference on Artificial Intelligence and Smart Communication (AISC), Greater Noida, India, 2023, pp. 1349-1352, DOI: 10.1109/AISC56616.2023.10085000.**

The surveillance of homes and other places like homes, restaurants, clubs, cafes, schools etc have become a major task in this technological era. There are various reasons required for this surveillance. One being the increasing crimes like that of theft. The major reason being the unattended homes by parents, either alone or under the care of babysitter or nanny. We don't know how these house service keeps on working and what they do at our homes, while we are away, leaving our homes completely unattended. So, to keep a check on it, we came on an idea of Mobile Controlled Surveillance Robot. This paper is based on the concept of Internet of Things, creatively called as IoT. The aim of this paper is to establish the communication between the owner and is/her unattended belongings, also to keep an eye on the surroundings. Thus, this research work will act as a game changer, i.e. nothing would go un-noticed now.

**11. S. K. Tyagi, P. Mittal and P. Kumar, "A Review on Optical Modulators Used in Radio Over Fiber (RoF) System for 6G IoT Applications," 2022 3rd International Conference on Issues and Challenges in Intelligent Computing Techniques (ICICT), Ghaziabad, India, 2022, pp. 1-6, DOI: 10.1109/ICICT55121.2022.10064619.**

One of the most cutting-edge technologies for the next generation is called Radio over Fiber (RoF), which combines an optical network with a wireless network. Because of the numerous advantages offered by optical fiber, RoF systems uses it as a backend technology and modulators play a very significant role in implementing RoF system. Electro-Absorption modulators (EAM), Phase modulators (PM), Electro-Optic modulators (EOM), Acousto-Optic modulators (AOM), Dual Drive Mach Zehnder modulators (DDMZM), Mach Zehnder modulators (MZM) and Dual Parallel Mach Zehnder modulators (DPMZM) have all had their operating principles examined in this paper. The important outcomes regarding the utility of optical modulators have been illustrated and comparative analysis based on the design parameters and characteristics is also performed and the observations in the paper will play an important role for emerging wireless applications.

## Collaborative Research and Development Presentations

S. No.	Name of Presenter	Name of Department / School	Topic of Presenter	Dated of Presentation
1.	Ms. Pallavi Sharma	Computer Science	GAN (generative adversarial network)	<a href="mailto:pallavi.sharma@kiet.edu">pallavi.sharma@kiet.edu</a>
2.	Ms. Neha Yadav	CSE	The grey wolf optimization algorithm	<a href="mailto:neha.yadav@kiet.edu">neha.yadav@kiet.edu</a>
3.	Dr. Ranchay Bhateja	KSOM	Women in atamnirbhar Bharat	<a href="mailto:ranchay.bhateja@kiet.edu">ranchay.bhateja@kiet.edu</a>
4.	Dr. Arunesh Chandra	ME	Metal foam	<a href="mailto:arunesh.chandra@kiet.edu">arunesh.chandra@kiet.edu</a>
5.	Dr. Abhishek Sharma	ECE	Recent Trends of ECE	<a href="mailto:abhishek.sharma@kiet.edu">abhishek.sharma@kiet.edu</a>
6.	Mr. Deep Kumar	CSIT	3D virtual scene construction for Metaverse Horizons	<a href="mailto:deep.kumar@kiet.edu">deep.kumar@kiet.edu</a>
7.	Prof. Anubha	IT	Related to Data Analytics	<a href="mailto:anubha.it@kiet.edu">anubha.it@kiet.edu</a>
8.	Prof. Deepak Vishwakarma	IT	Deep Neural Query Expansion for Contextualized Information Retrieval	<a href="mailto:deepak.vishwakarma@kiet.edu">deepak.vishwakarma@kiet.edu</a>

## CRDC Presentation Series

### Activity Report May 2023

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

<p><b>Presentation Topic</b></p> <p><b>Parameter optimization of software reliability growth model by using a chaotic grey wolf optimization algorithm</b></p>	
<p><b>Details of Presenter</b></p> <p>Ms. Neha Yadav, Assistant Professor Department of Computer Science Engineering Date of Presentation Session: 27<sup>th</sup> May 2023 Time of Presentation Session: 11:30:00 AM</p>	<p><b>Scope for Future Research Outcome</b></p> <p>Research Paper (Journals/ Conferences/ Book Chapters etc.)</p>
<p><b>About Presentation</b></p> <p>The chaotic grey wolf optimization algorithm (CGWO) is an advanced heuristic system for portraying the execution by achieving complex parameter optimization and designing application issues. Future topics of study can also focus on the extension of the CGWO to solve mixed-type problems and discrete optimization problems.</p>	
<p><b>About Presenter</b></p> <p>Neha Yadav is working as an assistant professor in CSE Department. She is pursuing Ph.D. from AKTU. Her area of specialization is software reliability optimization, machine learning, and evolutionary algorithms.</p>	
	

**Presentation Topic: 3D virtual scene construction for Metaverse Horizons**

**Details of Presenter**

Mr. Deep Kumar  
 Department of CSIT  
 Date of Presentation Session: 27-05-2023  
 Time of Presentation Session: 10:00:00 AM

**Scope for Future Research Outcome**

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

**About Presentation**

- Advancements in computer graphics and visualization techniques, leading to more realistic and immersive virtual scenes.
- Insights into the social dynamics, cultural representation, and human behaviour within the metaverse.
- Integration of architectural principles and urban planning simulations within the virtual realm.
- Innovations in game development and narrative design, creating engaging experiences within virtual scenes.
- Automation and AI/ML-driven tools for generating or assisting in the construction of 3D virtual scenes.
- Development of novel user interfaces and interaction techniques for intuitive navigation and manipulation within virtual environments.
- Advancements in computer graphics and visualization techniques, leading to more realistic and immersive virtual scenes.
- Contributions to the overall development and understanding of the metaverse as a concept and its practical implementation.

**About Presenter**

Deep Kumar works at the KIET group of institutions as an assistant professor in the Department of computer science and information technology. His total teaching experience is 14 years at both the UG and PG levels. His interests centered on data analytics and pre-processing for different kinds of datasets such as 3D, ig data, imagery and raster, data warehouse, GIS, NoSQL, databases, and Point clouds. He is currently working on point cloud analysis for the construction of 3D objects and horizons in Metaverse.





**Presentation Topic**

**Optimization of Machining Parameters of CNC Milling machine to minimize surface roughness of Fibre Reinforced Polymers**

**Details of Presenter**

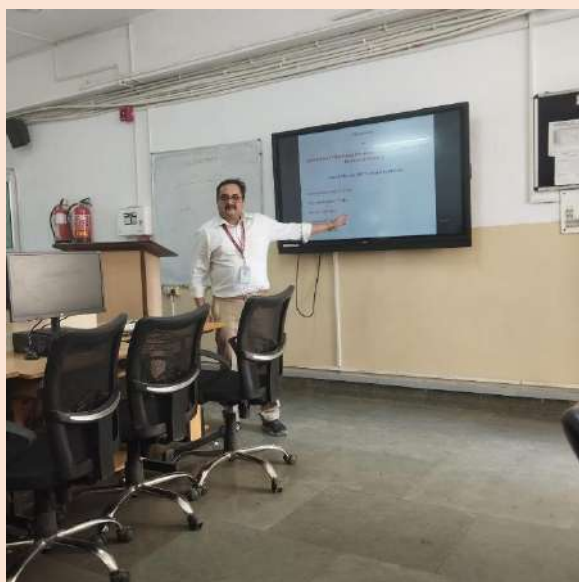
Dr. Arunesh Chandra,  
 Professor  
 Mechanical Engineering  
 Date of Presentation Session: 27-05-2023  
 Time of Presentation Session: 02:45:00 PM

**Scope for Future Research Outcome**

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

**About Presenter**

Dr. Arunesh Chandra is serving as a Professor in the Department of Mechanical Engineering at KIET Group of Institutions, Ghaziabad, Uttar Pradesh, India. Dr. Chandra has more than twenty years of teaching/research experience. He has more than thirty research papers in various peer-reviewed International/National Journals & conferences and two design patents granted from the Govt. of India to his credit. His current research interest areas include ergonomics, quality management, virtual reality, machining, etc. Citations of his research paper are more than three hundred. He has published two textbooks titled – Elements of Mechanical Engineering and Laboratory Manual on Engineering Mechanics. He has organized/attended various International Conferences/FDP/Seminars etc. He is a guest editor for Lecture Notes in Mechanical Engineering (Springer Publication).



**Presentation Topic Recent Trends of ECE (in the field of Ultra-Wide Band)**

**Details of Presenter**

Dr. Abhishek Sharma,  
Associate Professor  
Electronics and Communication  
Engineering  
Date of Presentation Session: 27<sup>th</sup>  
May 2023  
Time of Presentation Session:  
11:30:00 AM

**Scope for Future Research Outcome**

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

**About Presentation**

The presentation topic was “Recent Trends of ECE (In the field of Ultra-Wideband)”. The presentation includes the basics of Ultra-wideband (UWB) communication which is a wireless technology that transmits data over a wide range of frequencies, which has several benefits, including high data rates, low battery consumption, and precise ranging capabilities. UWB has received a lot of interest in recent years, especially in the context of 5G communication and the Internet of Things (IoT). In the presentation, UWB is being investigated as a supplementary technology in 5G communication to improve data rates and accommodate a variety of applications. The content also consisted of the applications of UWB's high bandwidth that allows its transmission for enormous volumes of data, making it ideal for bandwidth-intensive services such as high-definition video streaming and virtual reality. Furthermore, the UWB's low latency and excellent reliability are also discussed which makes it suitable for real-time responsive applications such as driverless vehicles and telemedicine. A discussion related to the recent trends in UWB communication revolves around standardization and integration. The latest channel model for UWB IEEE 802.15.4z-2020 is also discussed which is a standard that defines the UWB Physical Layer (PHY) for low-power, high-precision ranging, and positioning applications. Several standards related to UWB communication were also presented with recent publications in SCI index journals.

**About Presenter**

Dr. Abhishek Sharma received a Master of Science (with honours) degree in Electronics and Computational Physics from Dr. B.R.A. University, Agra in 2005 and a Master of Technology (with honours) degree in Telecommunications Technology from R.G.P.V, Bhopal in 2008. He completed his Ph.D. in Electronics and Wireless Transmission from State Government University, Dr. A.P.J. Abdul Kalam Technical University, Lucknow in 2019. He is currently working as a Research Associate Professor in the Department of Electronics and Communication Engineering at KIET Group of Institutions, Delhi-NCR, Ghaziabad. He is also in charge of the Centre of Excellence for Space Technologies. He is currently doing his research in Ultra-wideband communication for space technologies. His research interest includes Wireless Communication, Telecommunication Engineering, and Deep Learning.



## Faculty Articles

### **FUTURE OF SELF-DRIVING CARS AND CONSUMERS BEHAVIOUR**

One question always comes to mind. Whether the public is hesitant to adopt autonomous vehicles or willing to give up control to AI? Although fully autonomous vehicles are already available, they have yet to infiltrate the mainstream transportation market. Despite this, many companies are developing and implementing cutting-edge technology to enable fully autonomous vehicle operation. However, there is still the issue of whether commuters are ready to allow autonomous vehicles on the road. Or, that their security concerns will prevent widespread acceptance.



According to a recent survey conducted by the Lloyd's Register Foundation, it was revealed that only 27 percent of people worldwide believe in the safety of self-driving cars. This statistic may not come as a shock, given that autonomous driving technology is still relatively new and unfamiliar to the average consumer. However, the consequences of this scepticism should not be underestimated. If people continue to resist and fail to embrace the concept of self-driving cars, there are future risks. The development of autonomous vehicles has the potential to revolutionize transportation, providing improved safety, efficiency, and convenience. Because of their hesitance to accept this transformative technology, individuals and society may miss out on the many benefits it can bring, such as reduced accidents, increased mobility, and increased accessibility for people with limited mobility.

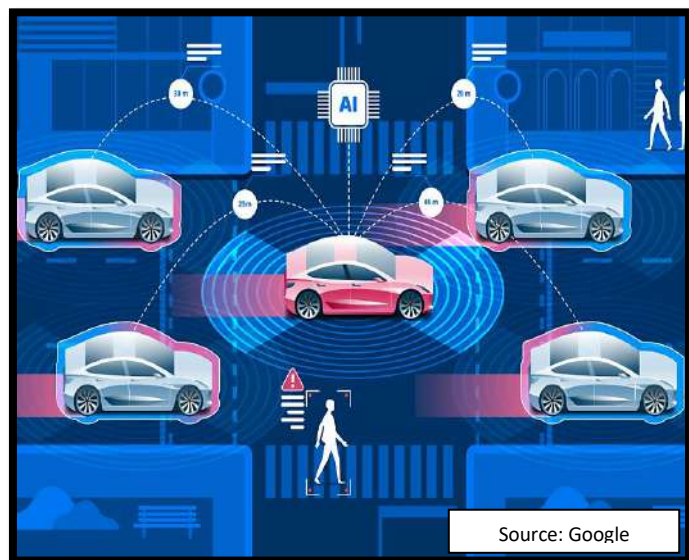
Therefore, it is important to address concerns, educate the public about progress, and promote a more positive outlook on the future of self-driving cars. By doing so, we can pave the way for a safer and more efficient transportation system for all. Slowly, autonomy is making inroads into the automotive industry, opening new opportunities for emerging automakers. The incorporation of self-driving technology into currently available electric



vehicles (EVs) is a notable development. Although concerns exist, it is widely believed that the benefits of autonomous vehicles outweigh the risks. This is mainly because artificial intelligence (AI) is beyond the capabilities and alertness of most human drivers. The revolutionary potential of artificial intelligence lies in its ability to eliminate human errors, distractions, and fatigue, thereby improving transportation safety.

In fact, a surprising 65 percent recognise this superiority and express reservations about travelling with a human driver, preferring the safety of an AI-controlled vehicle. Nevertheless, the study results not only highlight the beneficial effects of technology that can drive itself, but also highlights the critical need to prioritise trust-building in autonomous vehicles. The findings demonstrate that

organisations need to go beyond technology development and aggressively address issues and reservations regarding autonomous vehicles. Organizations can instil confidence in customers, which will ultimately lead to increased acceptance and active engagement in the adoption of self-driving technology, by acquiring an environment of trust using measures such as enhanced safety features,



transparent communication, and rigorous testing. This can be accomplished by fostering an environment of trust.

**Dr. Brijesh Singh, Associate Professor (EEE),**

*(The article is the author's own opinion and is inspired by EV Magazine's community portal.)*

### **Heating Planet, Melting Glaciers, and Indifferent we**

Greetings of the Day!

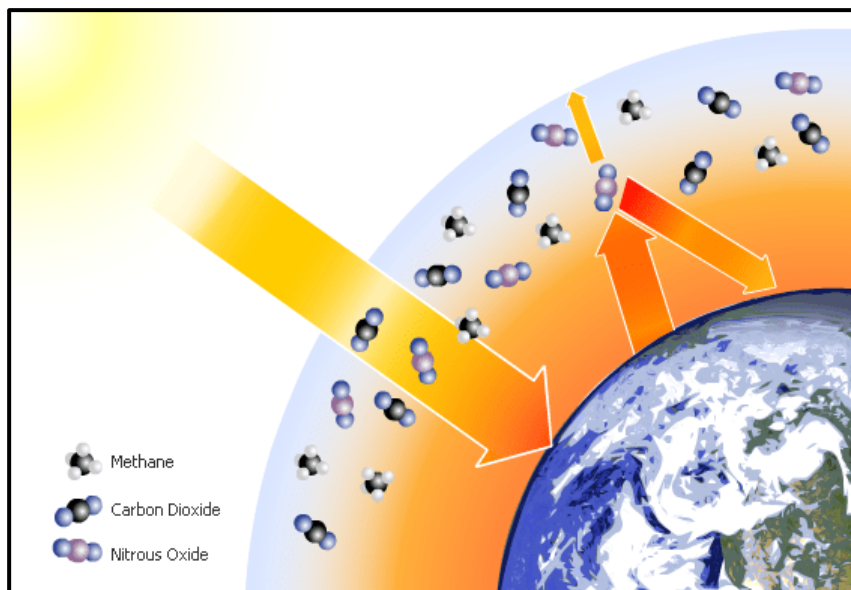
Just want to take your imagination where my mind went.

Yesterday, a summer afternoon, I opened my car to drive and found the temperature within was 55 degrees Celsius, I came in immediate discomfort and haphazardly opened all the windows of the car and got relieved by the unbearable scorching heat as the thermal IR energy went out to space.

This incidence is very common and every one of us has faced it yet. Moreover, we do have the privilege in our car to release this extra heat by opening the car's windows.

And in the case of our mother Earth this greenhouse effect is continuously working, just imagine what if it creates the same impact. Do we have the windows to release the unbearable extra IR heat?

This is the best example of the greenhouse effect that causes global warming on earth where six greenhouse gases (GHGs) like Carbon Dioxide, CFC, Nitrous Oxide, Methane, Ozone, and water vapor, which act like car glass and reradiate the thermal IR radiation back to the earth surface that leads to global warming, making our planet compatible to sustain lives. However, because of anthropogenic activities, the concentration of GHGs is increasing day by day



which is making these windows more non-porous thus enhancing global warming. A situation that cannot be controlled, nor we are in a place to mitigate its huge significant unbearable impacts. The ticking time bomb scenario is an eye opener to enhance thinking toward a sustainable living through reducing consumerism, more and more focus on renewable energy sources, inculcating eco-friendly thoughts, and carbon dioxide absorption through planting more and more trees, and other technologies related to carbon absorption from atmosphere. Time has gone since we used to think that we can control climate change, now we need to learn the adaptation measures regarding this burning issue and try to work on carbon credit from the individual world to this bigger world.

**Ask Questions yourself, please.**

Would we be able to bear or breathe if our earth would be a closed chamber like cars carrying 55 degrees of temperature?

If not, then wats the action plan to prevent this situation for the upcoming generations?

What is your idea of the day?

Our future generation needs a balanced environment to live in and not the leftover properties to survive.

**Jai Bharat Jai Bhoomi.**

***Dr. Minakshi Karwal, Associate Professor (AS)***



## KIET at National Platform

**Dr. Minakshi Karwal, Associate Professor of Applied Sciences and Assistant Dean of R&D was also invited to participate in the National TV DD URDU Show as an esteemed expert.**

The recording took place on 01.06.2023 for a special program on World Environment Day 2023. The program included a detailed panel discussion with experts on sustainable ways to prevent environmental pollution, Indian cultural heritage that is itself an environmental conservation philosophy, plastic pollution, food conservation, etc. on 01.06.2023, aired on DD Urdu Doordarshan. Around 12-14, students were present as the audience for the recording. The program was later broadcasted on 5th June 2023, and the link can be found below.

<https://youtu.be/Gf-H9uC4NLE>

**Dr. Minakshi Karwal, Associate Professor of Applied Sciences and Assistant Dean of R&D** has taken an expert session at National Zoo, where demonstrated the waste management practices for horticulture waste management. This news was published in various National e-news platforms of significant forums like CSR India, Krishi Jagran, etc. The mentioned paragraph which **demonstrates the India initiative on World Environment Day** is as follows:

The concept of life was introduced by the Prime Minister of India at the 2021 **United Nations Climate Change Conference (COP26) in Glasgow**. He called for a global effort to **adopt sustainable lifestyle** practices, and since then, India has been mobilizing people to embrace life.

To kick-start the Mass Mobilisation for **Mission life**, the National Museum of Natural History in collaboration with the **National Zoological Park** organized an event on **Waste Reduction**. A PPT on waste management, demonstration, and interactive sessions were delivered by **Dr. Meenakshi Karawal**, Associate Professor, KIET Group of Institution, Ghaziabad. Participants were also encouraged to pledge to adopt life actions.

**Links are under-mentioned.**

<https://indiacsr.in/what-is-the-theme-of-world-environment-day-2023-in-india>

<https://pib.gov.in/PressReleseDetailm.aspx?PRID=1922190>

<https://krishijagran.com/news/mission-life-takes-center-stage-as-world-environment-day-2023-approaches/>

<https://www.livemint.com/news/india/world-environment-day-2023-to-focus-on-mission-life-11683367271866.html>

## Innovation Spotlights of the Month

### **India's AI Supercomputer 'AIRWAT' makes it to the list of world's '100 most powerful'**

**India's AI Supercomputer 'AIRAWAT'** has been ranked No. 75 in the world at the International Supercomputing Conference (ISC 2023) in Germany. The AI supercomputer 'AIRAWAT' is installed at C-DAC, Pune. The supercomputer has been named in the 61st edition of the Top 500 Global Supercomputing List released recently. Airawat PSAI, stands as India's largest and fastest AI supercomputing system, with a remarkable speed of 13,170 teraflops (Rpeak). AIRAWAT's manufacturer is Netweb Technologies. Its operating system is Ubuntu 20.04.2 LTS. The supercomputer runs on AMD EPYC 7742 64C 2.25GHz processor with 81,344 cores. The supercomputer has been installed this year only.

Speaking on this achievement, Ministry of Electronics & Information Technology (MeitY) Secretary Shri Alkesh Sharma said, "Artificial Intelligence is the most promising technology in the digital age. India has a strong ecosystem and competitive advantage for AI due to its massive data availability, strong digital economy, and skilled workforce. India has been working in Applied AI with a focus on Natural Language Processing, Image Processing, Pattern Recognition, Agriculture, Medical Imaging, Education, Health Care, Audio assistance, Robotics, and developing solutions for the strategic sectors." India will pursue AI technology to empower citizens and organisations to solve the most pressing problems of society and economy to make the world a better place, he added.



*Source: [TIMESOFINDIA.COM](https://timesofindia.com)/Updated: May 25, 2023, 07:22AM IST*

### **Biden Administration announces \$11 Billion for rural clean energy Projects**

Rural electric cooperatives, utilities, and other energy providers will soon be able to apply for nearly \$11 billion in grants and loans for clean energy projects, funded by the \$430 billion Inflation Reduction Act signed into law last August, the Biden administration said on Tuesday. Expanding clean energy to rural communities is critical to meeting the administration's goal of net-zero emissions by 2050, officials told reporters on a Monday press call.

"This is an exciting and historic day and continues an ongoing effort to ensure that rural America is a full participant in the clean energy economy," said Agriculture Secretary Tom Vilsack on the call. Rural electric cooperatives will be eligible to apply beginning July 31 for \$9.7 billion in grants for deploying renewable energy, zero-emission, and carbon capture systems, the Department of Agriculture (USDA) said.

Renewable energy developers and electric service providers like municipal and tribal utilities will be eligible to apply beginning June 30 for another \$1 billion in partially forgivable loans for financing wind, solar, geothermal, biomass, and other renewable energy projects, USDA said.

On the call with reporters, White House advisor John Podesta said the money would bring good-paying jobs to rural communities and National Climate Advisor Ali Zaidi said the investment would be a "game-changer."

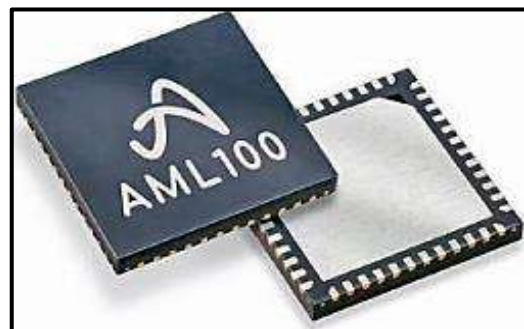
The new funds will help rural electric cooperatives reach parity with private utility companies who have already begun significant investment in clean energy, Vilsack told reporters.

"We have a climate crisis that requires all of America to participate in reducing emissions to get to the net-zero future," Vilsack said.

*Sources: The Times of India – Reuters/May 16, 2023, 14:48 IST*

### **World's first fully analogue machine learning chip**

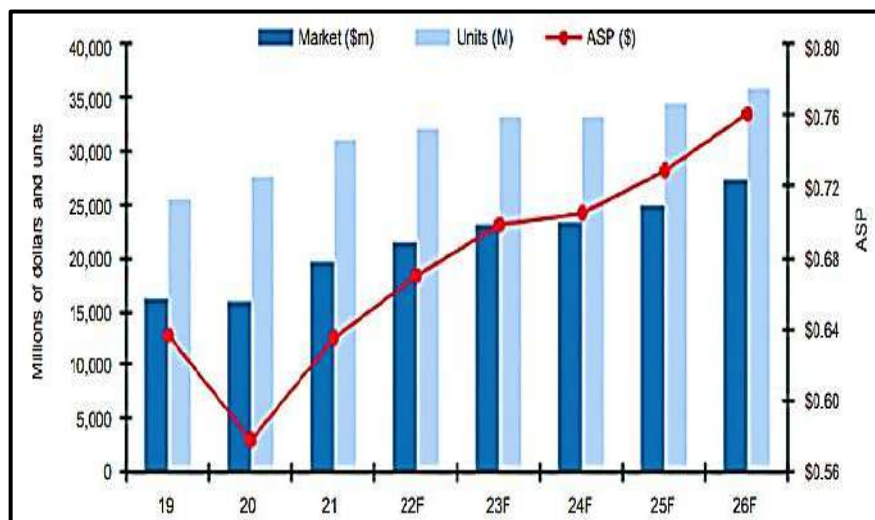
Aspinity's AML100 is the first product in Aspinity's Analog ML family that can detect and classify sensor-driven events from raw, analogue sensor data. It allows developers to design significantly lower-power, always-on edge processing devices. The IC consumes less than 20µA when in always-sensing, thus, enabling a ultra-low power always-on edge-processing solution for voice-first systems, acoustic event monitoring applications, predictive and preventative maintenance for industrial equipment, and biomedical monitoring.



*Source: Aspinity (<https://www.aspinity.com>)*

### **Microcontroller Sales Expected to Reach \$27 Billion by 2026**

Microcontroller (MCU) sales boomeranged back with strong growth in the economic recovery during 2021, when the MCU market climbed 23% to a record-high \$19.6 billion. Between 2021 and 2026, total MCU sales are projected to increase by CAGR of 6.7% and reach \$27.2 billion in the final year of the forecast. In the next five years, sales of 32-bit MCUs are expected to grow by a CAGR of 9.4% to hit \$20.0 billion in 2026. *Source: [www.icinsights.com](http://www.icinsights.com)*



### **Lithium deposits found in J&K: Is India's EV drive set to take the fast lane?**

India announced that 5.9 million tonnes of lithium reserves have been found for the first time in the country in Jammu and Kashmir. Lithium is a non-ferrous metal and is one of the key components in EV batteries. As the world moves away from gasoline-fuelled combustion engines, demand for lithium, nickel, cobalt, and other metals that go into lithium-ion batteries is soaring. India's Mines Ministry on Thursday announced that 5.9 million tonnes of lithium reserves have been found for the first time in Jammu and Kashmir.

"Geological Survey of India for the first-time established Lithium inferred resources (G3) of 5.9 million tonnes in the Salal-Haimana area of the Reasi district of Jammu and Kashmir," the Ministry of Mines said in the month of February.

It further said that 51 mineral blocks including Lithium and Gold were handed over to respective state governments. Lithium is a non-ferrous metal and is one of the key components in EV batteries.

"Out of these 51 mineral blocks, 5 blocks pertain to gold and other blocks pertain to commodities like potash, molybdenum, base metals, etc. spread across 11 states of Jammu and Kashmir (UT), Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Rajasthan, Tamil Nadu, and Telangana," the ministry added. The blocks were prepared based on the work carried out by GSI from field seasons 2018-19 to till date. Lithium-ion battery costs rose last year for the first time in the EV era, according to Bloomberg NEF. Elon Musk bemoaned lithium's "insane" rally and said high raw material costs were among Tesla Inc.'s biggest headwinds.

The central government has unveiled incentives of at least \$3.4 billion to expedite its lagging adoption of EVs as Prime Minister Narendra Modi vows to reach net zero by 2070. The idea is that manufacturing the costliest component — batteries — locally will make the product more affordable for the mass market and set the country up as a potential exporter, tapping into surging global demand.

The initiatives have piqued the interest of billionaires like Mukesh Ambani, whose Reliance Industries Ltd. is building an EV battery facility as part of a broader \$76 billion push into clean energy. Ambani's is among three companies, including scooter-maker Ola Electric Mobility Pvt. and bullion refiner Rajesh Exports Ltd. set to receive incentives under a \$2.3 billion program to support advanced battery cell development.

The world's second most populous country has only a fraction of the raw materials needed to satisfy domestic demand for lithium-ion batteries — forecast by Crisil to grow 100-fold by 2030 — let alone produce on a global scale.

As the world moves away from gasoline-fuelled combustion engines, demand for lithium, nickel, cobalt, and other metals that go into lithium-ion batteries is soaring.

"The entry barriers are quite high," said Jasmeet Singh Kalsi, director of Manikaran Power Ltd. to news agency Bloomberg. The company is setting up India's first lithium refinery and scouting for nickel, cobalt, and copper assets overseas. "China has captured most of it." India has a long way to go to catch up, and faces competition from other countries, including the



US, which is pushing to grow domestic battery production in an effort to break China's hold on the market.

*Source: [economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/in-a-first-in-country-5-9-million-tonnes-lithium-deposits-found-in-jk/articleshow/97788887.cms?from=mdr](https://economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/in-a-first-in-country-5-9-million-tonnes-lithium-deposits-found-in-jk/articleshow/97788887.cms?from=mdr)*

### **Artificial Intelligence**

The use of **artificial intelligence (AI) is accelerating the drug discovery** and development processes. Startups are exploring the use of these technologies to address the various challenges in the pharma industry, such as automation and optimization of the manufacturing processes, as well as designing effective marketing and post-launch strategies. Patient identification is a crucial step in the drug discovery and development process, especially for conducting clinical trials. AI simplifies the identification of eligibility criteria and the inclusion of patients and makes the cohort identification process faster and cheaper.

*Pangaea Data – Patient Cohort Identification: **Pangaea Data** is a British startup that uses unsupervised AI algorithms to identify patient cohorts for drug discovery, clinical trials, and real-world evidence (RWE) studies. The machine learning-based software scans through electronic health records (EHR) and unstructured doctors' notes to find the right patients based on phenotypes. The startup also develops a library of AI models for different disease areas.*

*InVivo AI – Drug Discovery: Canadian startup **InVivo AI** develops novel algorithms for drug discovery. The startup uses different machine learning approaches, such as few-shot learning, reinforcement learning, active learning, and representation learning, to aid the drug discovery process. The deep learning solution uses small and noisy datasets to predict and optimize potential drug candidates, further eliminating the need for large datasets.*

*Source: [www.icinsights.com](http://www.icinsights.com)*

### **Precision Medicine**

Precision medicine comes from the idea of treating each patient as a unique individual. Advancements in omic and data analysis are providing new insights into how the human body responds to drugs. This knowledge, along with advanced manufacturing methods such as additive manufacturing, is making personalized medicine a reality. Drug exposure models determine the pharmacokinetic and pharmacodynamic properties of drugs for arriving at the right dosage for drugs based on age, sex, comorbidities, and other clinical parameters.

*ExactCure – Drug Exposure Model: **ExactCure**, a French startup, offers a software solution for simulating the effects of drugs in a patient's body based on personal characteristics. The startup makes use of population pharmacokinetics, as well as scientific literature data, for real-time prediction of efficacy and drug interaction, on everyone. ExactCure is developing drug-specific exposure models for drugs under investigation for the treatment of COVID-19.*

*Tepthera: Individualized Cancer Vaccine Swiss Startup **Tepthera** offers platform technologies for the identification of T-cell antigens. The **MEDi** platform helps in the rapid identification of tumor-specific antigens from patient human leukocyte antigens. After the selection of antigens, the solution identifies tumor-specific epitopes and then monitors antigen T cells.*

*Source: [www.icinsights.com](http://www.icinsights.com)*

## Student's Corner

**Students of KIET School of Pharmacy have been involved in the innovative project as mentioned below:**

### **Virushield Mask**

Virushield Mask is an electric mask that not only stops the virus, bacteria, and pollutant droplets but it also kills them by using the electric current.

We are creating a hybrid combination of non-woven fabrics and stainless-steel mesh with some smart layer features which will show effective and high filtration.

The layer of stainless-steel mesh relates to an electric cell that provides an electric current that will flow in the smart layer of stainless-steel mesh.

When any virus, bacteria, or pollutant droplets will come in contact with the smart layer it will kill by the electric current.

### **Achievements-**

- Achieved 2nd position in project exhibition in Innotech 2022 held on 20th May 2022.
- Achieved 3rd Position in the Project in ALTU zonal fest at ABES Engineering College, Ghaziabad held on 9-10 Dec 2022.
- Achieved 1st Position in the KIET Innovation Day challenge of December 2022.
- Achieved 1st Position in On Campus Round of HULT Prize Challenge and shortlisted for the semifinals round going to be held in Mumbai.



## KIET (R&D) Policies

### 1. Membership of Professional Societies

- All KIET faculty members with more than 05 SCI/SCI-E/SSCI research papers with KIET Group of Institutions affiliation and membership in national and international professional societies are eligible for 75% reimbursement of membership registration fees.
- No life membership fees will be reimbursed for any professional society or association.
- A maximum of Rs. Eight thousand (Rs. 8000) will be paid for both national and international society membership.
- An Incentive claim under the Research Incentive Schemes (RIS) of KIET must be made within a month of registration with the professional bodies in the prescribed form. **(Annexure VII of KIET Research Policy).**

### 2. PhD- Fee Reimbursement, OD & Incentives

For more details, kindly refer to the Policy for Research Guidance/ Ph. D Guidance for Improving Research Culture issued by the Director Office on 25th Aug'21.

S. No.	Category	Ph.D. Benefits	Requirements/Conditions
1.	Ph. D (Part Time) Fee Reimbursement	On acquisition of the Ph.D. from Institutes/Universities of repute (IISc Bangalore, IITs, JNU, NITs, IIITs and Central Universities of repute), a faculty may avail Ph.D. tuition fee reimbursement on an actual basis but not exceeding Rs. 30,000/- per year (on prorata basis with salary) for three years after fulfilling conditions as mentioned.	<p>Faculty members entering service without a Ph.D. shall be encouraged to enroll themselves/acquire Ph.D. in the relevant branch/discipline from Institutes/ Universities of repute (IISc Bangalore, IITs, JNU, NITs, IIITs and Central Universities of repute).</p> <p>One needs to claim the Ph.D. tuition fee reimbursement within a month after award of degree by submitting a copy of degree certificate and tuition fee paid slips.</p> <p>Two Research Publications in SCI Journals with the affiliation as "KIET Group of Institutions, Delhi- NCR, Ghaziabad" (Annexure B).</p> <p>Faculty should submit the undertaking for serving the Institute for at least one year. In case of non- fulfillment of serving for one year, faculty member should refund the reimbursed Ph. D tuition fee.</p>
2.	ODs	<p>The maximum total number of ODs for completing a Ph.D. is 12 per academic year/leave year for a maximum of 4 years.</p> <p>A maximum of 3 ODs at a stretch can be given to a faculty member in a month at the discretion of HoD (provided there is no academic loss of students)</p>	<p>Faculty members entering service without a Ph.D. shall be encouraged to enroll themselves/acquire Ph.D. in the relevant branch/discipline from Institutes/ Universities of repute (IISc Bangalore, IITs, JNU, NITs, IIITs and Central Universities of repute).</p> <p>One needs to claim the Ph.D.tuition fee reimbursement within a month after award of degree by submitting a copy of degree certificate and tuition fee paid</p>

		<p>just after the Ph. D registration.</p> <p>Faculty may avail the facility of OD for pursuing Ph.D. immediately post joining KIET.</p> <p>If the course work of Ph.D. program falls during summer break, then faculty must consume their summer vacation first (two weeks) and rest will be treated as OD provided the count remains 12 ODs per academic/ leave year.</p> <p>For completing the course work 3-4 months Leave without pay (LWP) can be given to faculty members at the discretion of HoD provided</p> <p>There is no academic loss of students and department will be able to manage without any substitute.</p>	<p>slips.</p> <p>Two Research Publications in SCI Journals with the affiliation as “KIET Group of Institutions, Delhi- NCR, Ghaziabad” (Annexure B).</p> <p>Faculty should submit the undertaking for serving the Institute for at least one year. In case of non-fulfillment of serving for one year, faculty member should refund the reimbursed Ph. D tuition fee.</p>
3.	Incentives on Award of Ph.D. Degree	<p>Five increments shall be admissible at the entry-level of recruitment to faculty members possessing the degree of Ph. D (full time), awarded in the relevant discipline from Institute/ University of repute (IISc Bangalore, IITs, JNU, NITs, IIITs and Central Universities of repute).</p> <p>Faculty members who complete their Ph.D. degree (part time) while in service shall be entitled to three increments.</p>	<p>Ph.D. is in the relevant branch/discipline and has been awarded by a university and two Research Publications in SCI Journals with affiliation as “KIET Group of Institutions, Delhi-NCR, Ghaziabad”.</p> <p>One needs to claim the Ph. D incentives within a month after the award of the degree by submitting a copy of degree certificate/provisional degree certificate.</p> <p>The Ph.D. incentives in terms of increments will be applicable from the date of submission of the application copy along with the copy of the degree certificate/provisional degree certificate.</p> <p>During recruitment, if faculty intimates that the Ph. D thesis has been submitted, then faculty will have to complete the Ph. D within one year for entitlement of five increments else three increments would be awarded.</p>



### 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





**Raja Ramanna**, India's leading physicist,  
was born on Jan 28, 1928

# FATHER OF INDIA'S NUCLEAR PROGRAMME

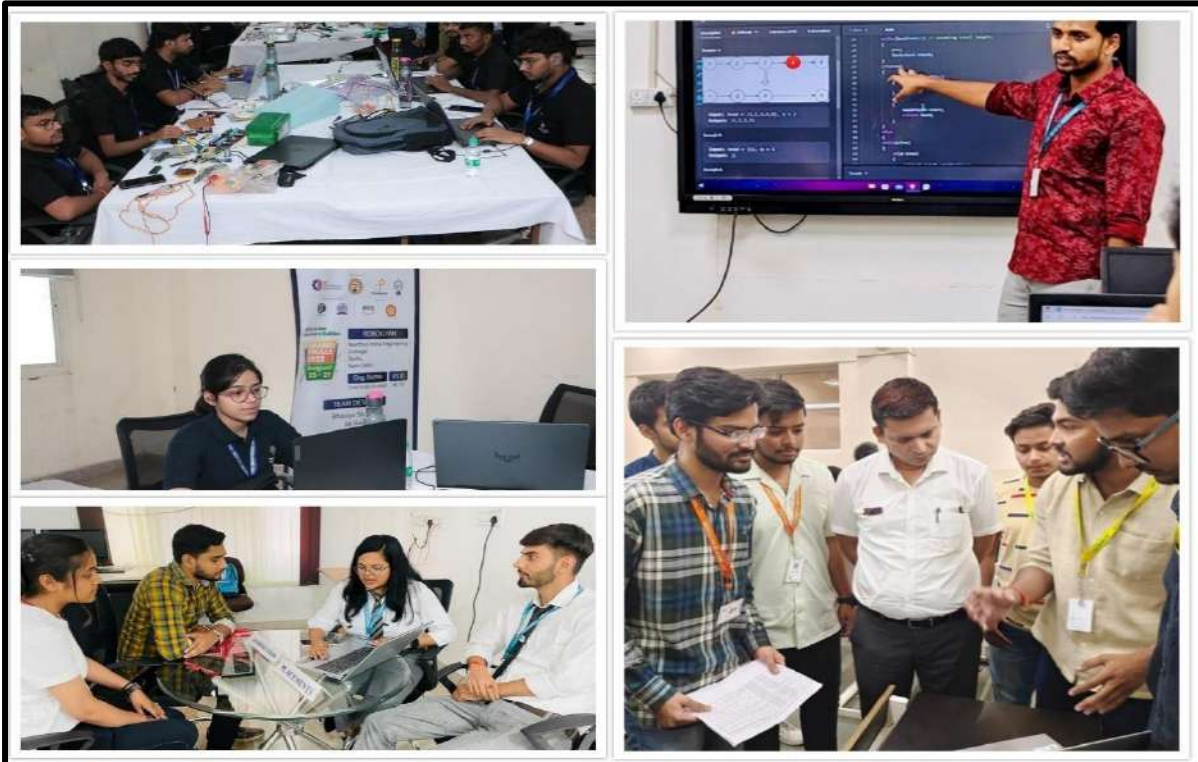
**Began his career**  
under Homi J Bhabha  
at Bhabha Atomic  
Research Centre

**Headed the team**  
that carried out  
India's first nuclear  
tests in 1974

**Was passionate  
about classical  
music & was  
a scholar of  
Sanskrit literature**

**Wrote** *The Structure  
of Music in Raga and  
Western Systems and  
Years Of Pilgrimage,*  
*his autobiography*

**Honoured with**  
Padma Shri(1968),  
Padma Bhushan(1973),  
Padma Vibhushan (1976)



**KIET Group of Institutions**

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