

Volume No. 20

# अनुसंधान

(KIET Research Magazine)



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**Head of Operations**  
**WIKI Inst. India Pvt. Ltd.**  
**Ghaziabad UP - 201206**

**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 7500+ students and is empowered with 350+ highly qualified full-time faculty to nurture our students. Institute credentials and Centers of Excellence can be viewed @ our website [www.kiet.edu](http://www.kiet.edu).

The Institute has NAAC accreditation status with an 'A+' Grade and 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 the Pharmacy discipline, Rank Band (151-200) for Engineering and Innovation (51-100) Rank band in the National Institutional Ranking Framework (NIRF) - India Ranking 2023 released by Ministry of Education, GOI. The Institute has to its credit QS-I GAUGE 'Diamond' rating and Scientific and Industrial Research Organization (SIRO) recognition by the Department of Scientific and Industrial Research (DSIR) etc. The Institute also has a Technology Business Incubator (TBI) set up in association with NSTEDB, DST, Govt. of India to promote Innovation and 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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## Message from the Face of Cover Page



**Dear Readers,**

It is an immense honour to be featured on the cover of the **KIET Research Magazine**. As the Head of Operations at WIKA Instruments India Pvt Ltd, I am privileged to represent an organization that values innovation, precision, and excellence.

Research is not just about discovering new ideas; it's about solving real-world problems, fostering collaboration, and inspiring future generations. At KIET, the dedication to nurturing talent and driving impactful research is truly commendable.

This recognition is not just a personal milestone but a reflection of the collective efforts of my team, mentors, and the dynamic ecosystem at WIKA. I am deeply grateful for this opportunity and excited about the continued collaboration between industry and academia to drive meaningful change.

To all aspiring researchers and readers, remember: every breakthrough begins with curiosity and perseverance.

All Best wishes.

Warm regards,

**Mr. Umang Gupta**

**Head of Operations**

**WIKA Inst. India Pvt. Ltd.**

**Ghaziabad UP – 201206**

## Message from Chief Patron



Dear Readers,

It is with immense pride and enthusiasm that I address you through this edition of the KIET Research Magazine. Our journey towards academic excellence and innovation has been both inspiring and rewarding, and it is your dedication and contributions that fuel this remarkable progress.

At KIET Institute, we believe in pushing the boundaries of knowledge and fostering an environment where innovative ideas can flourish. The content of this magazine is a testament to the groundbreaking research and scholarly pursuits KIETians. Each article represents not just the culmination of hard work but also the potential to drive future advancements in our fields.

As we continue to advance in a world that is ever-changing and increasingly complex, your voice and insights become more crucial than ever. I encourage each of you to embrace the opportunity to share your innovative research and perspectives. Your submissions have the power to influence the discourse, inspire your peers, and contribute to the broader academic and scientific community.

Let us remain committed to exploring new frontiers and challenging the status quo. The more we engage in sharing our research, the more we contribute to a vibrant culture of discovery and innovation. I urge you to submit your most innovative and impactful research articles, and to continue pushing the envelope of what is possible.

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, let us build on our collective knowledge and make a lasting impact on the society.

Warm Regards

**Prof. (Dr) Preeti Bajaj**

Ph.D (Electronics), M.B.A

Director General-KIET Group of Institutions

Delhi-NCR, Meerut Road (NH-58) 201206

## 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 innovative technologies and solutions, share their findings, and disseminate their findings.

Our studies will 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 Group of Institutions

Delhi-NCR, Meerut Road (NH-58) 201206



## 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



It is with great pleasure that we present this month's edition of the *KIET Research Magazine*, a testament to the relentless pursuit of knowledge, innovation, and excellence by our vibrant research community.

This issue showcases some remarkable achievements, including groundbreaking **research articles** authored by our talented faculty and students, addressing contemporary challenges and advancing knowledge across diverse fields. We are proud to feature notable **patents filed and granted**, reflecting the innovative spirit and commitment to transforming ideas into tangible solutions.

Additionally, we highlight **innovative project ideas** that have the potential to create significant societal and industrial impact. These projects not only demonstrate technical brilliance but also showcase creativity and problem-solving skills.

The magazine also captures the energy of recent **research and innovation events**, workshops, and collaborative initiatives that foster an ecosystem of learning and discovery.

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 General, Joint Director, Dean R&D, Heads, and all the associates for their support, blessings, and cooperation in publishing this multidisciplinary research magazine “अनुसंधान” .

### **Dr. Himanshu Chaudhary**

Assistant Dean R&D  
Assistant Professor, ECE Department  
KIET Group of Institutions  
Delhi-NCR, Ghaziabad

## Foreword



**"Research is seeing what everybody else has seen and thinking what nobody else has thought". – Szent Gyorgyi**

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 2025 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 General, the Joint Director, the Dean of R&D, and the entire KIET family for their generous support and leadership over the years.

**Dr. Abhishek Sharma**

Associate Professor, ECE Department

KIET Group of Institutions

Delhi-NCR, Ghaziabad

In an era driven by knowledge and technological advancements, research has become the cornerstone of growth and development. The **KIET Research Magazine** not only highlights the dedication and intellectual prowess of our faculty and students but also fosters a culture of curiosity, critical thinking, and collaboration.

This magazine stands as a bridge between knowledge creation and dissemination, offering valuable insights to researchers, academicians, and industry professionals alike. Each article represents a step towards solving real-world problems, contributing to the broader academic community, and inspiring future generations of innovators.

I extend my heartfelt gratitude to all contributors, reviewers, and editorial team members who have worked tirelessly to bring this publication to life. Your commitment to upholding the standards of academic excellence is truly commendable.

As we continue this journey of discovery and innovation, I encourage our readers to actively engage with the content, share feedback, and contribute their own research findings for future editions.

**Dr. Amit Arora**

Associate Professor, MBA Department

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 make efforts to establish collaborative research projects with their counterparts in reputed National and International Universities.
- ❖ To encourage faculty members to submit proposals and secure funded research projects from various funding agencies in India and Abroad.
- ❖ To undertake consultancy projects sponsored by the Government as well as Private, Industrial, and other organizations.

### **Contact**

Office of Dean (R&D)

Department of Electronics & Communication Engineering

KIET Group of Institutions, Delhi-NCR, Ghaziabad, Uttar Pradesh, India-201206

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

## Glimpses of Month

### InnoTech'24, the Annual Technical Fest



#### InnoTech'24 Successfully Concludes! 🚀

We're thrilled to announce the grand success of **InnoTech'24**, the Annual Technical Fest at **KIET Group of Institutions!**

🌟 A Day of Innovation and Inspiration

From groundbreaking ideas to impactful solutions, the fest truly embodied the theme of Sustainable Solutions for Viksit Bharat.

**Key Highlights:**

Exceptional projects in tracks like Smart Cities, Bioinformatics, Green Energy, Education, and Agriculture.

Engaging sessions and insightful guidance from **Dr. U.B. Desai, Founding Director, IIT Hyderabad.**

A whopping prize pool of **₹1.5 Lakhs+** distributed to the brightest innovators.

**ECE Department Conducted 5-Day Online Faculty Development Program**



**IEEE MGA Board Meeting - November 2024**

Dr. Preeti Bajaj Director General KIET Group of Institutions attended and Chaired the MGA Awards and Recognition Committee as a part of MGA Board meeting series Nov 2024 at Dallas USA convened for a session followed by networking with global leadership of IEEE.

**KIET Group of Institutions at VIVIBHA 2024 – Vision for Viksit Bharat**



### KIET Group of Institutions at VIVIBHA 2024 – Vision for Viksit Bharat

We are thrilled to announce our participation in VIVIBHA 2024, a prestigious exhibition organized by **Bharatiya Shikshan Mandal**, from 15th to 17th November 2024 at Gurugram, Haryana.

This remarkable event brings together institutions, innovators, and visionaries to showcase groundbreaking ideas and initiatives that contribute to the development of a self-reliant and progressive Bharat.

We are proud to share that:

✔ **Three startups from TBI KIET**

✔ **One startup under Karismatic**

represented our institution at this platform, showcasing their innovative ideas and contributing to India's vision of becoming a global leader. It was coordinated by the PRIR department.

Through this participation, we aim to inspire innovation, foster collaboration, and support the vision of a Viksit Bharat.

### Session on the KIET Academics Autonomous System






We were honored to have our esteemed **Director General, Dr. Preeti Bajaj**, lead a transformative session on the KIET Academics Autonomous System! Her visionary insights provided an in-depth look at the autonomy model and its potential to enrich academic experiences and elevate institutional standards.

The session highlighted how autonomy empowers departments to innovate curricula, nurture creative freedom, and focus on research-driven learning. Her invaluable guidance is a beacon for us all, driving KIET's commitment to academic excellence and shaping a future-ready learning environment for every student.

## 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)

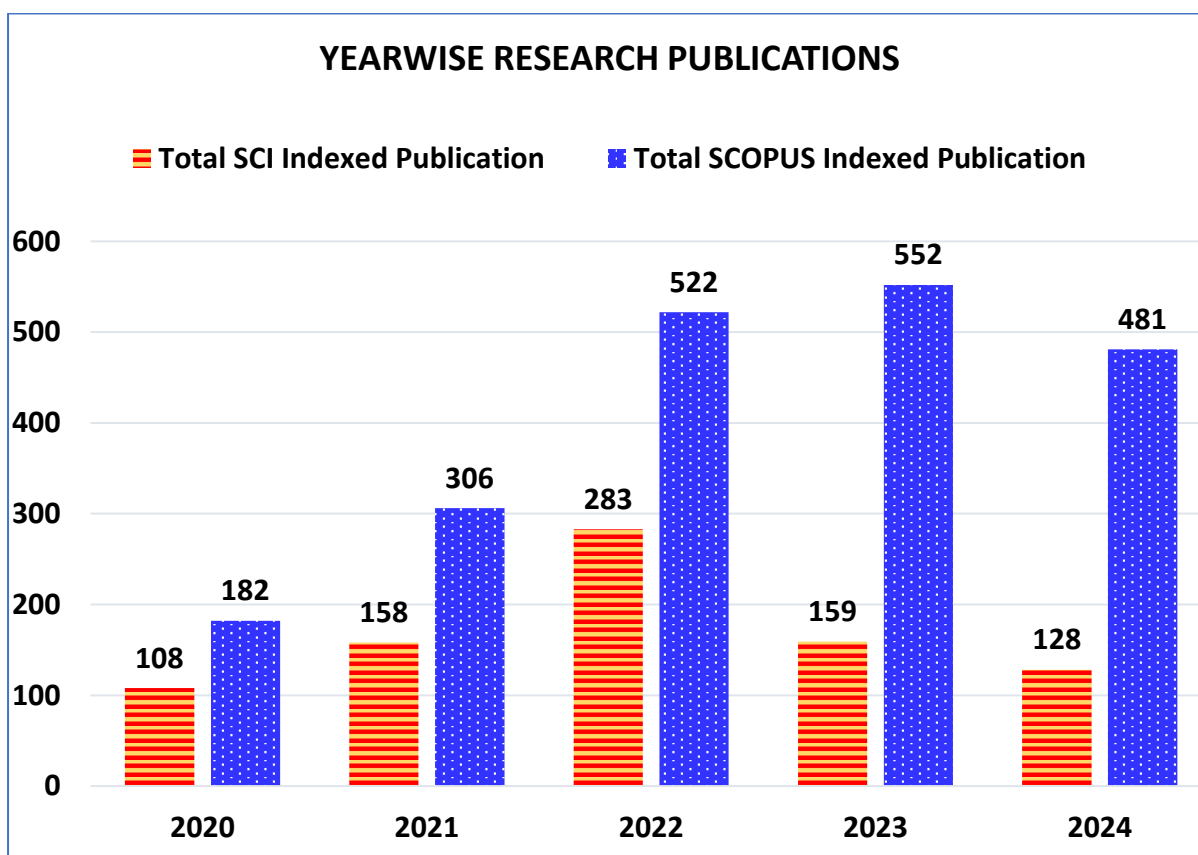
 <p>सत्यमेव जयते</p>	<p>भारत सरकार विज्ञान और प्रौद्योगिकी मंत्रालय वैज्ञानिक और औद्योगिक अनुसंधान विभाग टेक्नोलॉजी भवन, नया महरौली मार्ग, नई दिल्ली - 110016 GOVERNMENT OF INDIA MINISTRY OF SCIENCE AND TECHNOLOGY Department of Scientific and Industrial Research Technology Bhavan, New Mehrauli Road, New Delhi - 110016</p>
<p>दूरभाष/TEL : 26962819, 26567373 (EPABX) : 26565694, 26562133 : 26565687, 26562144 फैक्स/FAX : 26562134, 26562122 : 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>सूचना का अधिकार RIGHT TO INFORMATION</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 <b>Krishna Charitable Society, Ghaziabad, Uttar Pradesh</b> 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 <b>Krishna Charitable Society, Ghaziabad, Uttar Pradesh</b> from <b>01.04.2022</b> to <b>31.03.2025</b>. 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 SCI Research Publications and Scopus Indexed Research Publications with an affiliation of KIET Group of Institutions, Delhi-NCR, Ghaziabad are listed in Web of Science and Scopus Database till November 2024.

Year	Total Number of SCI Indexed Publications	Total Number of SCOPUS Indexed Publications	Total Number of Research Publications
2020	108	182	290
2021	158	306	464
2022	283	522	805
2023	159	552	711
2024* (Nov)	128*	481*	609*
<b>Total</b>	<b>836*</b>	<b>2043*</b>	<b>2879*</b>



**PATENTS Published – November 2024**

S. No.	Title Of Patent	Dept.	Name Of Applicant	Date Of Publication	Status
1.	Smart dashboard for IOT systems using ai and mathematical image processing	IT	Mr. Saurabh	15-11-2024	Published
2.	Integrated cyber-physical system for 24/7 sustainable drinking water supply networks using IOT, AI/ML, and cloud computing	CSE	Dr. Swati Sharma	15-11-2024	Published
3.	A System & Method Based on AI, ML & IOT for Rainy Diseases Monitoring, Diagnosis and Prevention	EC	Dr. Chirag Arora	15-11-2024	Published
4.	Development of a simple kinetic mathematical model for environment friendly coatings	AS	Dr.Soniya Juneja, Dr. Sweta Shukla, Dr. Richa Agarwal	01-11-2024	Published
5.	System for providing a personalized yoga practice	ECE	Ms. Ragini Sharma	01-11-2024	Published
6.	Sun tracking solar panel system for cloudy weather	EEE	Dr. Ankur Maheshwari, Dr. Sourav Diwania	29-11-2024	Registration of Design
7.	Kiosk	CSIT	Prof. Dr. Sudhir K. Sharma	22-11-2024	Registration of Design
8.	Biometric authentication device for financial transactions	KSOM	Ms. Menali Bajaj	15-11-2024	Registration of Design

## Patent Details

**1. Title of the Invention:** Smart dashboard for IOT systems using ai and mathematical image processing

**2. Application Number:** 202411083874 A (Indian Patent Office)

**3. Applicant(S):** Mr. Saurabh (IT)

**4. Date of Filing:** 02-11-2024

**5. Date of Publishing:** 15-11-2024

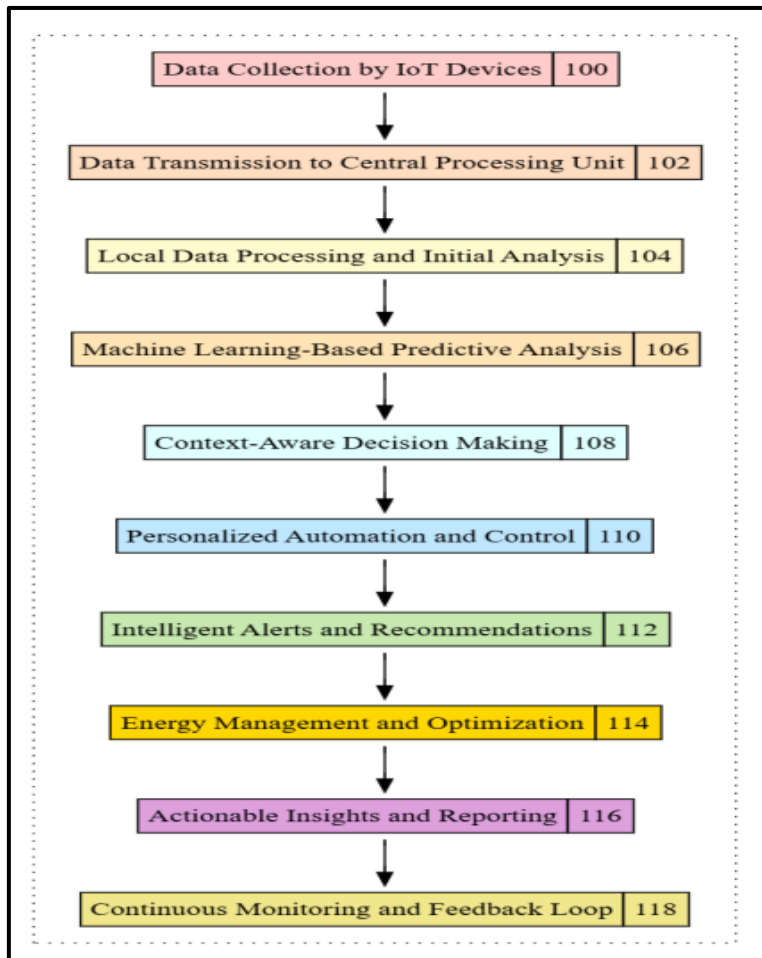
**6. Field of the Invention:** The present invention relates to smart dashboards for Internet of Things (IoT) systems, focusing on improving data visualization, real-time monitoring, and decision-making. Specifically, the invention integrates Artificial Intelligence (AI) and mathematical methods for image processing and pattern detection, enhancing automation, control, and optimization across various IoT applications.

**7. Objects of the Invention:** The principal object of the present invention is:

With the increasing adoption of IoT in various industries, the amount of data generated by sensors and devices is growing exponentially. Traditional dashboards in IoT systems are limited to basic data visualization without offering advanced analytics or real-time intelligence.

AI-driven systems are crucial in interpreting complex IoT data, while mathematical image processing is necessary for pattern recognition and anomaly detection, especially in visual data streams like images and videos.

The need for smart dashboards arises due to the limitations of current systems, which fail to incorporate advanced AI techniques for predictive analytics and image recognition, making it difficult for operators to make data-driven decisions efficiently.



**Figure:** It represents the system architecture for the Smart Dashboard for IoT Systems Using AI and Mathematical Image Processing

**1. TITLE OF THE INVENTION:** Integrated cyber-physical system for 24/7 sustainable drinking water supply networks using IOT, AI/ML, and cloud computing

**2. APPLICATION NUMBER:** 202411084862 A (Indian Patent Office)

**3. APPLICANT(S):** Dr. Swati Sharma (CSE)

**4. DATE OF FILING:** 06-11-2024

**5. DATE OF PUBLISHING:** 15-11-2024

**6. FIELD OF THE INVENTION:** This invention relates to the domain of sustainable water management systems, specifically targeting 24/7 drinking water supply networks through the integration of Internet of Things (IoT), Artificial Intelligence/Machine Learning (AI/ML), and cloud computing. This invention enables real-time monitoring, management, and equitable distribution of water resources in both urban and rural areas, addressing the technological needs and challenges of implementing continuous, reliable water services.

**7. OBJECTIVE:** The following description provides the information that may be useful in understanding the present invention. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

Water scarcity, uneven distribution, and inefficiencies in the existing public sector are critical challenges facing the drinking water sector in India. Many areas rely on irregular supply and unsustainable groundwater extraction, which exacerbates socio-economic disparities. Traditional methods for water management, which often operate in isolation, have proven inadequate for ensuring a reliable and equitable water supply. This patent proposes a demand-responsive approach (DRA), leveraging IoT and AI/ML to deliver a sustainable and smart water network.

**8. SUMMARY:** His invention provides an integrated solution for establishing a 24/7 drinking water supply network that incorporates:

**IoT-Based Real-Time Monitoring:** Advanced sensors monitor water levels, quality, and flow across reservoirs, pipelines, and end-user points, transmitting data in real-time to a central cloud platform. **AI/ML-Driven Analytics:** Cloud computing powers data aggregation and advanced analytics, enabling predictive maintenance, usage forecasting, and anomaly detection. **Cyber-Physical Control Mechanisms:** Actuators and controllers, integrated within the CPS framework, dynamically adjust distribution parameters, optimize water flow, and minimize wastage. **Equitable Distribution and Demand Management:** By employing a demand-responsive approach, this system supports service customization for diverse user demographics, ensuring all socio-economic groups have fair access.

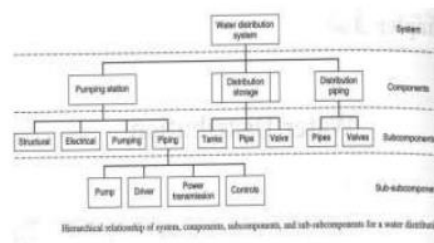


Figure1. Water distribution network-hierarchical relationships of its components , sub components, sub-subcomponents

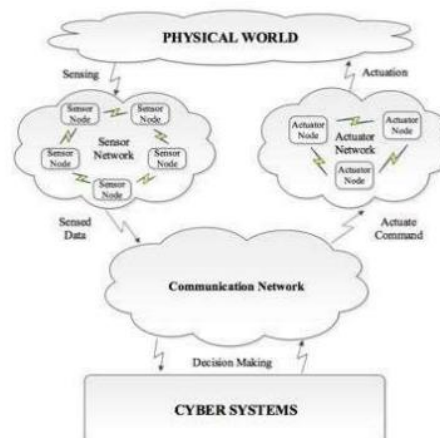


Figure 2. Cyber Physical Systems Representation

**1. TITLE OF THE INVENTION: A System & Method Based on AI, ML & IOT for Rainy Diseases Monitoring, Diagnosis and Prevention**

**2. APPLICATION NUMBER:** 202421076136 A (Indian Patent Office)

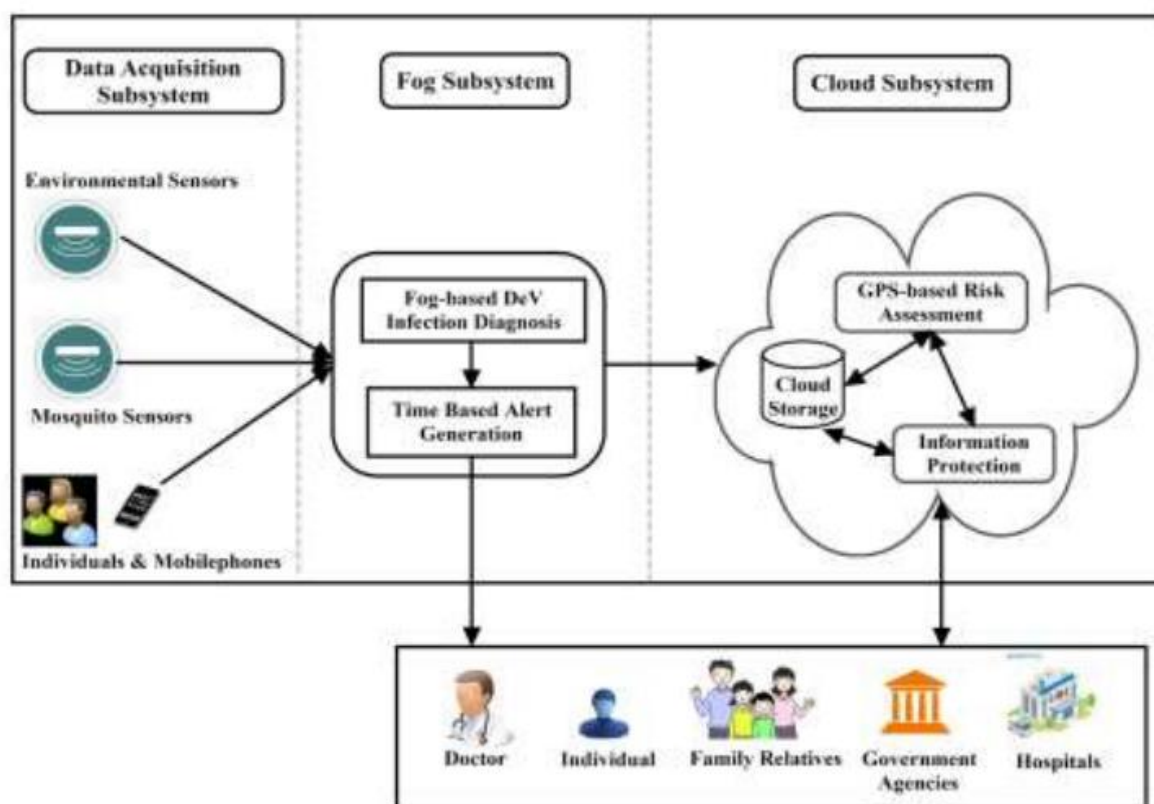
**3. APPLICANT(S):** Dr. Chirag Arora (EC)

**4. DATE OF FILING:** 18-10-2024

**5. DATE OF PUBLISHING:** 15-11-2024

**6. FIELD OF THE INVENTION:** The most recent development is associated with library management systems that organise books, articles, and journals through the use of artificial intelligence algorithms, sensor technology, and radio frequency identification (RFID).

**7. OBJECTIVE OF THE INVENTION:** A well-organised library is essential to the operation of many organisations. Even within the same warehouse, many conventional methods of library management utterly fail when it comes to accurately tracking the whereabouts of libraries. Increased logistics expenses, stockouts and backorders, human error, and unhappy consumers are all possible outcomes. Import and export shipments are under control. The ever-increasing size of libraries makes effective management and control all the more crucial.



**Fig.** Illustrates the use of AI and ML to improve library management

**1. TITLE OF THE INVENTION: Development of a simple kinetic mathematical model for environment friendly coatings**

**2. APPLICATION NUMBER:** 202411080122 A (Indian Patent Office)

**3. APPLICANT(S):** Dr.Soniya Juneja, Dr. Sweta Shukla, Dr. Richa Agarwal (AS)

**4. DATE OF FILING:** 22-10-2024

**5. DATE OF PUBLISHING:** 01-11-2024

**6. FIELD OF THE INVENTION:** The present invention relates to the field of Paint and Coating Technology. The present invention relates to the field of mathematical modeling in polymer coating binders. The mathematical modeling can predict the kinetic behaviors of polymer based coating binders. The present invention the swelling resistance of films can be predicted without doing set of practical experiments.

**7. ABSTRACT OF THE INVENTION:** The growing concern for environmental protection in present scenario, has pushed the polymeric sector toward adopting more eco-conscious production techniques. A method gaining significant momentum is emulsion polymer synthesis, recognized for its environmentally friendly nature and its ability to support the industry's goals of reducing ecological impact while maintaining production efficiency and product quality. The polymer sector is one of the most rapidly expanding sectors in the chemical field, with polymers being essential in various applications, including agriculture, healthcare, automotive components, packaging, adhesives, and surface coatings etc. Surface coatings are particularly significant in polymer applications, serving both protective and aesthetic roles. These coatings not only guard base surfaces against mechanical, chemical, and atmospheric damage but also improve their visual appeal. A polymer's success as a film-forming agent largely depends on its adhesion capabilities across different base surfaces, leading to substantial research and innovation in this domain. Historically, the use of solvent evaporation was predominant in the creation of polymer films on various materials. However, due to the environmental concerns and increasing expenses related to solvents, the industry has been transitioning toward water-based coatings. These waterborne options offer enhanced safety for the environment and often deliver better performance.

**8. OBJECT OF THE INVENTION:** This research aims to thoroughly understand the swelling kinetics of polyacrylate latex created through emulsion polymerization. The study is organized around the following core objectives:

- 1. Quantifying Swelling Properties:** This research seeks to measure key swelling characteristics, including swelling ratio, swelling rate, and diffusion kinetics of polyacrylate latex. These properties will be monitored over various time intervals to offer a detailed perspective on how the material's swelling behavior changes over time.
- 2. Developing and Testing Mathematical Models:** The study will employ the Firstorder absorption kinetic model to predict and analyze the swelling behavior of polyacrylate latex. A primary focus will be on validating this model by aligning its predictions with experimental data, which will enhance the accuracy and understanding of swelling kinetics.
- 3. Assessing Environmental and Economic Viability:** This research will explore the potential of water-based polyacrylate latex coatings as an eco-friendly alternative to conventional solvent-based systems. By examining factors such as environmental impact, cost-efficiency, and performance, the study aims to highlight the benefits of using waterborne coatings.

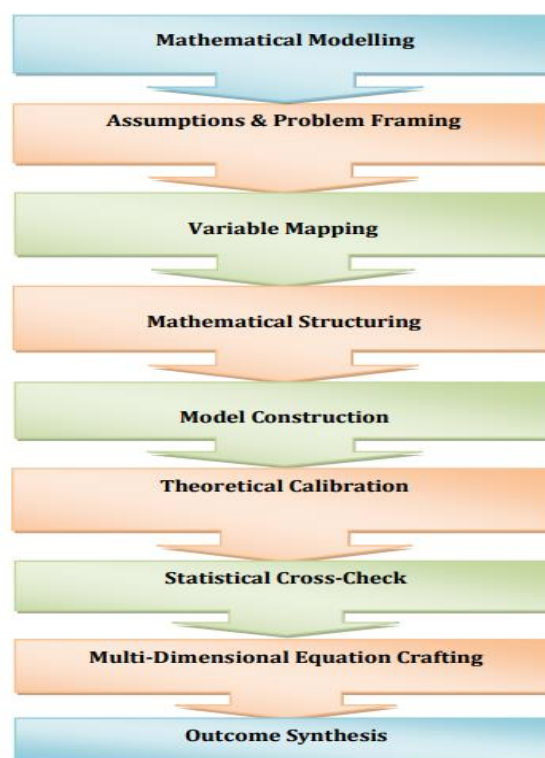


Figure 1. Diagram for the proposed invention

**REGISTRATION OF DESIGN:**

1. **TITLE OF THE INVENTION:** Sun tracking solar panel system for cloudy weather

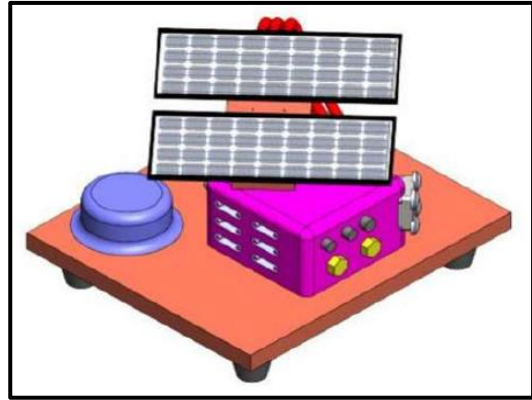
2. **APPLICATION NUMBER:** 416376-001

(Indian Design)

3. **APPLICANT(S):** Dr. Ankur Maheshwari, Dr. Sourav Diwania (EEE)

4. **DATE OF FILING:** 27-09-2024

5. **DATE OF REGISTRATION:** 29-11-2024



1. **TITLE OF THE INVENTION:** Kiosk

2. **APPLICATION NUMBER:** 422391-001

(Indian Design)

3. **APPLICANT(S):** Prof. Dr. Sudhir K. Sharma (CSIT)

4. **DATE OF FILING:** 05-07-2024

5. **DATE OF REGISTRATION:** 29-11-2024



**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.	Deepti Katiyar	Associate Professor	KSOP	A Comprehensive Review of the Protective Effects of Herbals against Toxicity of Bisheoni	3.3	11,000	SCIE
2.	Pravin Kumar	Professor	ECE	A review on mmwave based Energy Efficient RoF Systems for Next Generation Mobile Communication and Broadband Systems.	2.9	4,000	SCOPUS
3.	Sonal Nirwal	Assistant Professor	AS	Three Dimensional Multiferroic Structures under Time-Harmonic Loading	2.2	11,000	SCIE
4.	K. Nagarajan	Principal	KSOP	Development and Validation of Fast and Sensitive RP- HPLC Stability Indicating Method for Quantification of Teneligliptin in Bulk Drug	1.5	11,000	SCIE
5.	Sheetal Singh	Assistant Professor	EN	Alleviation and Control of Chaotic Oscillations in SMIB Power Systems Using A Modified- Whale Optimization-Based Battery- STATCOM	-	11,000	SCIE
6.	Balram Tamarkar	Assistant Professor	ECE	Tackling Third- Order Intermodulation Distortion: Modeling and Analysis of Linearized RoF Link for Future Prespective Networks	-	2,000	ESCI
7.	Balram Tamarkar	Assistant Professor	ECE	Fortifying File Sharing Systems Security Through AES Encryption Method for the Next Generation Networks	-	2,000	ESCI
8.	Rohit Vashisht	Assistant Professor	CSIT	An empirical study of just in time defect prediction using various machine learning techniques	-	5,000	SCOPUS
9.	Sourav Diwania	Assistant Professor	EEE	Machine Learning- Based Thermo- Electrical Performance Improvement of Nanofluid-Cooled Photovoltaic- Thermal System	-	11,000	SSCI
10.	Roma Ghai	Professor	KSOP	In Silico Profiling and Effect of Piperine and Ligan on Ovariectomy- Induced Osteoprosis in Female Rats	0.5	8,000	SCIE



## Highlights of the Published Journal Articles

1. **Katiyar, D., Saxena, R., Kumar, A., Bansal, P., Prakash, S., Ghosh, D., & Nagarajan, K. (2024). A comprehensive review of the protective effects of herbals against toxicity of Bisphenol - A. *Toxin Reviews*, 43(3), 329–357. <https://doi.org/10.1080/15569543.2024.2329907>**

Bisphenol-A (BPA) is a synthetically manufactured phenolic substance that is very widely employed in producing polycarbonate polymers and epoxy resins which further can be found in numerous items of daily use such as foodstuff and their containers, beverages, milk, audit rolls, dental fillings and so forth. Additionally, it is present in the air we breathe-in. The studies have reported that BPA produces toxic impacts on reproductive, cardiovascular, endocrine, renal, gastrointestinal, immune, respiratory, nervous and skeletal system. In the current literature review, we have targeted to highlight the protective role of herbs in opposition to BPA toxicity. The gift of nature-Plants' seem to be very efficient and potential agents to overcome the BPA induced toxicity as they themselves are devoid of adverse effects. Plants contain a mixture of phyto-molecules which together act to provide a synergistic effect. Further, we have explained the signalling mechanisms implicated in BPA toxicity. Even though, multiple mechanisms involved in BPA toxicity have been examined, no particular target therapy for this toxicity is available at present. Thus, naturally occurring substances may be looked at in the future for restorative use to mitigate the deleterious and negative consequences of exposure to BPA.

2. **Kumar, Parvin, Sharma, Sanjay Kumar, Singla, Shelly, Gupta, Varun and Sharma, Abhishek. "A review on mmWave based energy efficient RoF system for next generation mobile communication and broadband systems" *Journal of Optical Communications*, vol. 45, no. 2, 2024, pp. 303-318. <https://doi.org/10.1515/joc-2021-0159>**

In today's scenario, wireless communication is turning into a decisive and leading backbone to access the worldwide network. Therefore, the usage of mobile phones and broadband is rising staggeringly. To satisfy their expulsive needs, it demands increment in data rates while providing higher bandwidth and utilizing optical fiber in wireless communication, and this becomes a worldwide analysis area. Radio over fiber (RoF) system is taken into account as best solution to fulfill these needs. In RoF system, the radio frequency signal operated at millimeter wave (30–300 GHz) is centralized and processed at control station (CS) and also, the CS upconverts this electrical signal to optical domain. By employing optical fiber link, this signal reaches to base station (BS). Then, the received optical signal converts back to electrical domain at the respective BS. Now BS radiates the electrical signal to corresponding mobile station (MS) in commission with the millimeter wave frequency bands. This RoF system is providing massive bandwidth, facilitating large mobility for RF frequency signals, small loss, fast and cost effective setup, wonderful security, and unlicensed spectrum etc. The RoF system introduces microcells structure for BS cells to boost the frequency reuse and needed capacity. It has benefits in terms of ability to fulfill increasing bandwidth demands to cut back the power consumption and the dimensions of the handset devices. This paper firstly explains the overview of existing wireless mobile communication and broadband systems and then, targets the review of RoF system which will become energy efficient system for next generation mobile communication and future broadband systems. This paper also includes the performance degradation and evaluation parameters. Finally, this paper presents the various research opportunities for its implementation zone.

3. **Nirwal, S., Pan, E., Lin, C., Tran, Q.K. (2024). Three-dimensional multiferroic structures under time-harmonic loading. *Computer Modeling in Engineering & Sciences*, 141(2), 1165-1191. <https://doi.org/10.32604/cmcs.2024.054255>.**

Magneto-electro-elastic (MEE) materials are a specific class of advanced smart materials that simultaneously manifest the coupling behavior under electric, magnetic, and mechanical loads. This unique combination of properties allows MEE materials to respond to mechanical,

electric, and magnetic stimuli, making them versatile for various applications. This paper investigates the static and time-harmonic field solutions induced by the surface load in a three-dimensional (3D) multilayered transversally isotropic (TI) linear MEE layered solid. Green's functions corresponding to the applied uniform load (in both horizontal and vertical directions) are derived using the Fourier-Bessel series (FBS) system of vector functions. By virtue of this FBS method, two sets of first-order ordinary differential equations (i.e., N-type and LM-type) are obtained, with the expansion coefficients being Love numbers. It is noted that the LM-type system corresponds to the MEE-coupled P-, SV-, and Rayleigh waves, while the N-type corresponds to the purely elastic SH- and Love waves. By applying the continuity conditions across interfaces, the solutions for each layer of the structure (from the bottom to the top) are derived using the dual-variable and position (DVP) method. This method (i.e., DVP) is unconditionally stable when propagating solutions through different layers. Numerical examples illustrate the impact of load types, layering, and frequency on the response of the structure, as well as the accuracy and convergence of the proposed approach. The numerical results are useful in designing smart devices made of MEE solids, which are applicable to engineering fields like renewable energy.

**4. Kandasamy Nagarajan, Poornima , Richa Goel, Abhay Bhardwaj, Parul Grover, Development and Validation of Fast and Sensitive RP-HPLC Stability Indicating Method for Quantification of Teneligliptin in Bulk Drug, *Journal of Chromatographic Science*, Volume 62, Issue 5, May/June 2024, Pages 483–491, <https://doi.org/10.1093/chromsci/bmad061>**

Teneligliptin (TEN) is a novel, third-generation DPP4 inhibitor (Dipeptidyl peptidase) used for the treatment of Type 2 Diabetes Mellitus. A rapid, simple and highly sensitive stability-indicating reverse-phase high-performance liquid chromatographic technique coupled with a photodiode array detector was developed and validated for the estimation of TEN. The  $\lambda$  max was determined at 246 nm. The mobile phase comprised Methanol: Water (containing 1% perchloric acid):Triethylamine (80:20:1) at room temperature with a flow rate of 1 mL min<sup>-1</sup>. The chromatographic separation was achieved with Inertsil C-18 Octadecyl-silica (ODS) (250 × 4.6 mm), 5  $\mu$ m column with a retention time of 2.6 min (min). The developed method is fast with a run time of 6 min and sensitive with LOD 35 ng mL<sup>-1</sup> that was never reported earlier. The calibration curve was found to be linear in the range of 1–32  $\mu$ g mL<sup>-1</sup> with a R<sup>2</sup> value of 0.990. The developed method is validated as per International Conference on Harmonization guidelines. TEN was evaluated under stress conditions that included hydrolytic (acid, alkali and neutral), oxidative and thermal degradation. Significant degradation was observed in basic, oxidative and thermal degradation conditions. The developed method was employed successfully to estimate the amount of TEN in bulk and pharmaceutical formulation.

**5. Singh, S., & Saini, S. (2023). Alleviating Chaotic Oscillation in the Power System with Whale Optimization-Tuned Static Compensator with Battery Storage. *Electric Power Components and Systems*, 1–22. <https://doi.org/10.1080/15325008.2023.2287699>**

The presence of turbulent oscillations results in instability within power systems. These oscillations, while not directly impacting the synchronization of machinery, can incite specific oscillatory mode, causing voltage imbalance, and desynchronization of the machine. This research introduces a novel control approach in the form of a Static synchronous compensator (STATCOM) with a battery storage, tuned by a Whale Optimization Algorithm

(WOA) to alleviate and dampen the turbulence of the system. The versatile controller comprising two PI controllers (AC and DC voltage regulators) manages the control signals *via* a current regulator using PWM (Pulse width modulation). The battery integrated with the VSC (Voltage source converter) is meant to operate as a stable voltage source, while the control block ensures to maintain the battery voltage. The system is exposed to the most prominent perturbances like varying electric torque and changing reference voltages. Zero natural damping has been considered to aggravate the system conditions so that the efficacy of the proposed controller could be truly examined. The analysis of rotor dynamics has been conducted under various conditions, including no control, STATCOM alone, and WOA-based STATCOM. The results demonstrate the mitigation capabilities of the proposed controller while operating under the worst scenarios.

**6. Tamrakar, B., Singh, K. & Gupta, V. Tackling third-order intermodulation distortion: modeling and analysis of linearized RoF link for future perspective networks. *J Opt* 53, 2597–2608 (2024). <https://doi.org/10.1007/s12596-023-01432-2>**

The presented research article shows the mathematical and simulative analysis of a Dual-Drive Dual Parallel Mach Zehnder Modulator (DD-DPMZM)-based RoF link. A comparative analysis has been drawn between conventional MZM and DD-DPMZM-based RoF links. Two RF input signals, representing Tone-1 and Tone-2 at 7 and 8 GHz, respectively, are applied at the used RoF link. Third-Order Intermodulation Distortions (IMD3) components act as the major degradation component in the analysis of the RoF link and they must be eliminated or suppressed to get the distortion-free RoF link design. In the proposed article the major contributor of IMD3 is the third-order spurious component, which has been completely eliminated in the presented mathematical and simulative analysis. A 53.93-dB suppression in IMD3 components and 32 dB Hz<sup>2/3</sup> SFDR enhancement have been founded for the DD-DPMZM-based RoF link as compared to the conventional MZM-based RoF link.

**7. Balram Tamrakar, Krishna Singh, Varun Gupta, Diksha Chaturvedi, Ayushi Tiwari, Harshik Yadav, Manish Pratap Singh, Prateek Gupta, Paramanand Sharma and Vipin Kumar Verma *JAPED* 18.1, p. 37-52(2024)**

Data security plays a pivotal role in the evolution of communication systems, guaranteeing that our information remains exclusive to its intended recipient and thwarting any unauthorized attempts to modify or alter the data. Various strategies have been suggested for ensuring data protection. This paper conducts a thorough examination of a file sharing system, fortified with cryptography using AES encryption algorithm. The aim is to bolster security both within the cloud environment and during data transfers. In the event of a security breach, even if an unauthorized party gains access, the encrypted data remains inaccessible to them, ensuring continued data confidentiality. Within this system, when a user uploads a file to the portal, it undergoes encryption before being transmitted to the site. Users have the option to retrieve their files from the official site via the portal, initiating the download of the file in its decrypted or original form to their local computer.

**8. Vashisht, R., Juneja, A., Thakral, G., & Gupta, S. (2024). An empirical study of just-in-time-defect prediction using various machine learning techniques. *International Journal of Computers and Applications*, 46(6),397–406. <https://doi.org/10.1080/1206212X.2024.2328489>**

The goal of defect specificity is to pinpoint defective program components (such as faulty files, problematic procedures, or troublesome lines of code) based on defect symptoms, such as event logs or program spectrum. However, the problem is revealed and adverse effects are introduced when one experiences the defect indications. Consequently, one difficult task is to determine whether one can find buggy program before the signs of the defect manifests itself. Just-in-time defect prediction (JIT-DP) is a particular category of Software Defect Prediction (SDP) that includes this type of early detection of flawed changes to a software

programs. This paper presents a novel five-phase JIT-DP framework that classifies the newly committed change as either a buggy change or a clean change relying on the project's historical data regarding the executed changes. The distinctive aspect of the model is that it uses the Chunk Balancing Algorithm (CBA) as a novel way of handling the Class Imbalance Problem (CIP) rather than utilizing conventional data re-sampling techniques. The experimental study uses 10 open-source projects with an average of 23,989 modifications to train the JIT-DP model. The research study examines the JIT-DP model's prediction abilities from both Within Project (WP) and Cross Project (CP) scenarios. The findings show that for within project setup, Logistic Regression (LR) outperforms among all other classifiers with the highest accuracy, TPR, and FPR as 0.85, 0.847, and 0.207, respectively. The model provides comparable prediction findings with an average accuracy of 0.90 for all seven testing samples when it was trained using commit logs from related six Java projects under CP context. However, taking into account the larger training pool of commit records in the former scenario, the model in the CP context (3.740 s) lags behind in terms of training and classification time periods when compared to the results of WI (0.984 s).

**9. Diwania, S., Kumar, M., Kumar, R., Kumar, A., Gupta, V., & Khetrpal, P. (2024). Machine learning-based thermo-electrical performance improvement of nanofluid-cooled photovoltaic-thermal system. *Energy & Environment*, 35(4), 1793-1817. <https://doi.org/10.1177/0958305X221146947>**

Hybrid photovoltaic-thermal (hPVT) collectors are devices that allow the conversion of sun energy into useful thermal and electrical energy simultaneously. The power obtained from the photovoltaic (PV) module introduces random fluctuations into the system. While obtaining the data for PV power output in advance and for reducing the impact of random fluctuations, exact day-ahead PV power prediction is crucial. Machine learning algorithms have been proven an effective tool in PV technology for day-ahead prediction of PV-power output. This research employs the Gaussian process regression method using the Matlab environment for forecasting the hPVT collector's performance operating with pure water and Fe/water nanofluid. A one-year historical data pertaining to solar irradiance as well as ambient temperature for Roorkee (29.8543 °N, 77.8880 °E), India location has been used to validate the proposed model. This data is utilized for day-ahead forecasting of solar irradiance and ambient temperature. The outcome elucidates that as the mass-flow rate increases, the thermo-electric performance of the hPVT collector enhances. Raising the mass-flow rate of Fe/water nanofluid from 0.01 to 0.1 kg/s, the cell temperature decreases by 9.35 °C and 9.47 °C, respectively, for the actual and predicted data. The thermal, electrical, as well as overall efficiency of the hPVT collector, improves by 2.73%, 7.11%, and 9.84%, respectively, using Fe/water nanofluid ( $\phi = 2\%$ ) in contrast to the water-cooled PVT system. Finally, results demonstrate that the outcomes obtained using the forecasted data closely follow the results obtained using the actual data. In conclusion, this analysis provides a comprehensive solution for utilizing nanofluids as a coolant in the most cost-effective ways.

**10. Roma Ghai, Ayushi Pandey\*, K. Nagarajan<sup>1</sup>, Parul Grover<sup>1</sup>, N. Ali<sup>2</sup>, Kamaraj Mani<sup>2</sup>, Karishma Chauhan and Vaishnavi Verma [In Silico Profiling and Effect of Piperine and Lignan on Ovariectomy-Induced Osteoporosis in Female Rats](#) *Indian J Pharm Sci* 2024;86(4):1394-1400 DOI:10.36468/pharmaceutical-sciences.1407.**

Ovariectomy induced osteoporosis in rats is similar to oestrogen depleted postmenopausal osteoporosis in females. Osteoporosis after menopause is a serious global health issue in elderly populations that have shown minimal consideration until lately. Anti-resorptive medicines such as oestrogen, calcitonin, bisphosphonates and others are used in traditional treatments for postmenopausal osteoporosis. These have various negative effects and do not modify bone mass or replace bone that has already been lost. The goal of this study was to see if a herbal extract combination (*Piper nigrum* and *Linum usitatissimum*) might prevent ovariectomized rats from osteoporosis. 10-12 w of age female rats are randomized into six

groups of six rats each. The sham-operated group, the control group and four other ovariectomized groups, ovariectomized with standard (calcium carbonate 250 mg/kg); ovariectomized with black pepper extract (500 mg/kg), and ovariectomized with flaxseed extract (600 mg/kg) are treated for 14 d by oral dosing. The *in silico* study revealed that lignan has a direct interaction with gene interleukin-6 and an indirect connection with CYP4F2 and piperine indirectly inhibit tumor necrosis factor gene. The present study reveals that a combination of *Piper nigrum* and *Linum usitatissimum* extracts has given significant results when compared to these extracts if given alone in the estimation of various bone turnover markers alkaline phosphatase, calcium, phosphorus, total protein content and histopathology of the right leg femur bone. To summing up, *Piper nigrum* and *Linum usitatissimum* extract has a definite anti-osteoporotic activity and could be used as an analogous treatment for postmenopausal osteoporosis.

### Details of Research Incentives for Publications in Conferences

S. No	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Incentives	Published By
1.	Umang Rastogi	Assistant Professor	CSE	Intelligent Systems for Cyber Security	Decentralised System for Counterfeit Product Detection Using Block Chain Technology	SCOPUS	9500
2.	Chirag Arora	Assistant Professor	ECE	Nature International Conference	Design of L Shaped Microstrip Patch Antenna	SCOPUS	8000
3.	Rohit Vashisht	Assistant Professor	CSIT	This Conference was organized by B.M.Institute of Engineering & Technology, Sonapat 19-20 April 2024, This paper is added on IEEE Xplore digital library 19.July.24	Comprehensive Analysis of Drone Detection Model Using YOLO Version	IEEE	6000
4.	Sartaj Ahmad	ASSOCIATE PROFESSOR	IT	International Conferene (Hybrid) Advances in AI for Biomedical Instrumentation, Electronics and Computing (ICABEC-2023) at KIET	Prognosis of Heart Disease by Utilizing Data Mining		7000

5.	Arti Sharma	Assistant Professor	CS	The 2nd International Conference on Innovations in Data Analytics was Organized by Eminent College of Mgt. & Tech. During 29-30 Nov 23.	Review of Efficient Load Balancing Technique to Improve QOS Parameters Fog Computing	SCOPUS	6000
6.	Raj Kumar	Assistant Professor	CS	International Conference on Machine Learning, Image Processing, Network Security and Data Sciences (MIND 2023) was organized by CSE, NIT-Hamirpur on 21-22 Dec. 2023	Potato Leaf Disease Classification Using Deep Learning Model		8000

### Highlights of the Published Conference Papers

**1. U. Rastogi, D. Jain, D. Gaur and S. Kumar, "Decentralized System for Counterfeit Product Detection using Blockchain Technology," 2024 International Conference on Intelligent Systems for Cybersecurity (ISCS), Gurugram, India, 2024, pp. 1-5, DOI: 10.1109/ISCS61804.2024.10581381.**

This research presents a decentralized system that utilizes blockchain technology to improve the detection of counterfeit products, in response to the increasing risk they provide. Presently, centralized systems suffer from risks such as data tampering and the presence of single points of failure. This research adds to the ongoing issues around the prevention of counterfeit items. The current supply chain contains a large number of counterfeit goods. The Authentication Solution Providers' Association reports that each year it costs the Indian economy INR 1 trillion. For the consumer to determine whether or not the product they are purchasing is authentic, a system that allows them to know its status. Block technology is used to identify genuine products and identify counterfeit goods. DLT is a decentralized database that is supervised by numerous users on various nodes. A hash is an irreversible cryptographic signature used to record transactions on a blockchain, a type of DLT. Blockchain is a technology with features like distributed computation, decentralization, and digital ledger which is connected to numerous database/node computers through chains and it stores transactional data in the form of blocks. Because data stored in a blockchain is immutable, any block in the chain cannot be altered or compromised, making blockchain technology secure. Customers or users don't need to rely on other users to confirm the safety and authenticity of products due to Blockchain technology. This paper describes a system for detecting counterfeit goods that uses blockchain technology,

**2. Arora, C. (2024). Design of L-Shaped Microstrip Patch Antenna. In: Bhateja, V., Chowdary, P.S.R., Flores-Fuentes, W., Urooj, S., Sankar Dhar, R. (eds) Evolution in Signal Processing and Telecommunication Networks. ICMEET 2023. Lecture Notes in Electrical Engineering, Vol 1155. Springer, Singapore. <https://doi.org/10.1007/978-981-97-0644-018>**

This paper presents study on a microstrip patch antenna, which resembles like English alphabet "L". The proposed patch antenna resonates at 9.15 GHz with gain and bandwidth of 4 dBi and 1.51 GHz (16.33%), respectively. The directivity of this patch antenna is 8.390

dBi. Coaxial probe feeding has been used to feed the proposed antenna. This operating band of the proposed antenna is beneficial for X-band applications like Earth Exploration Satellite System (EESS), which is used in several areas such as weather forecast, collecting data about the earth etc. 1.6 mm thick FR4 substrate has been used to fabricate this proposed antenna. The proposed antenna possesses low profile and is easy to fabricate. Simulations are done on commercially available electromagnetic simulator, HFSS, which works on the theory of full wave finite element method.

**3. R. Vashisht, G. Thakral, R. K. Sharma, G. Kaur and A. Singh, "Comparative Analysis of Drone Detection Model Using YOLO Versions," 2024 Sixth International Conference on Computational Intelligence and Communication Technologies (CCICT), Sonepat, India, 2024, pp. 69-75, doi: 10.1109/CCICT62777.2024.00024.**

This article discusses a structured way for categorizing drones that combines deep learning with a number of other methodologies. It is impressive that this method was able to identify both fixed and moving objects with great accuracy. The You Only Look Once (YOLO) object detector is a well-liked and efficient method for object recognition. Convolutional Neural Networks (CNNs) have been developed for the analysis of visual data, automatically learning hierarchical representations of features from raw pixel inputs. The model is trained using the required dataset for 120 iterations in order to identify drones. In general, deep learning methods have transformed the field of computer vision, enabling impressive improvements in a range of tasks like picture classification, object recognition (including drone detection), segmentation, and image synthesis. To determine the optimum model for drone identification, different YOLOv7 models (YOLOv7, YOLOv7-X, YOLOv7-W6, YOLO-E6, YOLOv7-D6, and YOLO-E6E.) are compared.

**4. Ahmad, Sartaj, Vaishnavi Awasthi, Srishti Chaurasia, and Ajay Agarwal. "Prognosis of heart disease by utilizing data mining techniques." In *Advances in AI for Biomedical Instrumentation, Electronics and Computing*, pp. 52-56. CRC Press, 2024.**

Nowadays, a few diseases are the leading global cause of death. This is a result of how people live today. Due to irregular diets, office schedules, and other factors, people find it difficult to devote attention to their health. One of the primary causes of death is heart disease. The healthcare system contains lots of data that, when used in conjunction with technology, can be used to identify and analyze diseases so that appropriate care can be provided. Machine learning techniques and algorithms can be used to make symptom-based forecasts and stop them from happening, ultimately saving more lives. Numerous studies have been conducted. The fundamental objective of this study is to evaluate various methods and algorithms that can be implemented to anticipate the symptoms more precisely and reliably. For this purpose, various classifications, like KNN, Decision Table, ID3, Logistic Regression, and SVM, are employed and their results are analysed for further decision-making.

**5. Sharma, A., Mahapatra, R.P., Sharma, V.K. (2024). Review of Efficient Load Balancing Technique to Improve QoS Parameters Fog Computing. In: Bhattacharya, A., Dutta, S., Dutta, P., Samanta, D. (eds) *Innovations in Data Analytics. ICIDA 2023. Lecture Notes in Networks and Systems*, vol 972. Springer, Singapore. [https://doi.org/10.1007/978-981-97-3466-5\\_5](https://doi.org/10.1007/978-981-97-3466-5_5)**

Fog networking is an aspect of the IoT (Internet of Things) idea, which sees most of the products used by humans on a daily basis connected to one another. Smart phones, smart health monitoring equipment, as well as other similar technologies are examples. The goal of fog computing (FC) is to lessen the burden on CC. Fog computing advances processing of data, communication, storing and analysis nearer to edge nodes and applications. To alleviate some of the drawbacks of cloud computing, a significant number of apps and services are shifting to fog computing. The main problem in fog computing is how to improve service quality. It is clear to observe that the SNNC and EBS have improved QoS to a great extent.

6. **Kumar, R., Agrawal, T., Dwivedi, V.D. and Khatter, H., 2023, December. Potato Leaf Disease Classification Using Deep Learning Model. In *International Conference on Machine Learning, Image Processing, Network Security and Data Sciences* (pp. 186-200). Cham: Springer Nature Switzerland.**

India's primary industry is agriculture, which suffers an annual loss of 35% agricultural yield due to plant diseases. Illness-related harvest losses are a serious issue for both major farming operations and rural communities. Subsequently, the detection of plant diseases is crucial to agriculture. If adequate care is not taken in this area, it could have a significant negative influence on plants by lowering the productivity, quality, and quantity of the corresponding good or service. Automatic disease detection not only reduces labor costs associated with maintaining vast fields of crops, but also picks up symptoms as soon as they appear on plant leaves. The majority of plant illnesses may be identified from the symptoms that occur on the leaves; however, due to the wide variety of diseases, recognizing and classifying diseases with the naked eye is not only laborious and time-consuming, but also prone to inaccuracy with a high error rate. In this study, authors proposed a sequential deep learning model where in each convolution layer is followed by a max pool layer in order to extract most relevant features from the input images. For experimental validation of proposed deep learning model, study uses 2152 potato leaves images from Plant Village Dataset out of which 1000 are of early blight and 1000 are of late blight the remaining 152 images are of healthy leaves. Authors have divided this dataset into 32 different batches and trained the model using multiple subsequent 2-Dimensional convolutional layers and 2-Dimensional Max pooling layer with Rectified Linear Unit (RELU) as the activation function. With ADAM optimizer and 50 epochs, authors achieved a maximum accuracy of 98.83% and a loss of only 4.47%.



## Innovation Spotlights of the Month

### **Current Sensor with Industry's Top Low Noise Performance**

***What if you could improve energy efficiency, reduce noise, and increase system accuracy with just one component? Discover more!***

ABLIC, a group company of MinebeaMitsumi Inc., has announced the launch of the S-5611A linear Hall effect IC for general-use devices. The applications of the IC include core current sensors, which help measure current flow; linear position detection, enabling position sensing in industrial and automation systems; and rotation detection, providing monitoring of rotational movement in motors, robotics, and other mechanical systems.



It is suitable for manufacturers of general-purpose inverters, including those used in renewable energy systems like solar and wind power generation. Additionally, it can be used in industrial machinery, DC-DC converters, and other systems where current measurement and efficiency are important. Companies focused on developing energy-efficient and environmentally friendly solutions, such as those in the clean energy sector, would find the linear Hall effect IC useful.

As the adoption of renewable energy, such as solar and wind power, continues to grow, there is an increased focus on improving energy efficiency to reduce environmental impact. General-purpose inverters in systems like solar power generation and industrial machinery require current sensors for better efficiency. Improving these sensors' response speed and accuracy is key to optimizing inverter performance.

The linear Hall effect IC is a programmable IC that offers a response time of  $1.25\mu\text{s}$  and low noise performance at  $0.09\mu\text{T}/\sqrt{\text{Hz}}$ . This allows it to measure small current fluctuations, contributing to improved inverter control.

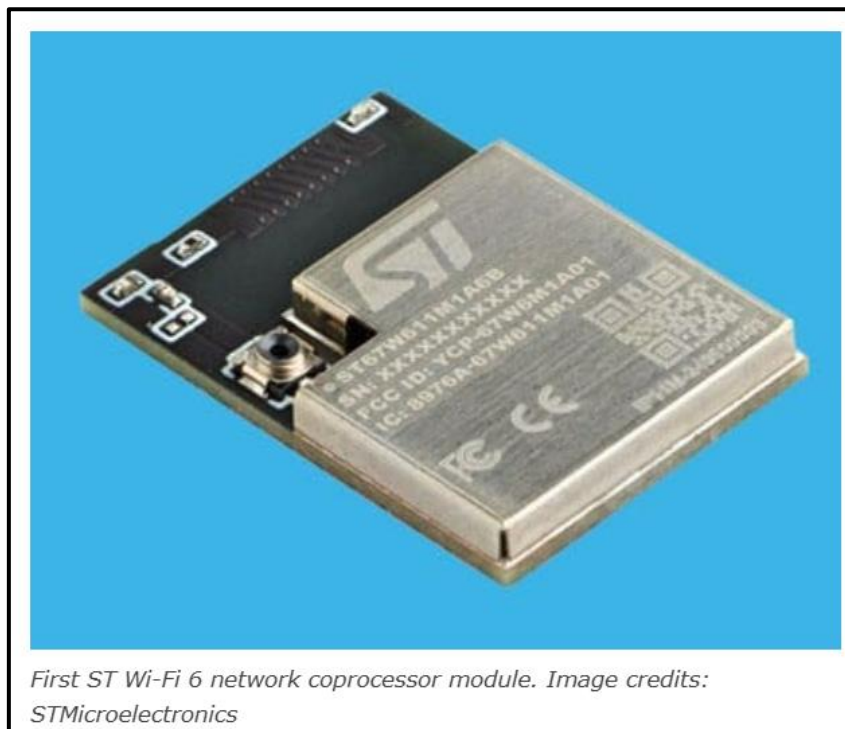
The IC features a frequency band selection function that allows users to choose between 400kHz, 200kHz, or 100kHz, reducing noise at lower frequencies. Additionally, it includes a function to compensate for magnetic core characteristic changes caused by temperature, ensuring accuracy across a wide temperature range.

These features help reduce power consumption and CO2 emissions, making the S-5611A suitable for current sensors used in inverters and DC-DC converters.

**Source:** <https://www.electronicsforu.com/special/current-sensor-with-industrys-top-low-noise-performance>

### **IoT Module with Wi-Fi 6 And Bluetooth 5.3 Enhances Connectivity**

***A latest wireless IoT module simplifies edge connectivity, integrating STM32 and Qualcomm technologies.***



STMicroelectronics, a global leader in semiconductor solutions, has launched its first wireless IoT module developed in collaboration with Qualcomm Technologies. Designed to enhance consumer and industrial IoT development, the ST67W611M1 module leverages the STM32 ecosystem and Qualcomm’s wireless connectivity expertise.

The new module combines advanced features like Wi-Fi 6, Bluetooth 5.3, and Thread protocol in a compact system-on-a-chip (SoC) based on Qualcomm QCC743. Offering robust integration capabilities, this module is aimed at a wide range of developers, from professionals creating sophisticated industrial IoT applications to hobbyists and startups focusing on consumer solutions. Its compatibility with the Matter protocol ensures seamless connectivity with a broad IoT ecosystem, making it an accessible choice for both large-scale enterprises and small teams.

“This collaboration puts powerful connectivity and embedded tools in developers’ hands,” said Remi El-Ouazzane, president (microcontrollers), STMicroelectronics. The STM32 ecosystem, comprising over 4000 commercial parts, integrates smoothly with Qualcomm’s wireless technologies, facilitating faster project development.

Advanced security is another highlight. Hardware cryptographic accelerators and secure boot processes ensure robust protection, achieving PSA certified level 1 compliance. With a compact 32-lead LGA package, the module allows for cost-effective PCB designs, making it accessible even for low-cost IoT applications.

Rahul Patel, general manager, Qualcomm described the collaboration as the start of a journey towards advanced edge processing. “We aim to deliver unparalleled experiences across Wi-Fi, Bluetooth, AI, and more,” he stated, signaling a future filled with innovative solutions.

With support for STM32Cube tools and enhancements like STM32N6 MCUs featuring Neural-ART AI accelerators, the module is poised to boost edge AI applications. Developers can utilise optimisation tools like STM32Cube.AI and NanoEdge AI for creating smart solutions.

The module underscores flexibility, performance, and simplicity, enabling developers to integrate IoT connectivity without RF design expertise. This groundbreaking module sets the stage for advancing embedded and connected technologies across various industries.

### **Madhya Pradesh Named a Global Destination for 2025 by Wall Street Journal**

Madhya Pradesh has recently gained international recognition as the Wall Street Journal named it one of the Go-To Global Destinations for 2025. This accolade showcases the state’s rich heritage, diverse wildlife, and stunning landscapes.

#### **Heritage and Culture**

Madhya Pradesh is home to numerous [UNESCO](#) World Heritage Sites. Notable sites include Khajuraho, famous for its intricate temples and sculptures. The state also features the ancient city of Mandu, with its historical architecture. Cultural festivals, local crafts, and traditional dance forms enhance the state’s vibrant cultural tapestry.

#### **Wildlife Attractions**

The state boasts several tiger reserves and national parks. Bandhavgarh National Park is renowned for its [tiger population](#). Panna National Park offers breathtaking scenery and diverse wildlife. These parks provide opportunities for wildlife safaris and eco-tourism experiences.

Madhya Pradesh features diverse natural landscapes. The state is dotted with picturesque hills, rivers, and waterfalls. Popular natural attractions include the scenic Pachmarhi hills and the stunning Dhuandhar Waterfall. These locations are ideal for nature enthusiasts and adventure seekers.

#### **Tourism Development Initiatives**

The Madhya Pradesh Tourism Board actively promotes tourism. Initiatives include enhancing infrastructure and promoting sustainable tourism practices. The government aims to improve accessibility to major attractions. This focus helps attract both domestic and international tourists.

#### **Local Cuisine and Experiences**

The state offers a rich culinary experience. Local dishes feature unique flavours and ingredients. Street food, traditional thalis, and regional sweets are popular among visitors. Cultural experiences, such as local music and dance performances, provide deeper vital information about the state’s traditions.

The recognition by the Wall Street Journal positions Madhya Pradesh for growth in tourism. The state aims to attract more visitors in 2025 and beyond. Enhanced marketing strategies and infrastructure development will support this goal.

**Source:** <https://www.gktoday.in/madhya-pradesh-a-global-travel-destination/>

## In-Silico Testing

Product development in cosmetics is costly and time-consuming, especially whenever companies look to discover new ingredients. Now, more companies are turning to in-silico screening to tackle these production problems.

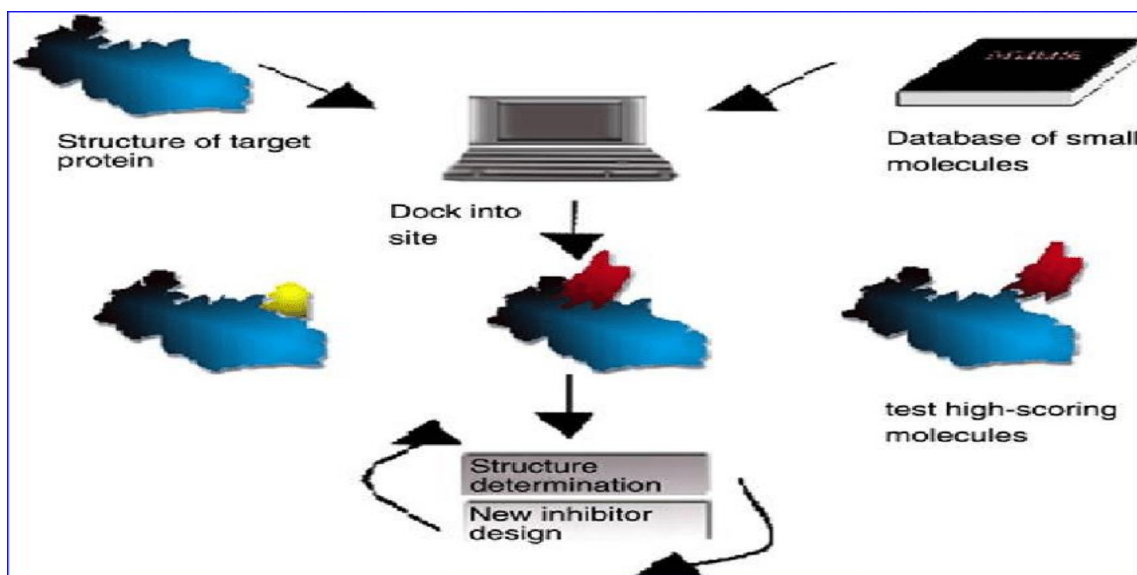
The powerful technology uses molecular databases and virtual modeling to make it easier to discover new active ingredients, which can help guide cosmetic product development.

In silico screening tools work together with databases and simulation software that store molecule information and interactions with proteins. In pharmacology, in-silico screening can show how a potential cancer-causing molecule interacts with proteins involved in the cancer process.

There is a range of possible use cases for in silico screening, as it can help sectors that rely on biological research such as food toxicology research, drug, and cosmetic development achieve the following:

- Improve existing products
- Identify potential active molecules for a specific target and vice-versa
- Guide product development and other different possible R&D processes
- Show the biological activity and health application of certain compounds

One real-world example of in-silico technology is the [GPDB database](#), which stores information about plant extracts and natural molecules.



Source: <https://masschallenge.org/articles/pharma-healthtech-trends/>

## Student's Corner

**Dr. A.P.J. Abdul Kalam Inter-Technical University Zonal Fest** with an array of thrilling competitions designed to ignite creativity, innovation, and teamwork.

### Highlights of the Day:

**Robo Wars:** Witness fierce robotic battles!

**Drone Flying Challenge:** Showcase your piloting skills.

**Junkyard War:** Transform scrap into brilliance.

**Debate (English & Hindi):** Engage in thought-provoking discussions.

**Turbo AI Challenge:** Push the boundaries of artificial intelligence.

**Ad Mad (AMC):** Show your marketing prowess with quirky ads.

**INNO Showcase & Quest:** Unveil groundbreaking innovations.

participants and experience the vibrant energy of talent and innovation!

**Venue:** KIET Group of Institutions, Delhi-NCR, Ghaziabad

**Date:** 27th–28th November 2024



## Students participation in Departmental level Round of InnoTech 2024



## **KIET (R&D) Policies**

Promotion of research culture with the formulation of policies by the R&D Committee is as follows:

- KIET Research Policy
- KIET Ethics Policy for Students and Faculty Members
- CV Raman Award Policy
- Policy for KIET Research Faculty Members
- Guidelines for Organizing International Conferences in Institute
- Departmental Research Committee
- KIET Policy for Research Proposals/Grants
- KIET Policy for Research Guidance/Ph.D. Guidance for Improving Research Culture

**For details, kindly refer -**

**<https://www.kiet.edu/Research%20and%20Development%20Policy>**

### **RESEARCH POLICY FOR STUDENTS**

Research and developmental activities create and disseminate new knowledge in a range of fields, promote innovation, and will motivate better learning and teaching among faculty members and students at our institute as they 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 a part of an active community that shares the mission objectives. Researching is a process that not only improves your skills but also teaches you a lot and broadens your knowledge, even though we could get to conclusions we already know. A deeper comprehension of the subject matter, a greater understanding of your issue, and the ability to ensure that your writing is well-informed and supported can all be attained through conducting research.

#### **1. Objectives of Research-**

- **Enhancing Knowledge-** New avenues for knowledge discovery can be reached through conducting research and producing research papers. Research will have a chance to develop your writing abilities when writing a research paper, and in the future, you will be able to produce a better piece of writing that will impress others. These skills would certainly be useful for getting high package placements.
- **Adds Value to Your Resume-** A research paper helps you to find more knowledge about the field you are researching, so you can learn something new and fascinating about the discipline that you can use for work later. Besides expanding your knowledge in each field, Research will enhance your CV and make you stand out as a candidate. Therefore, research is essential since it enhances the value of your CV and demonstrates the talents you currently possess—skills that they may be seeking for.

- **Raising Awareness-** Conducting research enhances your knowledge and helps you boost your analytical and critical thinking skills. As you choose your topic and do the research, you may reach new conclusions that spark discussions in academic work. Developing critical thinking is important not only for the writing of research papers, but also for many other duties. To become a successful person and a specialist in your field, becoming a better thinker is something that is certainly important.
- **Important for Higher Studies-** When students pursue postgraduate studies such as an M.Tech or MS degree in India or overseas, having strong research experience at the undergraduate level is crucial.
- **Enhancement of Practical knowledge-** Research is crucial for students to improve their practical knowledge. High package employment in R&D agencies such as DRDO/ISRO, etc., are available to students if they are having good research background.

## **2. The Vision of the Institute for Research**

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

## **3. The Mission of the Institute for Research**

- a. To motivate faculty members and students to concentrate on research-related activities to publish research articles in reputed journals and Scopus indexed conferences
- b. To pursue efforts to write books and monographs for publication by international and national publishers of repute.
- c. To spark faculty members' interest in joint research projects with colleagues at prestigious national and international universities.
- d. To encourage faculty members and students to submit proposals and secure funded research projects from various funding agencies in India and abroad.
- e. To undertake consultancy projects sponsored by the government as well as private, industrial, and other organizations.
- f. To encourage creativity in the minds of the faculty members and students so that they make original contributions by way of products, concepts, etc., and obtain patents.
- g. To reach out to national and international professional societies.

## **4. Policy of Research Incentives Scheme**

### **4.1 Scope of the Scheme**

Undergraduate and postgraduate students of KIET Group of Institutions can publish their original research work.

### **4.2 Incentives for Research Publications in Journals**

To further promote the intensive research culture among the students of KIET, it is intended to adopt the incentive policies under the vision of the research institution. KIET has already adopted the incentive policies for SCI, SCIE, SSCI, AHCI, SCOPUS, eSCI and CCR Expanded indexed international journals, but to make the research more adaptive, it is required to give more freedom in the regulation of SCI publications. In view of the above, **students may claim a maximum of 5 Research Publications incentives for Journals in an academic year as**



**mentioned in different categories of Table-1.** The primary objective of this incentive scheme is to motivate the students of our Institution to undertake quality research and other related activities.

**Requirements to be fulfilled by students for claiming the Incentives**

- The current/present impact factor, indexing (SCI/SCIE/SSCI) and other information will be taken from Clarivate analytics for evaluation of the papers. For indexing in Scopus, Cite Score and other information will be taken from scopus.com.
- The student requesting the incentive must be the first author in the research paper and other author may be his/her supervisor(s) only.
- Published papers must have "**KIET Group of Institutions, Delhi-NCR, Ghaziabad**" as the affiliation.
- Students needs to claim the incentive only after the volume number, issue number, and page number have been assigned to the research paper by the journal.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is advised for the perspective authors to include at least two references of already published Research Papers by KIET faculty/students in their Research papers.
- Authors must also be aware of the KIET Ethics Policy for Students on academic dishonesty and plagiarism
- Students shall take the responsibility of screening the paper for plagiarism, ethics approval, and background checks on the potential, possible, or probable predatory scholarly open access journals before communicating the research publication to Beall's list of predatory publishers.
- A publication claim under the Research Incentive Schemes (RIS) of KIET must be made within a month of publication in the prescribed form to the Head of Department (**Annexure I**).
- Students after publication of the research paper with volume, issue and page no. must submit the application along with the following documents to Head of the Department within one month of publication-
  1. Annexure I
  2. Copy of College ID card
  3. Proof of Volume/ Issue/ Page Number allotted by the respective journal.
  4. PDF of the research manuscript.
  5. Indexing of the journal
    1. Scopus Valid proof (if journal is Scopus indexed)
    2. SCI Valid proof (if journal is SCI indexed)
- The Head of the Department will send the file with recommendations to the Office of Dean R&D for further processing within one week of receiving the application from the students.
- Dean R&D will take the approval from Director, KIET Group of Institutions and will submit the approval note to the account's office for final disbursement of registration fees

### **Presentation of Research Papers in Conferences in India**

- **Reimbursement of Conference Registration Fees-**

**Case-I:** For the Research paper Publication by students in Scopus Indexed Conference based upon B.Tech. Final Year Project, the institute will reimburse 50% of the registration fee to each project group.

**Case-II:** For the Research paper Publication in Scopus Indexed Conferences by students of B.Tech. (I, II, III), B. Pharma (I, II, III, IV), MBA & MCA (I, II), M.Tech. & M.Pharma (I, II), the institute will reimburse 50% of the registration fee with a capping of maximum Rs 3000/-.

- The International/National conference must be of repute (viz. IEEE, Springer/Wiley/IPC etc.) and the hosting institutions must be of repute as well (IITs/IISc/NITs/IITs/Universities/Deemed Universities etc.).
- Authors must also be aware of the KIET Ethics Policy for Students and Faculty Members on academic dishonesty and plagiarism.
- Published paper must have '**KIET Group of Institutions, Delhi-NCR, Ghaziabad**' as the affiliation.
- Only oral presentation of research papers is acceptable.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is advised for the perspective authors to include at least two references of already published Research Papers by KIET faculty/students in their Research papers.
- Only one student may use the facility in the case of joint authorship.
- A publication claim must be made within a month of the publication of a research paper (available online) in the prescribed form to the Head of the Department (**Annexure II**).
- Students after publication of research paper online must submit the application along with the following documents to Head of the Department within one month of publication-
  1. Annexure II
  2. Copy of College ID card
  3. Valid proof of published paper in conference
  4. Valid proof of presentation certificate
  5. Valid proof of Scopus Indexing
  6. PDF of the research manuscript
  7. Page number of the research paper if published as book chapter
  8. ISSN/ ISBN number
  9. Valid proof of registration/fee receipt
- The Head of the Department will send the file with recommendations to the Office of Dean R&D for further processing within one week of receiving the application from the students.

- Dean R&D will take the approval from Director, KIET Group of Institutions and will submit the approval note to the account's office for final disbursement of registration fees within a week.

<b>Table-1</b>			
<b>S. No.</b>	<b>Categories</b>	<b>Conditions</b>	<b>Incentive</b>
<b><u>Incentive for publication in SCI/SCIE/SSCI/AHCI</u></b>			
1	<b>Outstanding Research Publication Incentive</b>	Publication in Nature (British Multidisciplinary Scientific Journal) Science Academic Journal of the American Association Harvard Business Review (Management magazine published by Harvard Business Publishing, a wholly owned subsidiary of Harvard University)	25,000 /-
2	<b>Premier Research Publication Incentive</b>	Paper must be published in SCI/SCIE/SSCI American Mathematical Society American Physical Society American Society for Civil Engineers (ASCE) American Society for Mechanical Engineers (ASME) American Society of Testing Materials (ASTM) Association for Computing Machinery (ACM) Transactions IEEE Transactions / Journals/ Letters/ Reviews IET Transactions/ Journals/ Letters/ Reviews Institute of Civil Engineering Publishing, London Institute of Mechanical Engineering, London <b>In addition to the above list the SCI/SCIE/SSCI journals with impact factor &gt;= 7 will be considered</b>	21,000 /-
3	<b>Commendable Research Publication Incentive</b>	Paper must be published in journal with an impact factor between 5 to 6.99 and indexed in SCI/ SCIE/ SSCI	15,000 /-
4	<b>Admirable Research Publication Incentive for SCI</b>	Paper must be published in journal with an impact factor between 0.750 to 4.99 and indexed in SCI/ SCIE/ SSCI	11,000/-
5	<b>Valuable Research Publication Incentive for SCI</b>	Paper must be published in journal with an impact factor between 0.500 to 0.749 and indexed in SCI/ SCIE/ SSCI	8,000/-
6	<b>Gratifying Research Incentive for SCI</b>	Paper must be published in journal with an impact factor between 0.250 to 0.499 and indexed in SCI/ SCIE/ SSCI	5000/-

<b><u>Incentive for publication in Scopus</u></b>			
7	<b>Admirable Research Publication Incentive for SCOPUS</b>	Quality research published in SCOPUS having Cite Score 3 and above	5000/-
8	<b>Valuable Research Publication Incentive for SCOPUS</b>	Quality research published in SCOPUS having Cite score <b>2 to 2.999</b>	4000/-
9	<b>Gratifying Research Incentive for SCOPUS</b>	Quality research published in SCOPUS having Cite score <b>1.000 to 1.999</b>	3000/-
<b><u>Incentive for publication in eSCI and CCR Expanded</u></b>			
10	<b>eSCI indexed Journal</b>	Quality research published in eSCI Journals is applicable for publications in any ESCI/CCR-Expanded journal, and a maximum of one ESCI/CCR-Expanded indexed research paper in an academic year shall be considered.	2000 /-

### Various Research Labs in KIET

S. No.	Research Lab/Centre of Excellence	Department
1.	Centre of supercomputing equipped with NVIDIA DGX A100	CS (AI ML)
2.	Centre of Robotics and Mechatronics	ECE
3.	KIET NI LABVIEW Academy	ECE
4.	Bio-Medical Instrumentation MBS	ECE
5.	Space Technologies	ECE
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





**Meghnad Saha (1893–1956)** was a renowned Indian astrophysicist best known for developing the **Saha Ionization Equation**, which explains the physical and chemical properties of stars based on their spectra.

- This equation allowed scientists to understand how the temperature and pressure of stars affect the ionization states of elements, revolutionizing astrophysics.
- Saha was also instrumental in the development of science education and research in India.
- He played a key role in establishing institutions like the Saha Institute of Nuclear Physics in Kolkata and contributed significantly to the planning of river projects in India.
- Beyond his contributions to astrophysics, Meghnad Saha actively participated in shaping **India's scientific and industrial policies** post-independence. He believed that science and technology were crucial for India's progress.
- Saha served as a **Member of Parliament (Lok Sabha)** in 1952.
- He played a key role in the **Damodar Valley Project**, contributing to river management and flood control strategies.
- He advocated for **scientific planning and development policies** in India.

**KIET Group of Institutions**

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