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Connecting Life with Learning
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Delhi-NCR, Ghaziabad
NATIONAL INSTITUTIONAL RANKING FRAMEWORK
Accredited by NAAC with Grade "A+"

September 2023

Vol No. 9

अनुसंधान

(KIET Research Magazine)

Dr. Uma Bhandari
Professor
Department of Pharmacology, School of Pharmaceutical Education and Research
Jamia Hamdard, New Delhi, 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 and Centers of Excellence can be viewed @ our website 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 88th rank in the Pharmacy discipline, Rank Band (151-200) for Engineering and Innovation (51-100) Rank band in the National Institutional Ranking Framework (NIRF) - India Ranking 2023 released by Ministry of Education, GOI. The Institute has to its credit QS-I GAUGE 'Diamond' rating and Scientific and Industrial Research Organization (SIRO) recognition by the Department of Scientific and Industrial Research (DSIR) etc. The Institute also has 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,

With profound gratitude and honor, being chosen as the Cover Face of KIET Research Magazine, I express my sincerest regard for having the privilege of sharing my insights, strengthening and reinforcing my commitment to continue the quest for knowledge and contribute with significant efforts in the enhancement of our society through this acknowledgment.

The mission of KIET Institute is to use teaching, research, and public services to solve social problems. In the process of learning, students would be oriented to use their education in solving practical problems confronting them in the society and beyond. Discipline, self-reliance, and excellence cannot be achieved without exceptional research input. An uninformed academic may conduct research just for promotion purposes but for the lifelong learner, research is imperative and indispensable.

Being a Professor and Researcher, I see the transformative potential of quality research for research scholars and society from a bigger picture. Research in any field should not merely reviewed as an academic exercise, but it serves as a link between classroom learning and real-world practical applications. It provides a strong foundation for students to think critically, cultivate curiosity, and encourage questions that cross the line of knowledge. Research can be used to form collaboration and networks e.g., in addressing global challenges.

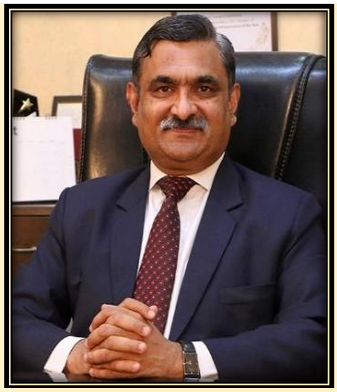
It gives me immense pleasure to thank every member of the Anusandhan team for their continued support of research and knowledge pursuits. The collaborative team efforts have provided a substantial impact on academic community growth and enrichment. Thus stimulated the area of cognitive research. I look forward to seeing these continuing impacts and achievements and appreciate for making research and dissemination a priority.

I am glad to say that research has profound impact on shaping our academic landscape. The quality research published in the KIET magazine is truly a valuable resource for the practitioners of solution-driven research. KIET is well-placed to continue its journey of success and excellence due to its unwavering commitment to research. In days and years to come, these constant efforts will enrich the research community to a new level of exceptional discoveries and contributions.

Congratulations on your future journey, and best wishes.

Prof. Uma Bhandari
Professor
Dept. of Pharmacology,
School of Pharmaceutical education and Research
Jamia Hamdard, New Delhi

Message from Chief Patron



Dear Esteemed Readers,

KIET Group of Institutions has always strived to be a beacon of knowledge, innovation, and progress in our ever-evolving world. Our commitment to excellence and dedication to fostering a culture of learning, discovery, and growth has remained unwavering. This magazine serves as a testament to our mission, and it is a privilege to share our stories, insights, and achievements with you.

In recent years, India has witnessed remarkable strides in various fields of research. Our nation's scientific and academic communities are working tirelessly to address some of the most pressing global challenges, from healthcare and environmental sustainability to cutting-edge technology and space exploration. These endeavors have not only propelled India onto the international research stage but also brought our scientists, scholars, and innovators well-deserved recognition.

The objective of this research magazine is to curate a collection of articles that encapsulate the diversity and dynamism of India's research landscape. Readers will have the opportunity to delve into the latest breakthroughs in fields such as artificial intelligence, renewable energy, biotechnology, space research, and many more. It is our commitment to bring you the most up-to-date, well-researched, and thought-provoking content that captures the spirit of innovation that defines research in India today.

In closing, I invite you to engage with us, to share your thoughts, feedback, and suggestions. This magazine is not just ours; it belongs to the community of knowledge seekers, innovators, and change-makers. I encourage you to share your thoughts and continue supporting the pursuit of knowledge and innovation. It is your enthusiasm and curiosity that propel our mission forward.

I also want to extend my heartfelt gratitude to all our contributors, editors, and the diligent team that works tirelessly behind the scenes to bring this magazine to life. Their dedication ensures that our message of progress and learning reaches you, our cherished readers.

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)
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

The Dean R&D office has organized an interaction session on “LATEX Workshop''. The esteemed guest for the session was Dr. Gaurav Singhal.
Dr. Gaurav Singal is an Assistant Professor in Computer Science Engineering, Delhi Technical University, Delhi, India.
The theme for the Workshop was “Advances and challenges in *LateX* “

On September 23, 2023, **KIET School of Pharmacy** celebrated "**World Pharmacist Day-2023**" with great enthusiasm. This year's theme, "**Pharmacists strengthening health systems—Angdaan Mahadaan**," resonated with our passionate pharmacy students (B. Pharm., M. Pharm., and D. Pharm.).
The event was graced by the presence of the esteemed spiritual guru, **Sadguru Sakshi Shree**, who served as the **Guest of Honor** for the event. His inspirational session and life-changing workshop on "**Stress-free success and happiness in life**" left an indelible mark on everyone present. During the ceremony, outstanding achievers and toppers in B.Pharm. and D.Pharm were honored. The event was celebrated by recognizing, the winners of various competitions, including label design, pharma quizzes, debates, and oral presentations.

KIET Group of Institutions conducted an Internal Hackathon for Smart India Hackathon 2023 (SIH-2023) on the 22nd and 23rd of September 2023. Smart India Hackathon 2023 is a nationwide initiative by AICTE, Ministry of Education, Government of India, aimed at providing students with a platform to address some of the pressing problems we encounter in our daily lives. This initiative fosters a culture of product innovation and a problem-solving mindset. A total of 201 teams registered for the internal Hackathon across both Software and Hardware categories. In SIH-2023, there were 181 problem statements in the software category and 58 problem statements in the hardware category. These problem statements were provided by various central ministries, state governments, public sector units, and industries. Students were invited to propose solutions for these problem statements.

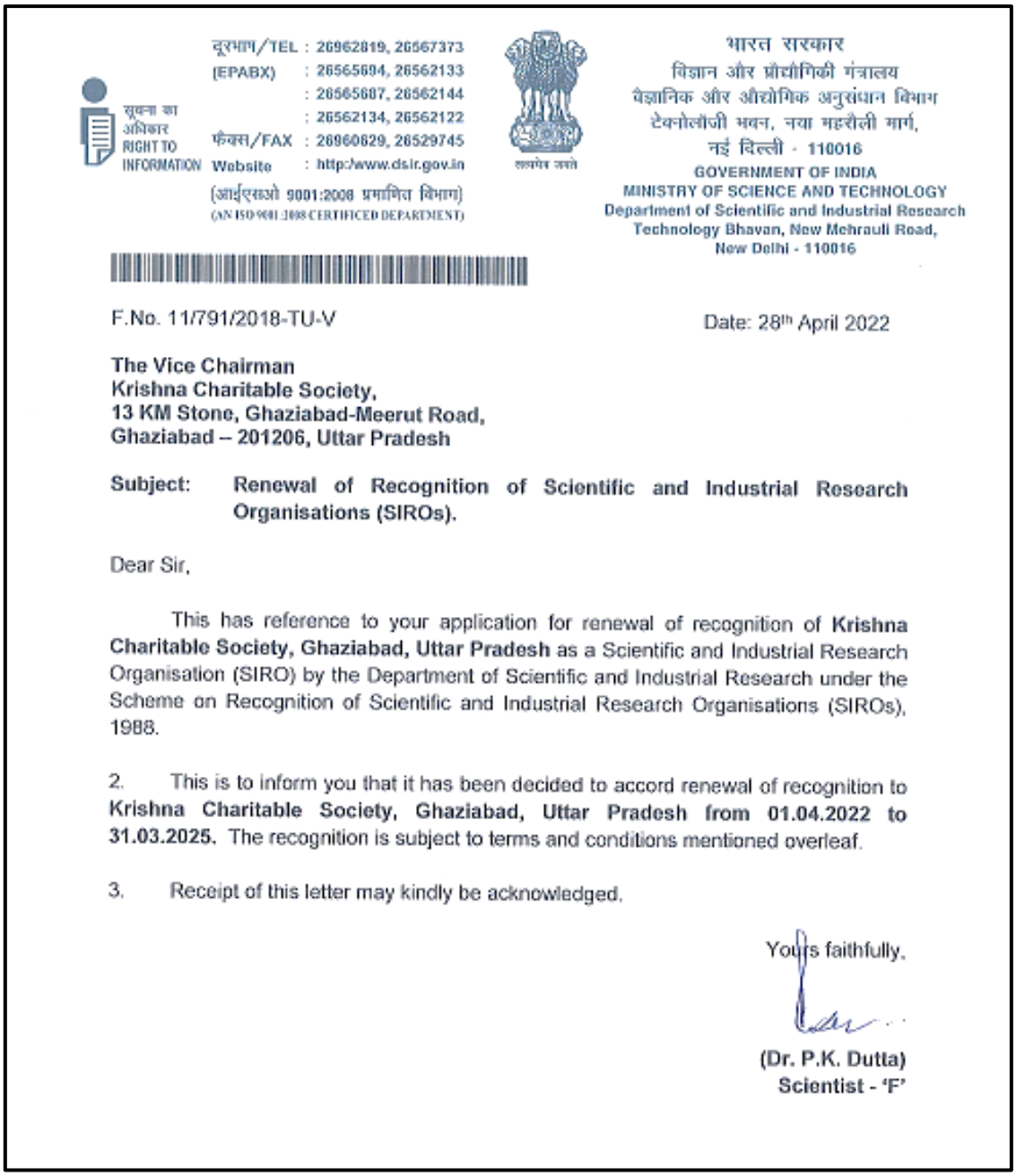
The Department of Electrical and Electronics Engineering had the privilege of hosting Mr. Nirlep Singh Rai, the former CMD of NFL and Chairman of RFCL, with over four decades of expertise in corporate leadership, sustainability, and green Hydrogen.

His profound insight inculcates diverse domains such as motivation, empowerment, diversity, fertilizer policy, agricultural practices, and industrial product management. Mr. Rai's lecture not only enriched our students but also kindled a beacon of inspiration. His knowledge and experiences stand as a testament to the transformative power of visionary leadership in shaping a sustainable future.

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)**



दूरभाष/TEL : 26962819, 26567373
(EPABX) : 26565694, 26562133
: 26565687, 26562144
: 26562134, 26562122
फैक्स/FAX : 26960629, 26529745
Website : http:/www.dsir.gov.in
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सत्यमेव जयते

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नई दिल्ली - 110016
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
Department of Scientific and Industrial Research
Technology Bhavan, New Mehrauli Road,
New Delhi - 110016

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

Date: 28th April 2022

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

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

Dear Sir,

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

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

3. Receipt of this letter may kindly be acknowledged.

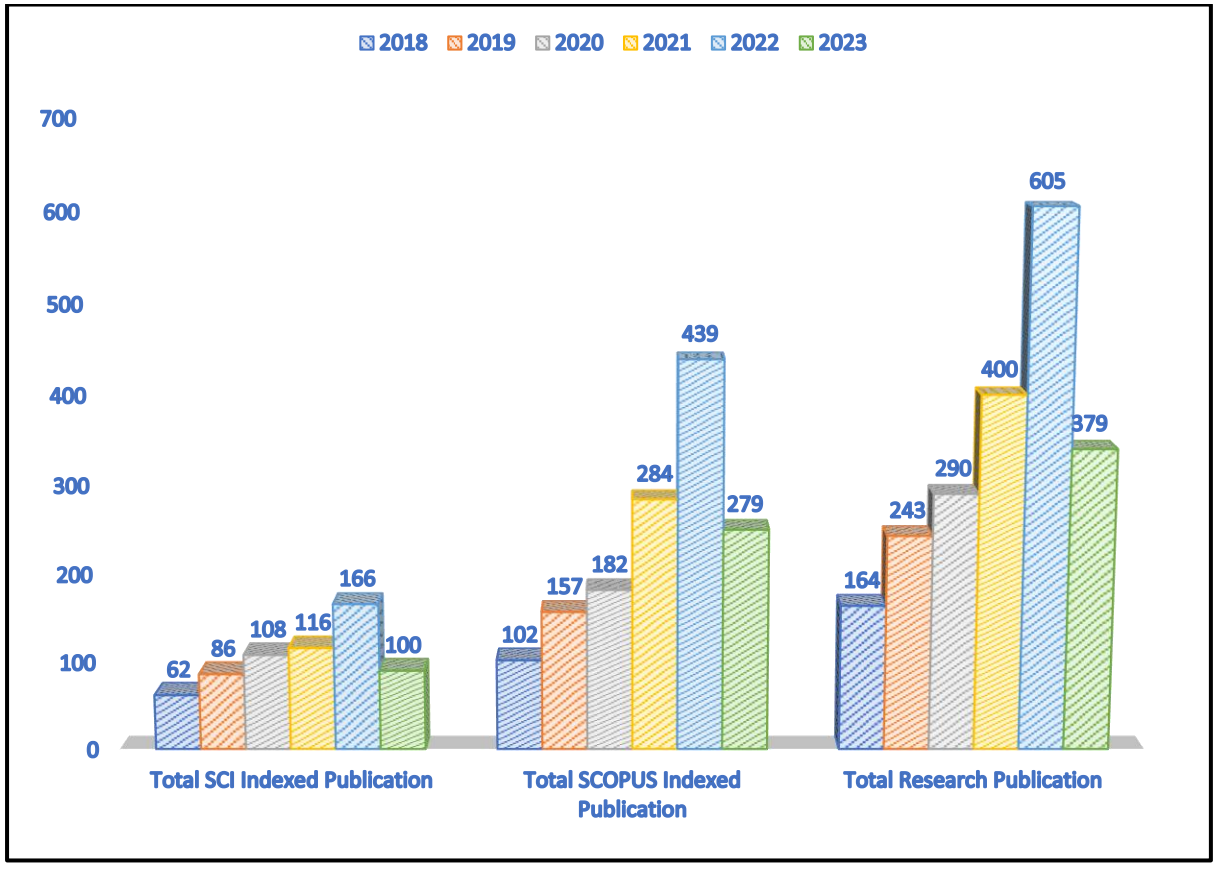
Yours faithfully,

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

KIET Research Credentials

A total of 638 SCI Research Publications and 1443 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 September 2023.

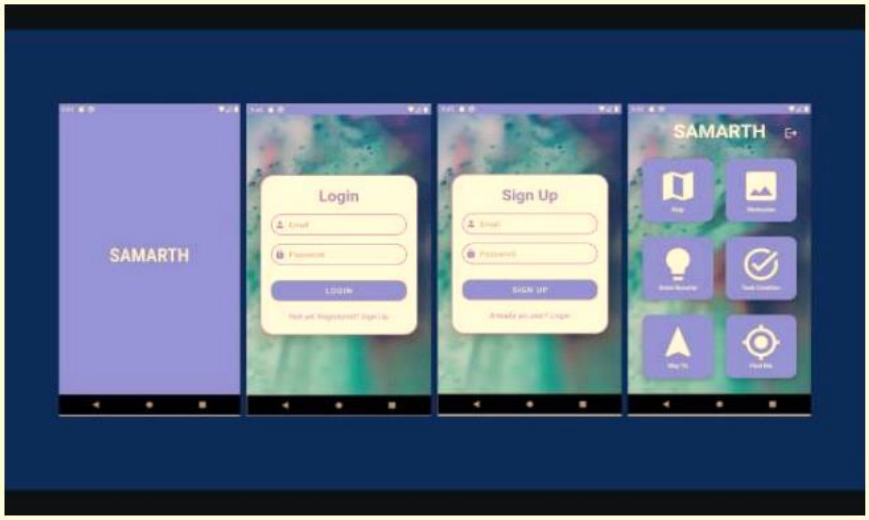
Year	Total Number of SCI Indexed Publications	Total Number of SCOPUS Indexed Publications	Total Number of Research Publications
2018	62	102	164
2019	86	157	243
2020	108	182	290
2021	116	284	400
2022	166	439	605
2023	100	279	379
Total	638	1443	2071



Category	Number of Publication for August 2023	Number of Publication for September 2023
SCOPUS Publications	54	29
Web of Science Publication	16	10

Details of Patents Published/Granted

Title of the Invention: **Comprehensive Dementia Support App with Ar Navigation System**
Application Number: 202341043285 A (Indian Patent Office)
Applicant(S): Mr. Vaibhav Singh, KIET Group of Institutions (CSIT)
Date of Filing: 28-06-2023
Date of Publishing: 01-09-2023
Field of the Invention: The invention is related to a comprehensive dementia support app that integrates advanced AR technology with a wide array of features to support individuals living with dementia. By combining AR navigation, memory enhancement activities, personalized photo albums, communication tools, and caregiver support, our app provides a holistic approach to address the multifaceted challenges faced by individuals with dementia.
Objects of the Invention: A comprehensive dementia support app with an integrated AR navigation system offers a unique combination of features specifically tailored to the needs of individuals living with dementia. By addressing multiple aspects of dementia care, including navigation, memory enhancement, communication, and caregiver support, the app provides a comprehensive and user-friendly solution that enhances the overall well-being of individuals with dementia and their caregivers. The market potential for a comprehensive dementia support app is significant, given the increasing prevalence of dementia and the growing need for supportive technologies. With a target audience that includes individuals with dementia, their caregivers, and healthcare institutions, the app has the potential to positively impact the lives of millions worldwide.
KEY FEATURES: Users may comfortably navigate their surroundings by using maps made by the Unity software- visual clues, and customized instructions, increasing their independence and lowering the chance of accidents.
• Indoor Mapping: Our system incorporates navmesh pathfinding to create detailed digital maps of indoor spaces, enabling accurate navigation within homes, hospitals, or care facilities.
• Wayfinding Assistance: Users are guided through the environment with step-by-step directions and visual cues overlaid on their real-time camera view, ensuring a seamless and intuitive navigation experience.
• Object Recognition: System employs object recognition capabilities to identify important objects or areas, allowing for personalized prompts and reminders tailored to the individual's needs.
• Memory Triggers: Memory-triggering features help stimulate cognitive abilities and memory recall by presenting familiar images or reminders as users approach specific locations or objects.



• Safety Alerts: Our system includes safety alerts that detect potential hazards or obstacles in the user's path, enhancing their safety and preventing accidents.

• Customizable Preferences: Users have the flexibility to customize the system according to their preferences, adjusting the size and visibility of AR markers, color schemes, and audio cues.
• Offline Functionality: System is designed to work offline, ensuring uninterrupted navigation even in areas with limited or no internet connectivity.

Title of The Invention: **A System and Method for Labelling of Area as Socially Developed Using Maps**
Application Number: 202311056541A (Indian Patent Office)
Applicant(S): Dr Richa Agarwal (KIET Group of Institutions)
Date of Filing: 23-08-2023
Date of Publishing: 22-09-2023
Field of the Invention: The present invention relates to the field of computer science, more particularly to a system and method for labelling of the area as socially developed using maps.
Objectives: Some of the objects of the present disclosure, which at least one embodiment herein satisfies, are as follows.
It is an object of the present disclosure to ameliorate one or more problems of the prior art or to at least provide a useful alternative.
An object of the present disclosure is to provide a system and method for labelling of area as socially developed using maps that can:
1. Integrate various spatial data sources, including socio-economic, demographic, and infrastructure data, onto a unified Geographic Information System (GIS) platform.
2. Implement advanced data analysis techniques to process and analyze the integrated data to derive meaningful insights about social development indicators.
3. Automate the process of calculating indicators and classifying areas, reducing human intervention, and increasing efficiency
4. Ensure that the chosen indicators collectively provide a comprehensive efficiency and accurate representation of social development.

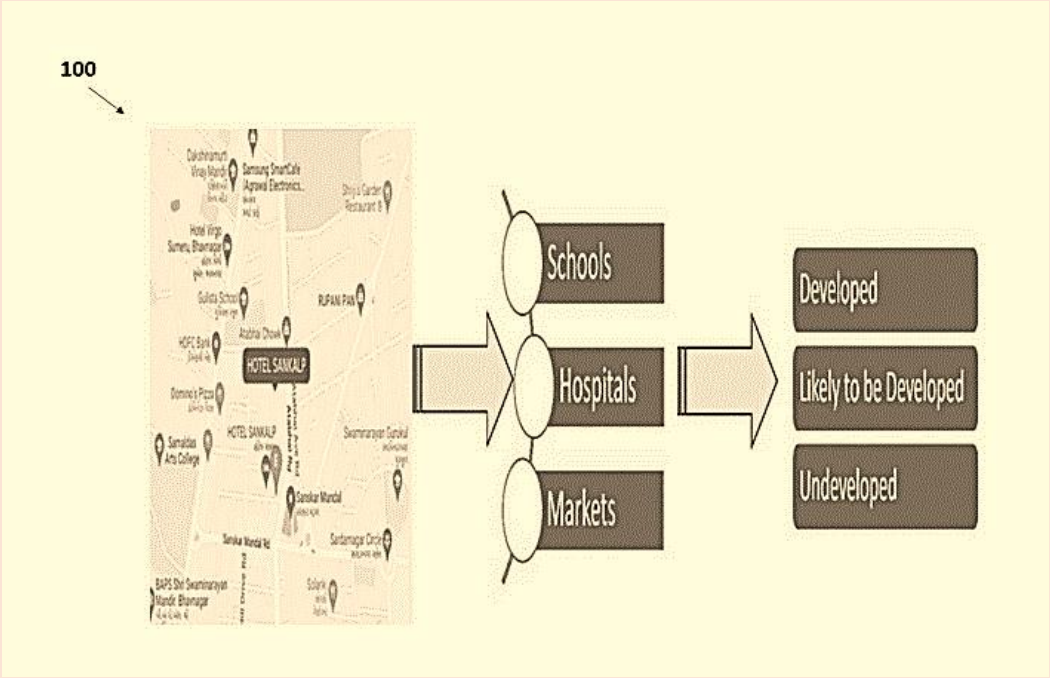


Fig. Illustrates a system for labelling of area as socially developed using maps, in accordance with an embodiment of the present invention.

Title of the Invention: **An Accident Detection and Management System**
Application Number: 202311054368 A (Indian Patent Office)
Applicant(S): KIET Group of Institutions (CS)
Date of Filing: 13-08-2023
Date of Publishing: 08-09-2023
Field of the Invention: The present invention is generally related to road safety by detection and management of accidents even at places where network services are hard to reach, using sensors and algorithms connected with cloud, web, and android services.
Objects of the Invention: Some of the objects of the present disclosure, which at least one embodiment herein satisfies, are as follows. It is an object of the present disclosure to ameliorate one or more problems of the prior art or to at least provide a useful alternative.

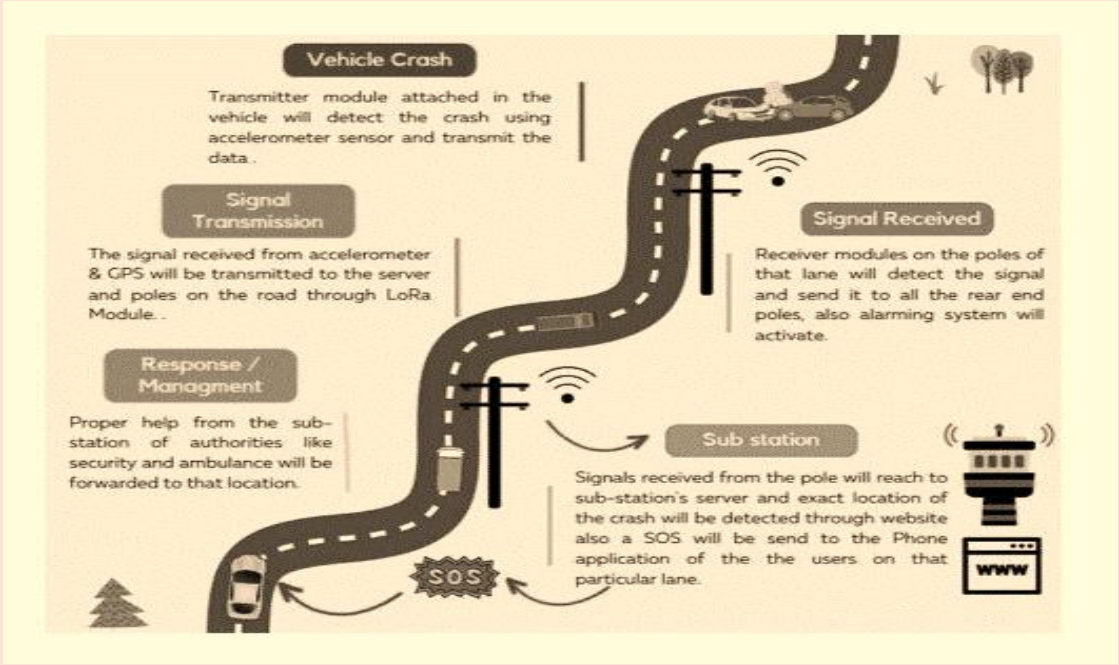


Fig. Illustrates an accident detection and management system, in accordance with an embodiment of the present invention.

An object of the present disclosure is to provide a solution to prevent any roadway accident and in any type of climate within or without the presence of internet connectivity. Also, we are focused on transmitting the location coordinates of the accidental site even at the farther places with or without internet.
An objective of the present disclosure is to provide an accident detection and management system regarding accidents to tackle the connectivity issues and techniques to aware a driver about the accidents before time. To aware the driver about the accident- prone areas on the diverse roads for preventing accidents through an application and the poles that will indicate about the accident ahead through display and sound making devices. It would also be aware about the accidents happened ahead in case of low visibility zone and aware the driver about the accident- prone areas on the various roads for preventing accidents.
Even if the unavailability of internet the sensors will work and a SOS in mode of siren will indicate about the accident site and the coordinates will be received there which could determine the location of the accident.

Title of the Invention: **System and Method for Artificial Environment Conditions on Plant Biotechnology for Optimal Plant Growth**
Application Number: 202311054372 A (Indian Patent Office)
Applicant(S): KIET Group of Institutions (ME, ECE)
Date of Filing: 13-08-2023

Date Of Publishing: 08-09-2023

Field of the Invention: The present invention relates to the field of Agriculture field from the BioTechnology Domain.

Objects of the Invention: It is an object of the present disclosure to ameliorate one or more problems of the prior art or to at least provide a useful alternative.

An object of the present disclosure is to provide a system that offers a feature to adjust the wavelength of the grow light to provide different wavelengths of light that are optimal for different plant varieties. This customization feature is not found in many previous solutions.

Another object of the present disclosure is to provide a system that offers a comprehensive control system that can adjust various environmental factors such as temperature, humidity, light intensity, pH, and soil moisture, ensuring that plants receive optimal growing conditions.

Another object of the present disclosure is to provide a system that uses an ESP32 microcontroller to manage the environmental conditions, which improves the efficiency of the system and reduces the amount of manual intervention required.

Still another object of the present disclosure is to provide a system that can aid in the identification of optimal conditions for various plant varieties and hasten the development of new plant varieties that are better suited to various environmental conditions.

Still another object of the present disclosure is to provide a system that can improve the yield and quality of the plants, resulting in healthier and more productive plants.

Summary of the Invention: The following presents a simplified summary of the invention in order to provide a basic understanding of some aspects of the invention.

This summary is not an extensive overview of the present invention. It is not intended to identify the key/critical elements of the invention or to delineate the scope of the invention. Its sole purpose is to present some concept of the invention in a simplified form as a prelude to a more detailed description of the invention presented later.

The invention is a plant growth environmental control system comprising a microcontroller that receives data from various sensors, including temperature and humidity sensor (DHT11), light intensity sensor (BH1750), pH sensor, and soil moisture sensor.

The system also includes a water pump, grow light, relay for water pump control, and a room heater. The microcontroller adjusts the environmental conditions based on the sensor data, and the system has the capability to adjust the wavelength of the grow light to provide optimal light conditions for different plant varieties. It is extended stating that the microcontroller can also adjust the pH level of the soil by activating an acid or base solution to provide the ideal pH level for plant growth.

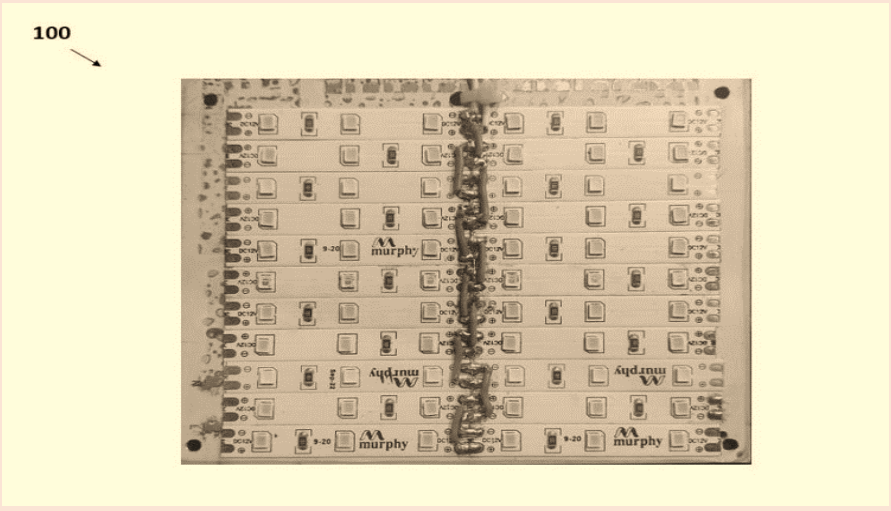


Fig. Illustrates an exemplary process of the system, in accordance with an embodiment of the present invention, in accordance with an embodiment of the present invention.

Title of the Invention: **System and Method for E-Commerce Platform: Apna Vyapar**

Application Number: 202311056660 A (Indian Patent Office)

Applicant(S): KIET Group of Institutions

Date of Filing: 24-08-2023

Date of Publishing: 22-09-2023

Field of the Invention: The present invention relates to a field of E-commerce and particularly to system and method for E-commerce Platform: Apna Vyapar. The answers provided by the current innovation apply to the field of Electronic Commerce Innovation Platform. The current invention involves the new Platform for the local vendors at Electronic Commerce Innovation. The present invention is more specifically linked to applying the new Innovative Electronic Commerce Platform for Local Vendors to connect with the Global Market

Objects of the Invention: Some of the objects of the present disclosure, which at least one embodiment herein satisfies, are as follows. It is an object of the present disclosure to ameliorate one or more problems of the prior art or to at least provide a useful alternative. An object of the present disclosure is to provide a system that local suppliers are not the focus of electronic commerce innovation. The foundation of a town's local market is its local vendors. As a result of our research, we've come to the conclusion that these local vendors aren't using all of their potentials to draw in the right clients. We developed a concept to increase the local suppliers' power over the customers they want. As a result, they will earn more money each day and can serve more people. Other objects and advantages of the present disclosure will be more apparent from the following description, which is not intended to limit the scope of the present disclosure.

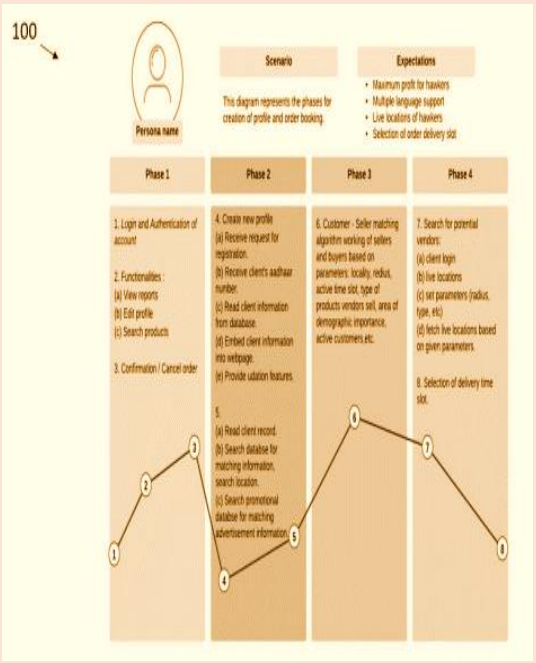


Fig. Describe the new registration process of the customer and the vendors to meet at the single Platform

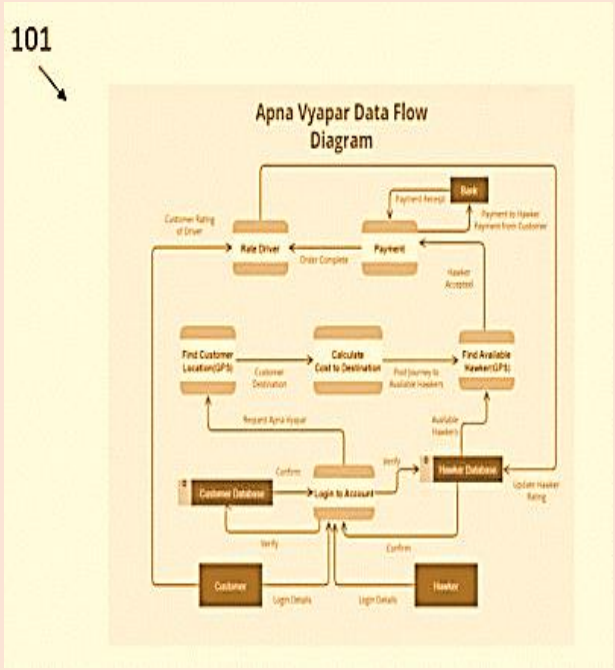


Fig. Provides the complete description of the product finalization to payment process and then process initiation of the Delivery

PATENTS Published - September 2023

S. No.	Title Of Patent	Dept.	Name Of Applicant	Date Of Publication	Status
1.	A Modular IOT-Based Device for Monitoring Air Pollution and Safe Practices	EE	Brijesh Singh	01.09.2023	Published
2.	Smart Agriculture Robot with Ai to Identify Disease and Plant Health	CSE	Dr. Parita jain	01.09.2023	Published
3.	AI-ML & Cloud-based recommendation system for rain-fed agriculture	CSE, IT	Ms. Neha Yadav, Mukul Aggarwal	01.09.2023	Published
4.	Method and System for Remotely Monitoring with IoT Devices to Boost Industrial Production	EE, CSE	Ms. Deepti Singh, Dr. Swati Sharma	01.09.2023	Published
5.	System based on ML, AI, Deep Learning, and Data Mining to Assess Elderly Walking Patterns with TechEnabled Footwear to Avoid Bone Problems	IT	Ms. Minakshi	01.09.2023	Published
6.	Comprehensive Dementia Support App with Ar Navigation System	CSIT	Mr. VAIBHAV SINGH, Mr. RITESH SHARMA, Mr. SATYAM PATEL, Ms. JAYA SHARMA	01.09.2023	Published
7.	Experimental Investigations on	CE	Siddharth Jain	01.09.2023	Published

	Development of a Concrete With Waste Glass Sludge For Sustainable Construction Industry				
8.	Ai And Machine Learning Based Approach for Predicting Shortest Path in Google Map	CSIT	Ambrish Gangal	01.09.2023	Published
9.	Legal Implications of Cybersecurity: Addressing Emerging Threats in The Digital Era	MBA	Dr. Mani Tyagi, Dr Rashid Ali	01.09.2023	Published
10.	A Novel Method for Data Visualization Using Graph Theory	AS	Dr Richa Agarwal	01.09.2023	Published
11.	A Novel Method for Developing Fuzzy Code Word Length in Noiseless Coding Theorem	AS	Dr Barkha Rohtagi	01.09.2023	Published
12.	Chemical Risk Assessment Using Mathematical Modelling	AS	Dr Manisha Sharma, Dr Prachi Jain, Dr Priyanka Rai, Dr Rashid Ali	01.09.2023	Published
13.	System and Method for Resolving the Parking Issues Using Smart Vehicle Parking	CS	Gurpreet Kaur, Ishita Srivastava, Kritika, Harsh Khatter	01.09.2023	Indian Patent
14.	An Accident Detection and Management System	CS	Mr. Ashish Sikarwar,Mr. Suraj Upadhayay,Mr. Kapil Chaudhary,Mr. Utkarsh Awasthi,Mr. Garvit	08.09.2023	Published

			Singhal,Mr. Surendra Kumar Keshari,Mr. Harsh Khatter		
15.	A Cloud Based Smart Summary	IT	Dr. Sartaj Ahmad, Mr. Sumit Pandey, Dr. Adesh Kumar Pandey, Dr. Vikas Goel, Saloni Pandey, Deepika Kamboj	08.09.2023	Published
16.	Need of Entertainment Quotient Per Week for An Individual Based on Various Parameters	CS	Mr. Anurag Mishra,Mr. Harsh Khatter,Mr. Gaurav Dubey	08.09.2023	Published
17.	System and Method for Artificial Environment Conditions on Plant Biotechnology for Optimal Plant Growth	ME, ECE	Mr Keshav Raina, Mr Salim, Ms Shikha,Dr Jyoti Ohri, Dr Neeraj Kumar Gupta, Dr Parvin Kumar	08.09.2023	Published
18.	A Method for Assessing the Effects of Renewable Energy Surges On Coal Demand	AS	Dr Anamika Singh	08.09.2023	Published
19.	AI and ML based Early detection of Neurodegenerative Motor Disorder (Parkinson disease) using neuroimaging, brain scanning by applying efficient image processing technique and Machine learning algorithm	CSIT	Ambrish Gangal	08.09.2023	Published

20.	Eye Testing Apparatus	KSOP	Prof.(Dr.) N. G. Raghavendra Rao Professor	08.09.2023	Design
21.	Fluid Bed Granulator for Pharmaceutical Purpose	KSOP	Prof.(Dr.) N. G. Raghavendra Rao Professor	08.09.2023	Design
22.	IoT Based Wearable Health Monitoring Device	CSE	Dr. Dilkeshwar Pandey, Dr. Sanjiv Sharma, Dr. Gaurav Agarwal, Dr. Ankur Bhardwaj	08.09.2023	Design
23.	Smart Spectacle for Visually Challenged Persons	AS/KSOP	Dr.Deepti Seth, Dr.Roma Ghai, Dr. Seema Maitrey, Dr. Sheetal Mital	08.09.2023	Design
24.	Pharmaceutical Composition for Managing Diabetes With Berberine And Gymnema Sylvestre Extracts	KSOP	Dr. Neha Rana	15.09.2023	Published
25.	Efficient Reservations of Resources in Distributed Environment	CS	Anurag Mishra	15.09.2023	Published
26.	A Network Control Method for Traffic Engineering Using Graph Theory with High Efficiency	AS	Dr. Richa Agarwal	15.09.2023	Published
27.	Compact Ventilator for Dyspnea Patients	EE	Harsh Sangal, Mohammad Muzammil, Salim, Dr. Sourav Diwania	15.09.2023	Design
28.	Multi Station Tablet Punching Machine	KSOP	Prof.(Dr.) Nidagurthi	15.09.2023	Design

			Guggulla Raghavendra Rao		
29.	Summvid: A System and Method For Automatic Summarization Of Youtube Video Transcripts	CS	Harsh Vardan, Harsh Bharadwaj, Ishita Goswami, Manish Tiwari, Dr. Ajay Kr. Shrivastava	22.09.2023	Published
30.	A System and Method For Labelling Of Area As Socially Developed Using Maps	CS	Anurag Mishra, Harsh Khatter, Gaurav Dubey	22.09.2023	Published
31.	System And Method for E-Commerce Platform: Apna Vyapar	IT	Ashutosh Pandey, Arunesh Tiwari, Ayushi Singh,Deepika Kamboj, Dr Sartaj Ahmad, Dr Adesh Kumar Pandey	22.09.2023	Published
32.	Curved-Groove-Based Pvt System	EE	Dr. Rajeev Kumar	22.09.2023	Design
33.	Portable Spectrophotometer for analyzing Chemical Composition of Natural Products	KSOP	Dr Monika Kaurav	22.09.2023	Design
34.	A System Based on IoT, Cloud & Ai for Monitoring Manufacturing Exhaustion	IT, AS	Dr. Sanjeev Kumar, Dr. Neelam Sharma	29.09.2023	Published
35.	Envirogas: An Intelligent Biogas-Extracting Waste Bin System for Sustainable Organic Waste Management	MCA	Yash Shrivastava, Vikash Gupta, Chandriki Tiwari, Smriti Tiwari, Ms. Shweta Singh, Dr Sangeeta Arora	29.09.2023	Published

36.	Autonomous Marine Vessel for Intelligence, Surveillance, And Reconnaissance Missions Thereof	ME	Dr. Sandeep Chhabra,Dr. Ajay Singh Verma, Mr. Sharad Mishra, Mr. Ritish Sajwan, Mr. Saarthak Singh, Mr. Vaibhav	29.09.2023	Published
37.	Combined Pectin Hm and Ph Dependent Double Coated Colon Targeted Delivery of Multi-Particulate Dosage Forms	KSOP	Mr. Debaprasad Ghosh, Prof. (Dr.) Ashu Mittal, Mr. Hemant Tomar, Prof. (Dr.) K. Nagarajan, Dr Kiran Sharma	29.09.2023	Published
38.	Analysis of a Vehicle Driver for Accessing Their Driving Performance And Enhancing Road Safety	CS	VIKAS KAMRA, Sneha Jaiswal, Shikha Dixit, Shivi Goel	29.09.2023	Published
39.	Prediction of Academic Monitoring System in Higher Educational Institute Incorporating Ai	ECE	Dr. Ruchita Gautam	29.09.2023	Published
40.	Automated Retail Checkout System Using Yolov5 in Computer Vision	CS	Vikas Kamra, Nandita Yadav, Kshiteesh Kumar, Kumari Bhavya Chaubey	29.09.2023	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.	Archana Sharma	Assistant Professor	AS	Flexible inventory system of imperfect production under deterioration and inflation	2.2	4000	SCOPUS
2.	Upendra Mishra	Assistant Professor	CS(AI)	An Intuitionistic Fuzzy Random Vector Functional Link Classifier	3.1	11000	SCIE
3.	Manohar Singh	Student	KSOP	Interaction Of Pteridophytic Bioactive Compounds With Fungal Dihydrofolate Reductase Enzyme As Inhibitor	0.6	2000	SCOPUS
4.	Gaurav Singh	Assistant Professor	ME	Effect of strain path change on static recrystallization behaviour of AT63 Magnesium Alloy	2.4	11000	SCIE
5.	Varun Gupta	Associate Professor	EN	FrWT-PPCA-based R-peak detection for improved management of healthcare system	1.5	11000	SCIE
6.	Varun Gupta	Associate Professor	EN	Processing of ECG signal based on ANF and ICA: a comparison	1	3000	SCOPUS
7.	Pankaj	Assistant Professor	KSOP	Functional and Tableting Properties of Alkali — Isolated and Phosphorylated Barnyard Millet (Echinochloa esculenta) Starch	4	11000	SCIE
8.	Pankaj	Assistant Professor	KSOP	Plasma Modification Techniques for Natural Polymer — Based Drug Delivery Systems	5.4	15000	SCIE

Highlights of the Published Journal Articles

1. Archana Sharma, Chaman Singh, Priyanka Verma, A.K. Malik, "Flexible Inventory System of Imperfect Production Under Deterioration and Inflation", Yugoslav Journal of Operations Research, https://doi.org/10.2298/YJOR220318025S

This study emphasizes the development of a flexible inventory system considering rework requirements on imperfect and defective items. This work has considered defective items could be sold at a lower price in the market as compared to the perfect items. The developed model has considered Weibull deterioration and inflation to balance the same amount in the future due to its potential earning capacity. And demand's function depends on price as well as inventory level because a large pile of goods and their price strategy attracts more customers to generate higher demand. The work also supports managerial decision-making by focusing on the volume flexibility system for smooth production runs. The mathematical formulation of the developed inventory system tries to optimize the inventory cost function under a realistic scenario. A solution procedure has been illustrated and assisted with a numerical example. Later, a validation test is also performed to check the robustness of the proposed mathematical model. The findings of the study will support policymakers, strategists, and firms to implement flexible inventory systems under realistic conditions.

2. Mishra, U., Gupta, D. & Hazarika, B.B. An Intuitionistic Fuzzy Random Vector Functional Link Classifier. Neural Process Lett 55, 4325–4346 (2023). https://doi.org/10.1007/s11063-022-11043-w

Random vector functional link (RVFL) is a widely used powerful model for solving real-life problems in classification and regression. However, the RVFL is not able to reduce the impact of noisy data, despite its high generalization capability. This paper presents a new intuitionistic RVFL classifier (IFRVFLC) for binary classification with the goals of improving the overall classification capability of the RVFL network and increasing its classification efficiency on noisy data sets. In IFRVFLC, each training sample is associated with an intuitionistic fuzzy number which consists of membership or non-membership frames. The membership degree of a pattern considers the distance from the respective class centre. The degree of non-membership, on the other hand, is determined by the ratio of the heterogeneous point number to the total number of neighbouring points. To check the efficiency of the proposed IFRVFLC model, its classification performance is compared with the support vector machine (SVM), twin SVM, kernel ridge regression, extreme learning machine, intuitionistic fuzzy SVM, intuitionistic fuzzy twin SVM and RVFL networks. The obtained results show the usability of the proposed IFRVFLC model.

3. Manohar Singh, Mansi Raghav, Akansha Singh, Priya Bansal, Akansha Kumari, Abhishek Kumar, "Interaction of Pteridophytic Bioactive Compounds with Fungal Dihydrofolate Reductase Enzyme as Inhibitor", J. Fac. Pharm. Ankara / Ankara Ecz. Fak. Derg., 47(3): 1170-1176, 2023, https://doi.org/10.33483/jfpau.1270767

Fungal infections which are relatively common mainly invade the body of immunosuppressed patients and people undergoing therapy. These pathogens act through different pathways like Dihydrofolate reductase (DHFR) has a role in the folate synthetic pathway which is responsible for DNA synthesis. Since the early ages, herbal remedies have been used and tested for treating these fungal infections. Previous studies have revealed the use of bioactive molecules of pteridophytes to demonstrate antifungal activity. Material and Method: In the present study different pteridophytes were selected from the available library which showed the presence of bioactive phytoconstituents. In-silico studies on the DHFR target (PDB ID: 6DRS and PDB ID: 3QLW) were carried out using the PyRx program (India) to determine the affinity of bioactive molecules against the fungal strain. Result and Discussion: Molecular docking was performed with 11 bioactive molecules showing activity against the selected target proteins. So, we can conclude that the selected bioactive molecules are active against fungal strains and can be further investigated for both in-vivo and in vitro studies.

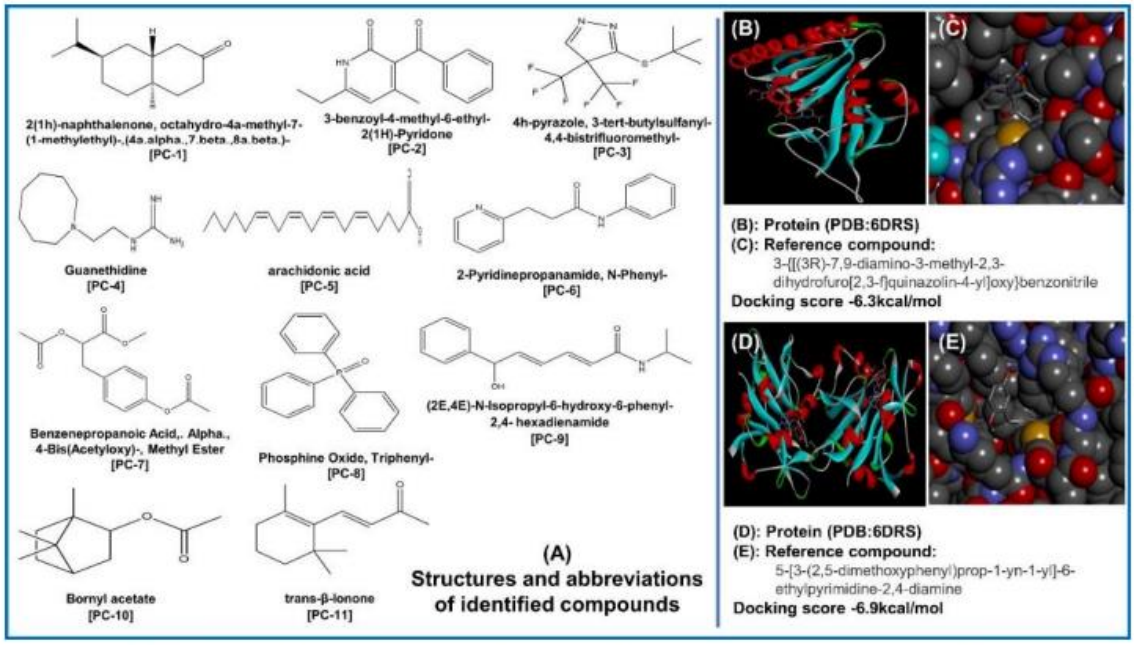


Figure (A) Structure and abbreviations of identified pteridophytic molecules; (B) Protein structure of DHFR enzyme of *A. niger;*(C) Docking of reference molecule; (D) Protein structure of DHFR enzyme of *C. albicans*

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4. Singh G, Chakraborty P, Mohapatra S, Tiwari V. Effect of strain path change on static recrystallization behavior of AT63 magnesium alloy. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications. 2023;237(9):2030-2045. https://doi.org/10.1177/14644207231170461

The present work has examined the influence of strain path change on the static recrystallization process of Mg-6Al-3Sn (AT63) magnesium alloy. The samples were deformed at ambient temperature for three conditions namely unidirectional rolling (UDR), clock cross rolling (CCR), and forging. The microstructural features of deformed and recrystallized samples at different conditions were characterized through optical microscope (OM), scanning electron microscope (SEM), electron back-scattered diffraction (EBSD), hardness testing, and X-ray diffraction (XRD). The results suggest that the recrystallization predominately started at the prior grain boundaries and within the twin boundaries. A significant reduction of the grain size from 83 μm to ~ 7 μm was observed after recrystallization. The recrystallization kinetics was relatively slower for CCR samples. It was attributed to the level of stored energy in the material, initial deformation texture, and evolution of fine precipitates.

5. Varun Gupta, Monika Mittal & Vikas Mittal (2023) FrWT-PPCA-Based R-peak Detection for Improved Management of Healthcare System, IETE Journal of Research, 69:8, 5064-5078, https://doi.org/10.1080/03772063.2021.1982412

Fourier analysis is well known to provide complete information on the frequencies present in a signal. But in the process, time information is lost. Therefore, its time-frequency representation is required for depicting both time and frequency information simultaneously. Therefore, in this paper, fractional wavelet transform (FrWT) is proposed to be used for the first time for extracting the features of various datasets in a standard ECG database by combining the advantages of both fractional domain techniques and wavelets as case II. Afterward, Probabilistic Principal Component Analysis (PPCA) is used for detecting R-peaks for diagnosing heart abnormalities in various morphologies of the ECG signal. The proposed technique has been evaluated on the basis of sensitivity (SEN), detection error rate (DER), and positive predictivity (PPR) (of the detected ECG beats) for the MIT-BIH Arrhythmia database (M/B Ar DB). Even though both FrFT and FrWT techniques exhibit a high degree of robustness, SEN of 99.99%, DER of 0.026%, & PPR of 99.99% obtained by the latter in case-

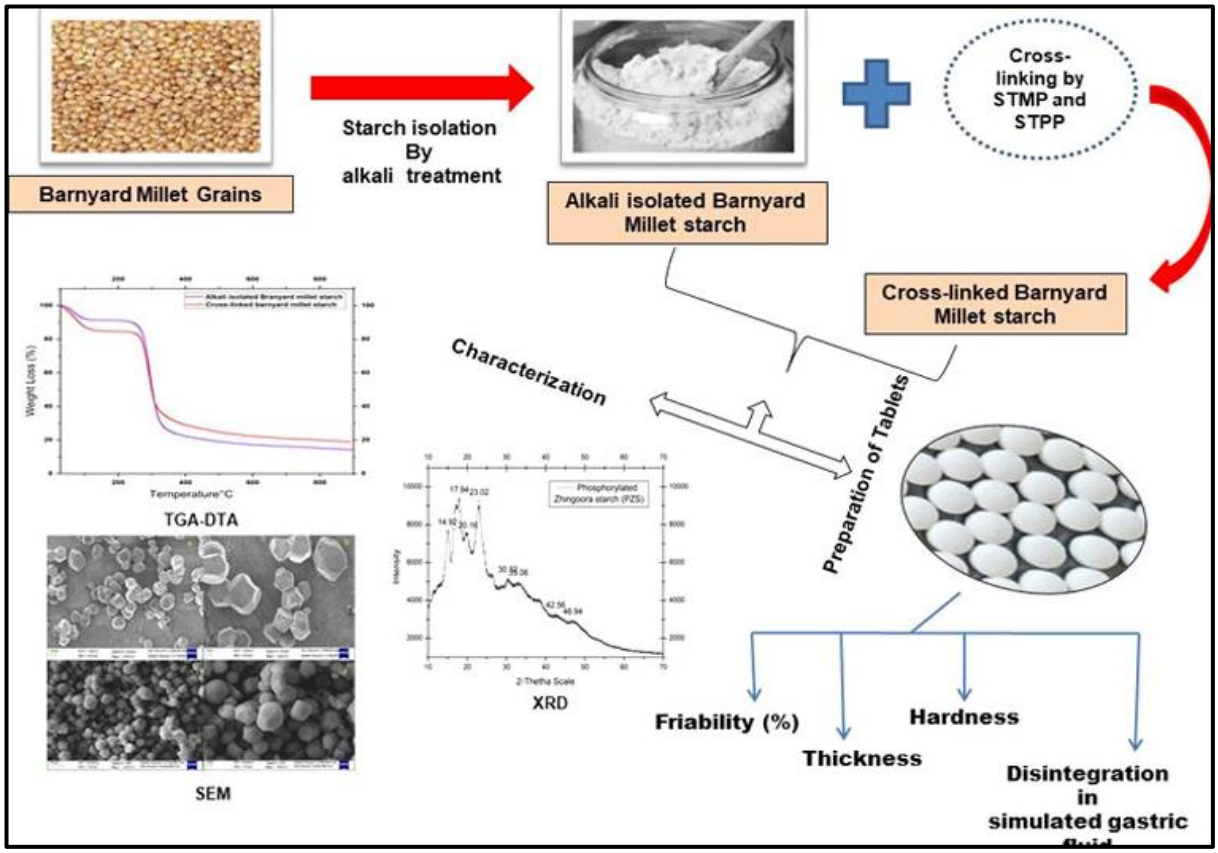
II are better than SEN of 99.97%, DER of 0.053%, & PPR of 99.98% obtained by the former in case-I for M/B Ar DB. In this paper, average time error (ATE) is also obtained for the considered datasets establishing the effectiveness of the proposed technique further. These encouraging results suggest that the proposed methodology will go a long way in assisting cardiologists to detect temporal patterns in a wide variety of electrophysiological cases, which is important for improved management of the healthcare system.

6. Varun Gupta, Parvin Kumar, Sourav Diwania, Nitin Kumar Saxena, and Natwar Singh Rathore. 2023. Pre-processing of ECG signal based on ANF and ICA: a comparison. Int. J. Data Anal. Tech. Strateg. 15, 3 (2023), 179–197. https://doi.org/10.1504/ijdats.2023.133024

For removing noises from recorded ECG signals, an adaptive notch filter (ANF) and independent component analysis (ICA) are used in this paper. In ANF, a notch filter is obtained by adding a bandpass filter (BPF) and voltage amplifier of unity gain. ANF is obtained by cascading of notch filter and adaptive filter which makes it more robust with respect to locating the poles and zeros on the respective constrained circle. On the other hand, ICA establishes the new coordinates which are non-orthogonal and statistically independent. It solves the problem of blind source separation (BSS). The novelty of this work is that for the first time, ICA is used for the pre-processing of a variety of ECG signals with linear discriminant analysis (LDA) classifier/detector. The motivation behind using LDA was that it minimizes the variance and maximizes the class distance of the two variables by which chances of false detection become very low.

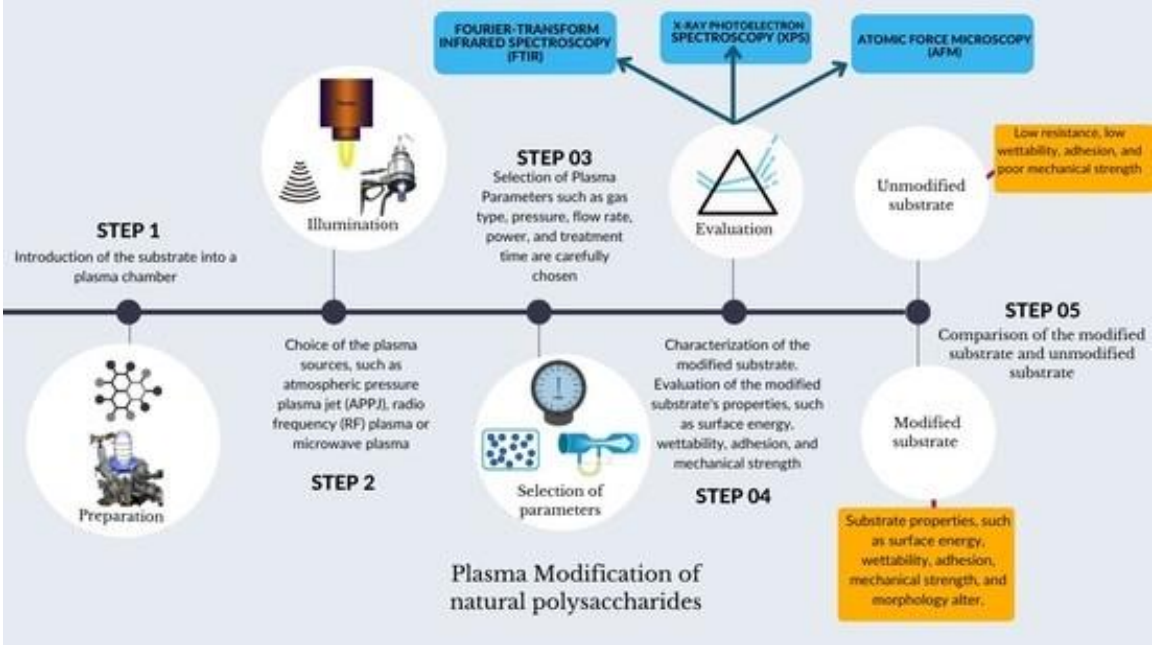
7. Pankaj Bhatt, Vipin Kumar, Harsh Rastogi, Mayank Kumar Malik, Raghav Dixit, Sakshi Garg, Garima Kapoor, and Suruchi Singh," Functional and Tableting Properties of Alkali-Isolated and Phosphorylated Barnyard Millet (Echinochloa esculenta) Starch", ACS Omega 2023 8 (33), 30294-30305, https://doi.org/10.1021/acsomega.3c03158

The functional and tableting properties of barnyard millet starch (Echinochloa esculenta) were investigated in its native (alkali-treated) and chemically modified (phosphorylated) states. The grains were pulverized, soaked, and ground before filtration to separate starch and protein. Multiple NaOH treatments were performed. The starch was washed, neutralized, and dried. Sodium tripolyphosphate (STPP) and sodium sulfate were used to modify the starch, followed by maceration, washing, and drying to remove unreacted chemicals. The amylose content of alkali-treated barnyard millet starch increased by 19.96 ± 3.56% w/w. The amount of protein, the kind of starch used, and the size of the starch granules, all affected the ability of the starch granules to swell up. It was observed that alkali-extracted barnyard millet starch (AZS) has a swelling power of 194.3 ± 0.0064% w/w. The swelling capacity of treated starch was lesser as compared to the native alkali barnyard millet starch. A decrement in the swelling power of phosphorylated starch was observed due to the tightening of bonds in the molecular structure. The moisture content of the excipients may affect the overall stability of the formulation. The moisture content of the AZS was found to be 15.336 ± 1.012% w/w. Compared to AZS, cross-linked barnyard millet starch had a moisture content that was up to 20% lower than AZS. The Hausner ratio for phosphorylated starch was found to be 1.25, which indicates marked flow property. Similar morphologies could be seen in the alkali-isolated barnyard millet starch and the cross-linked/phosphorylated barnyard millet that was cross-linked using a mixture of sodium sulfate and sodium tripolyphosphate. The modest degree of substitution would have no effect on the surface morphology as shown by the scanning electron microscopic study. The crushing and compacting abilities of modified barnyard millet starch were also improved, but its friability and rate of disintegration were decreased. The whole study revealed that after cross-linking, barnyard millet had good tableting properties and it can be used as an excipient in drug delivery.



8. Bhatt, P.; Kumar, V.; Subramaniyan, V.; Nagarajan, K.; Sekar, M.; Chinni, S.V.; Ramachawolran, G. Plasma Modification Techniques for Natural Polymer-Based Drug Delivery Systems. *Pharmaceutics* 2023, *15*, 2066.
https://doi.org/10.3390/pharmaceutics15082066

Natural polymers have attracted significant attention in drug delivery applications due to their biocompatibility, biodegradability, and versatility. However, their surface properties often limit their use as drug delivery vehicles, as they may exhibit poor wettability, weak adhesion, and inadequate drug loading and release. Plasma treatment is a promising surface modification technique that can overcome these limitations by introducing various functional groups onto the natural polymer surface, thus enhancing its physicochemical and biological properties. This review provides a critical overview of recent advances in the plasma modification of natural polymer-based drug delivery systems, with a focus on controllable plasma treatment techniques. The review covers the fundamental principles of plasma generation, process control, and characterization of plasma-treated natural polymer surfaces. It discusses the various applications of plasma-modified natural polymer-based drug delivery systems, including improved biocompatibility, controlled drug release, and targeted drug delivery. The challenges and emerging trends in the field of plasma modification of natural polymer-based drug delivery systems are also highlighted. The review concludes with a discussion of the potential of controllable plasma treatment as a versatile and effective tool for the surface functionalization of natural polymer-based drug delivery systems.



Reimbursement of Conference Registration Fee

S. No	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Benefits/ Incentives	Published By
1.	Sartaj Ahmad	Associate Professor	IT	International Conference on Intelligent Engineering and Management	Study of Cryptographic Techniques Adopted in Blockchain	11953	IEEE
2.	Abhishek Tyagi	Student	CSE	International Conference on Emerging Trends in Engineering & Technology - Signal and Information Processing (ICETET - SIP)	A New Optimized Version of Merge Sort	3500	IEEE
3.	Abhishek Tyagi	Student	CSE	International Conference on Electrical, Electronics, Information and Communication Technologies (ICEEICT)	A New Approach to find Articulation Points and Bridges in Undirected Graphs	4000	IEEE
4.	Shivam Yadav	Student	IT	International Advances in Computing communication, Embedded and Secure Systems" (ACCESS 2023)	Comparison of Machine Learning Techniques for Sentiment Analysis	2500	IEEE

Highlights of the Published Conference Articles

1. S. Ahmad, S. K. Arya, S. Gupta, P. Singh and S. K. Dwivedi, "Study of Cryptographic Techniques Adopted in Blockchain," *2023 4th International Conference on Intelligent Engineering and Management (ICIEM)*, London, United Kingdom, 2023, pp. 1-6, https://doi.org/10.1109/ICIEM59379.2023.10166591.

This study investigates how blockchain, a decentralized ledger technology that has garnered popularity due to its potential to revolutionize industries, uses cryptography technology. In the article, the main ideas of cryptography as encryption, hashing, digital signatures, and public-key cryptography-as well as their applications in blockchain technology are discussed. The significance of cryptography in the blockchain is examined in the paper, with a focus on protecting user data privacy, maintaining data integrity, and authenticating transactions. By using encryption algorithms to scramble data so that only authorized parties can decrypt it, cryptography guarantees that data is protected from unauthorized access. Data integrity is protected by hashing algorithms because any alterations to the data would produce a new hash value. Transactions are authenticated using digital signatures and public-key encryption, ensuring that only authorized parties carry them out. The study also looks at the cryptographic limitations of blockchain, like the possibility of quantum attacks on public-key cryptography, which might jeopardize the security of blockchain systems. The paper's discussion of future research paths and potential areas for advancement in cryptography technology to maintain the security and robustness of blockchain systems comes to a close.

2. A. Tyagi and A. K. Ahlawat, "A New Optimized Version of Merge Sort," *2023 11th International Conference on Emerging Trends in Engineering & Technology - Signal and Information Processing (ICETET - SIP)*, Nagpur, India, 2023, pp. 1-5, https://doi.org/10.1109/ICETET-SIP58143.2023.10151579.

The ordering of items of an array/list in a certain sequence is one of the crucial topics in computer science. Sorting algorithms determine the new order of elements in a data structure typically in arrays and lists, they do so based on a comparison operator. The effectiveness of these sorting algorithms is determined by calculating their time and space complexity. Financial institutions and commercial enterprises organize much of the information by sorting. They must deal with a large amount of data. There might be millions of data rows. Now we have enough space but less time which is also one of the major reasons of microservices architecture is being used nowadays. The microservice design enables the fast, frequent, and reliable delivery of large, sophisticated applications. Hence, the algorithms must be lightning-fast. The purpose of this study is to improve on the classic Merge Sort Algorithm and create a new approach with a faster execution time. Merge sort is a popular method for sorting large datasets since it is typically efficient and straightforward to implement. The proposed method surpasses the standard Merge Sort algorithm, which has a time complexity of O(nlog 2 n). The proposed approach has been examined, executed, and compared, with favourable findings and the suggested modified mergesort algorithm is 12.12% faster than the usual merge sort.

3. A. Tyagi and A. Kumar Ahlawat, "A New Approach to find Articulation Points and Bridges in Undirected Graphs," *2023 Second International Conference on Electrical, Electronics, Information and Communication Technologies (ICEEICT)*, Trichirappalli, India, 2023, pp. 01-08, https://doi.org/10.1109/ICEEICT56924.2023.10157249.

Articulation points And Bridge illustrate weak spots in a connected network graph, single points that, if they failed, would cause the network to break into two or more halves. SPOF stands for Single Point of Failure, which has the potential to render a system completely useless. SPOF that is Single Point of Failure is essentially a weakness in the blueprint or configuration of a system or circuit, or execution of a system, circuit, or component that bearing a possible peril because it can result in a scenario where there is just one issue or malfunction stops the entire system from working. The cargo ship “Ever Given” became

stranded in the Suez Canal in 2021. The ship became stuck in a crucial area of the canal that was working as a single channel. The obstruction rendered the whole canal's cargo lanes inoperable. The non-redundant canal served as the lone point of failure. Understanding of articulation points and the role of a bridge in a network or in a graph becomes vital when constructing trustworthy and robust networks with no single point of failure. The purpose of this study is to present an algorithm that is an elegant blend of Depth First Search and Recursion to find Articulation points And Bridges in a graph.

4. S. Mishra, M. Aggarwal, S. Yadav and Y. Sharma, "Comparison of Machine Learning Techniques for Sentiment Analysis," *2023 3rd International Conference on Advances in Computing, Communication, Embedded and Secure Systems (ACCESS)*, Kalady, Ernakulam, India, 2023, pp. 184-191, https://doi.org/10.1109/ACCESS57397.2023.10200806.

Sentiment analysis is the process of categorizing and locating the emotions represented in a textual source. Sentiment analysis can be used widely in different areas, such as customer review data, feedback data classification, survey responses, and social media comments. Tweets on Twitter contain a variety of sentiments reflecting the perception, thinking, and working background of the user. With the help of the sentiment analyzer, it can define the response of others on any matter or subject of interest. Here, we used machine learning-based NLP (natural language processing) and text analysis technology to define an automated model that can classify the sentiment of a large dataset. Here we used the following three machine-learning classifiers: logistic regression, SVM, and Bernoulli Naïve Bayes. The effectiveness and performance of these classifiers are assessed using F1 scores and accuracy. The accuracy of these models is 83%(LR), 81%(SVM), and 80%(BNB) So, logistic regression model provides the best result among these.

Research Incentive for Book Chapters

S. No	Name of Faculty	Designation	Dept.	Category	Title of Book Chapter	Benefits/ Incentives	Published By
1.	Sapna Juneja	Professor	CS(AI)	Book Chapter	Integration of IoT with Cloud Computing for Smart Applications	2000	International Publisher Springer
2.	Neha Rana	Assistant Professor	KSOP	Book Chapter	Integrative Strategies for Bioremediation of Environment Contaminates, Volume-2	2000	International Publisher Elsevier
3.	Parul Grover	Assistant Professor	KSOP	Book Chapter	The Roles of Chromenes in Drug Discovery and Development	2000	International Publisher Bentham
4.	Manish Bhardwaj	Associate Professor	CSE	Book Chapter	Integration of IOT with Cloud Computing for Smart Applications	2000	International Publisher Taylor & Francis

Faculty Articles

Virtual Reality and The Technical World

Virtual Reality (VR) is a technology that has had a significant impact on the technical world and continues to play a pivotal role in various industries and applications. Here are some key aspects of how VR interacts with the technical world:

Immersive Experiences: VR technology allows users to immerse themselves in digital environments. This has numerous applications, from gaming to training simulations. In the gaming industry, VR provides a level of immersion that was previously unattainable.

Training and Simulation: VR is extensively used for training in various fields, such as aviation, medicine, and the military. Pilots can practice in virtual cockpits, surgeons can rehearse procedures, and soldiers can train for combat situations. This significantly reduces the risks and costs associated with real-world training.

Architectural and Design Visualization: Architects and designers use VR to create and explore 3D models of buildings, interiors, and products. This technology allows stakeholders to experience spaces and designs before they are built, helping to identify issues and make improvements early in the design process.

Entertainment and Media: VR has transformed the entertainment industry. Beyond gaming, it's used for virtual concerts, film experiences, and interactive storytelling. This provides new ways for artists and creators to engage with their audiences.

Healthcare and Therapy: In healthcare, VR is used for pain management, exposure therapy for phobias, and rehabilitation. It can provide a safe and controlled environment for patients to confront their fears or practice physical therapy exercises.

Education: VR can enhance the educational experience by offering students immersive learning environments. This can be particularly valuable in subjects like history, science, and geography, where students can virtually visit places and eras.

Collaboration and Remote Work: VR technology is being harnessed for remote work and collaboration. Virtual meetings and collaborative environments in VR can make it feel like team members are working together in the same room, even if they are geographically distant.

Medicine and Telehealth: VR is used for medical visualization, surgical planning, and even telehealth. Surgeons can visualize complex procedures in 3D before operating, and telehealth sessions can be more engaging through VR interfaces.

Artificial Intelligence: AI and VR often go hand in hand. AI algorithms are used to create more realistic and interactive VR environments. For example, AI can be used to generate realistic speech for virtual characters, making interactions in VR more lifelike.

Hardware Advancements: The technical world has seen significant advancements in hardware to support VR. This includes more powerful graphics cards, high-resolution headsets, and improved motion tracking systems. These developments have made VR more accessible and enjoyable for users.

Challenges: Despite its many benefits, VR also faces technical challenges. These include the need for more compact and powerful hardware, addressing motion sickness, and creating more natural and intuitive user interfaces.

Ethical and Social Considerations: As VR becomes more widespread, ethical and social issues related to privacy, addiction, and the blurring of virtual and real worlds are becoming increasingly important.

In summary, VR has become an integral part of the technical world, with applications spanning multiple industries. Its continued development and integration with other technologies, such as AI and AR (Augmented Reality), hold promise for future innovations and enhancements across various domains.

Dr. Sapna Juneja
Professor and Associate Dean R&D, Department of Computer Science

Electronic Waste: A Challenge to Public Health

The boom and advances in electronics, communication, information technologies, and enhanced consumer affordability resulted in a boom in the CS and IT engineering sectors. These advancements have introduced a significant number of potential contaminants through e-waste in the modern world as well. The waste arising from end-of-life electronics and electric products, referred to as e-waste, is one of the fastest-growing waste streams in the world. The electrical and electronics wastes that are rejected from repair and remanufacturing are categorized into E-waste.

Electronic waste mismanagement led to the deterioration of the quality of air, water, and soil. However, in our country, it is mismanaged through informal sectors in the hazardous environment. The lack of protection equipment like mask and gloves render the informal workers exposed to acidic fumes, poisonous smoke containing heavy metals, and contaminated ashes. The lack of proper space to work exposes hazardous waste to the worksite, where the informal sector resides, extending the risk to especially the children and elderly members of the families. The lack of proper recycling techniques poses a threat to the occupational health and safety of the associated workers. The exposure to toxic, poisonous, and cancer-causing elements led to severe health issues. For example, mercury is toxic to soft organs like the brain, kidney, central nervous system, cardiovascular system, and respiratory system. The rate of bioaccumulation of toxic heavy metals is higher among child labour prevalent in such low-skilled operations.

The unsafe practices of dumping electronic waste into sanitary landfills are a grave environmental concern. Since e-waste poses a significant amount of hazardous and toxic components, and its mixing with other waste stream like biodegradable waste enhances the toxicity and halogens in the produced leachate which further contaminate the water resources and land resourced in proximity to the sanitary landfill.

While this crude form of e-waste provides employment to people involved in the activity, however, the current methods of dismantling and extraction followed by dumping are the unsustainable mismanagement practices of e-waste associated with degraded social and environmental pillars.

The daunting challenges of the e-waste management ecosystem are the lack of access to clean recycling technology and the prevalence of the informal sector.

The dismantling and recycling stages of the e-waste focus on recovering the parts for sale as second-hand parts, repairing them using old parts, and recovering valuable materials like plastic and heavy metals like gold, copper, and other metals. The E-waste contains a wide range of heavy metals like lead, cadmium, and mercury. Circuit boards, one of the most valuable parts, contain lead and cadmium, both of which are valuable. Other examples include CRT monitors which have lead oxide and cadmium; mercury in flat screen monitors and switches; cadmium in computer batteries; organic compounds such as brominated flame retardants in PCBs, plastic casings, cables, and PVC cable insulations. The isolation of heavy metals and essential components from e-waste is costlier and is unfriendly to the environment. This results in the emission of toxic emissions as well as leachates, that damage the environment and the health of workers as well.

Sources:

https://psa.gov.in/CMS/web/sites/default/files/publication/annexure1_advisoryonewastemanagementinsmartcities%20%281%29.pdf

Dr. Minakshi Karwal
Associate Professor
Applied Science Department

Innovation Spotlights of the Month

Micro plastics in Clouds Hanging atop Mount Fuji and Mount Oyama

The ingestion and inhalation of microplastics by both humans and animals have raised concerns. These particles have been found in human organs, including the lungs, brains, hearts, blood, placentas, and faces. While their toxicity is still under investigation, studies on mice exposed to microplastics suggest potential health issues, such as behavioural changes. Additionally, some studies have linked microplastics to cancer and irritable bowel syndrome. Researchers from Waseda University collected samples at altitudes ranging from 1,300 to 3,776 meters, revealing the presence of nine types of polymers, including polyurethane, and one type of rubber in the cloud mist. The samples contained approximately 6.7 to 13.9 pieces of microplastics per liter, including a substantial quantity of "water-loving" plastic bits. This suggests that these microplastics may play a critical role in rapid cloud formation, with potential implications for the climate.

Microplastics in the upper atmosphere degrade more rapidly when exposed to ultraviolet light, releasing greenhouse gases in the process. High concentrations of these microplastics in clouds over sensitive Polar Regions could disrupt the ecological balance. This further underscores the urgent need to address the issue of airborne plastic pollution urgently.

This research underscores the high mobility of microplastics, highlighting their ability to travel great distances through the air and the environment. Previous studies have found microplastics in rain, with researchers suggesting that the primary sources of airborne plastics might include sea spray and aerosols generated by crashing waves and bursting ocean bubbles. Additionally, dust from car traffic on roads is considered another potential source of airborne microplastics.

Source: https://www.gktoday.in/microplastics-in-clouds-hanging-atop-mount-fuji-and-mount-oyama/

6G Internet of Things with RoF System

The Internet of Things (IoT) has been a promising communication paradigm that involves sensors, microcontrollers, and transceivers for an efficient communication and computation system. The infrastructure and the applications shall enable and improve the intelligent management of our city service, workspace, and daily life.

The RoF is one of the most promising enablers for the outstanding characteristics of flexibility and efficiency of 6G IoT systems.

The future 6G system will be investigated and standardized during the next few years, enabling data rates 100–1000 times faster than 5G services. Besides, there are the following requirements and technologies: 1) new man–machine interfaces; 2) universal computation distribution; 3) data fusion and mixed reality; 4) precision sensing and controlling; and 5) massive and scalable connectivity. In the 6G network, new use cases may occur, such as telepresence, zero energy devices, swarms of robots, biosensors, and some applications that may still be unknown nowadays.

The figure below summarizes six typical use cases, including smart home, satellite–terrestrial-integrated communication, smart city, underwater communication, hospital, and industry as per 6G IoT.

Converged with RoF, the 6G IoT system can benefit from the joint use of wireless and optical domains, thus creating more opportunities and challenges in the future.

Table: Frequency Resources Available for IoT

	Licensed Band	Unlicensed Band		
Frequency Band	0.703-2.2 GHz	0.125-13.56 MHz	300-400 THz	5.85-5.925 GHz
Network Type	NB-IoT	RFID/NFC	IrDA	DSRC (IoV)
Transmission Range	≤ 1 km	10 cm	10 m	1 km
Achievable Rate	160-250 kbps	424kbps	4 Mbps	27Mbps
Application Scenarios	M2M	M2M	M2M	V2X (V2V/V2I/V2R/V2P)

RFID: radio-frequency identification NFC: near-field communication
IrDA: infrared data association DSRC: dedicated short range communication
IoV: Internet of vehicles M2M: machine to machine V2X: vehicle to everything
V2I: vehicle to infrastructure V2R: vehicle to roadside V2P: vehicle to pedestrian

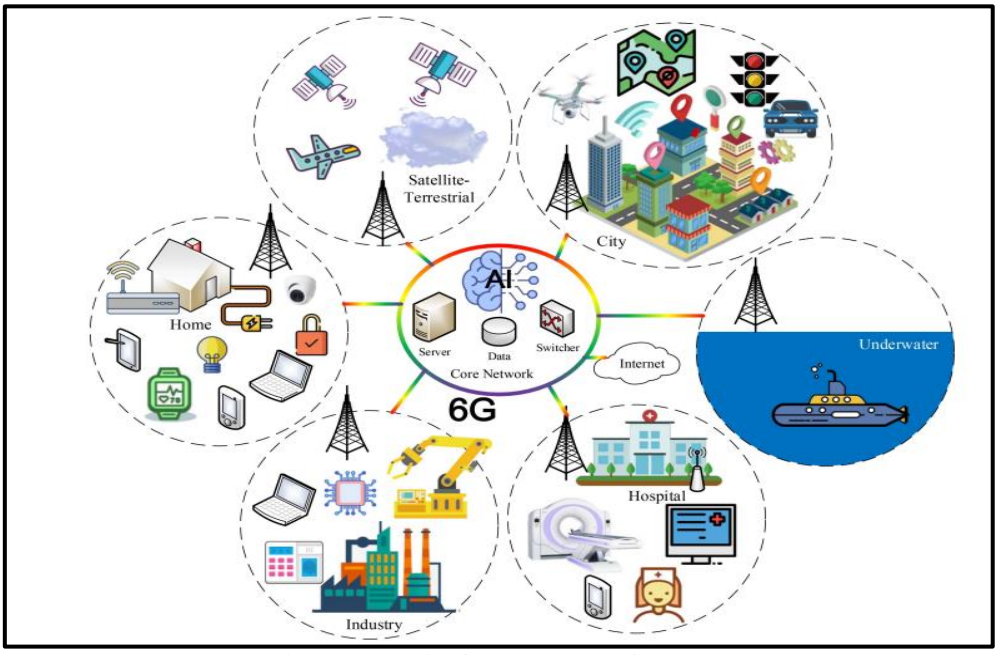


Figure. Typical use cases of 6G IoT

References: Na Chen, and Minoru Okada. "Toward 6G Internet of Things and the Convergence with RoF System", IEEE Internet of Things Journal, Vol. 8, No. 11, June 1, 2021

Bioprinting Innovations

Clinical testing is still a significant challenge in the pharma industry. Companies use live subjects to measure a drug's efficacy and safety during clinical trials due to the lack of a better medium. However, thanks to bioprinting, that's about to change.

A significant stride in health tech that sounds like it was pulled from a dystopian movie script, bioprinting uses 3D printing–like techniques to create imitations of natural human tissue and organs. This technology combines cells, growth factors, and other biomaterials to form a mesh-like structure.

These 3D-printed organs can replace live human subjects during clinical trials. Bio-ink — a liquid suspension of living cells and the primary component of 3D printed organs — can help researchers create human tissue in-lab.

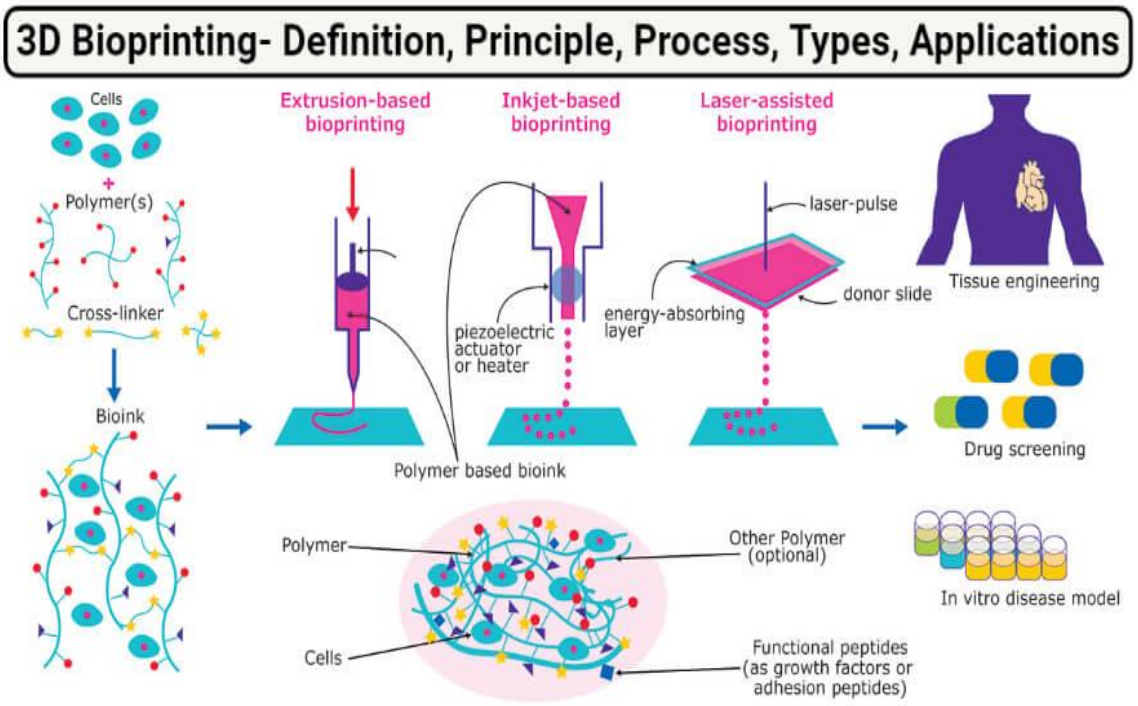
This incredible technology forms micro-organs and tissues that react the same way the human body does to new drugs and substances.

Customized bio-ink made using genes from a patient can enable researchers to recreate larger, more complex organs. It could even allow pharmaceutical companies to create customized drugs suitable for a specific patient.

Other benefits of bioprinting to the pharma industry can include:

- Testing drug toxicity at a specific dosage
- Modelling diseases and testing various treatment procedures
- Measuring a drug's metabolic effects in living tissue

The use of 3D-printed organs could help drive down costs associated with clinical trials while reducing the time required to approve new medications.



***Sources**: www.masschallenge.com*

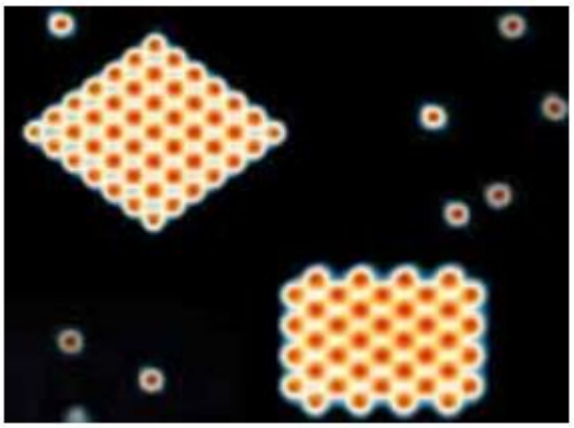
Versatile skin-like sensors fit nearly anywhere

Researchers from the Munich Institute of Robotics and Machine Intelligence (MIRMI) at the Technical University of Munich have developed an automatic process for creating soft sensors. The framework uses software to design sensory systems and a 3D printer to make soft sensors by injecting conductive paste into silicone. These sensors adapt to surfaces like fingers, changing electrical resistance when squeezed or stretched, providing precise data for controlling artificial hands. This adaptability ensures accurate feedback for effective interactions. Integrating soft sensors into 3D objects enhances haptic sensing in AI, offering real-time data on forces and deformations for immediate feedback. This expands perception and enables more nuanced interactions in robotics, prosthetics, and human-machine relations. The researchers see the potential for revolutionary impact, allowing wireless and customizable sensor technology across different objects and machines.

The sensor skin is very flexible and can be attached to many surfaces, including fingers, for example (**Credit**: *Andreas Heddergott/ TUM*)_Electronic for You Magazine_September Month 2023

Atom-by-atom construction of new superconductors

Researchers at the University of Zurich have achieved a remarkable feat by meticulously designing superconductors, atom by atom, leading to the creation of previously unexplored states of matter. Researchers created materials atom by atom, focusing on pioneering superconductors that exhibit zero electrical resistance at low temperatures. Often called 'ideal diamagnets' these have extensive use in quantum computers for their unique magnetic interactions. Using a scanning tunneling microscope, researchers manipulated atoms with precision, measuring the system's magnetic and superconductive characteristics. By adding chromium atoms to superconducting niobium, they created two new superconductivity forms. This approach marks the first successful creation of two-dimensional superconductors, although similar methods have been used before with metal atoms.



***Sources**: Electronic for You Magazine_September Month 2023*

A robotic system for weed control and crop monitoring

Researchers at the University of Bonn have developed a robotic system called BonnBot-I that may aid farmers in more efficiently managing weeds and monitoring crops. The robot employs localisation sensors, including GPS and odometry, enabling it to navigate fields, locate, classify, count plants, and manage weeds using integrated tools. The system seamlessly integrates with the Robot Operating System. The team curated a new dataset for training algorithms to identify and count corn, a challenging crop for computer vision detection. The researchers leveraged crop monitoring techniques, integrating GNSS and wheel odometry to boost precision in plant location and classification. This enhancement reduced tracking accuracy error from 8.3% to 3.5%, assessed on a new publicly accessible corn dataset. They also introduced a unique setup of weeding tools on linear actuators, tested in simulations.

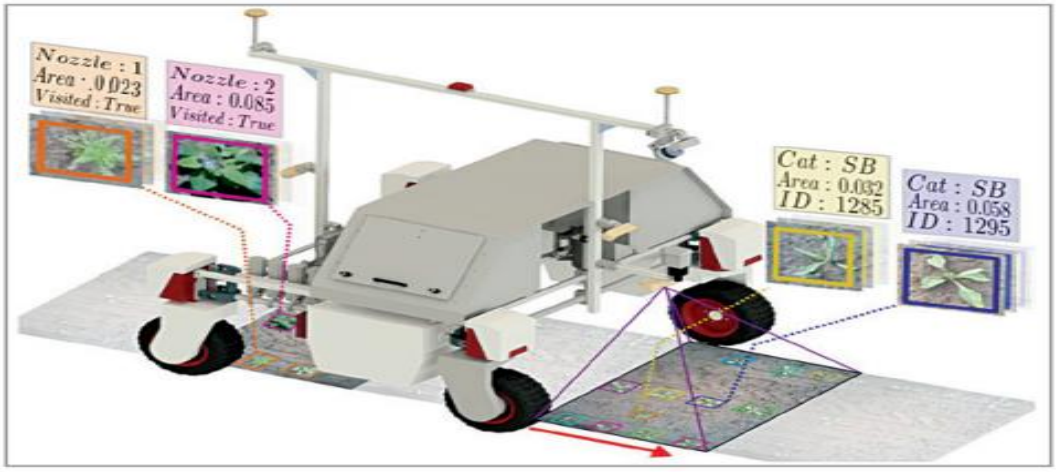


Figure illustrating the BonnBot-I platform (Credit: Ahmadi, Halstead & McCool)

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

KIET Ethics Policy for Students and Faculty Members

Plagiarism means copying another person's text or ideas and passing the copied material as your own work without acknowledging them. According to University Grant Commission (UGC), plagiarism means 'taking someone else's work or idea and passing them as one's own', and it will apply to the 867 universities and their affiliated institutions that report to the nation's education regulator, the University Grants Commission (UGC). *Plagiarism not only is legally wrong but also morally corrosive. Any report/thesis/research paper based upon the writing of others should acknowledge every source used.* Plagiarism is a common and serious issue in the academic field and elsewhere. Plagiarism in academia can occur in the text or source code. It eases one's task at the cost of another person. In many cases, plagiarism occurs due to a lack of proper acknowledgment of work done by others.

This policy has been framed as per guidelines proposed by AKTU vide their letter no. AKTU/2019/1997 dated 7 June 19.

1. The scope of plagiarism

(a) Plagiarism may be due to:

- **Copying** (using another person's language and/or ideas as if they are your own).
- **Collusion** (unauthorized collaboration).

(b) Plagiarism includes:

- **Directly quoting** another person's language, data, or illustrations without clear indication that the authorship is not your own and due acknowledgement of the source.
- **Paraphrasing** the critical work of others without due acknowledgement–even if you change some words or the order of the words, this is still plagiarism if you are using someone else's original ideas and are not properly acknowledging it.
- **Using ideas** taken from someone else without reference to the originator.
- **Cutting and pasting** from the Internet to make a 'pastiche' of online sources.
- **Colluding** with another person, including another candidate (other than as might be permitted for joint project work).

- **Submitting** as part of your own report or dissertation someone else's work without identifying clearly who did the work (for example, where research has been contributed by others to a joint project).
- **Borrowing** words or ideas from other person or sources without citation.
- **Using** software or online translator to translate material without citation.
- **Buying** assignments from other sources.
- **Paying** for another to contribute to your work without citation.
- **Reproducing** information that is not common knowledge or self-evident without citation.
- **Forgetting** to cite sources without giving credit where credit is due.
- **Misquoting** to the cited sources without giving credit where credit is due.
- **Passing off** as one's own pre-written papers from the Internet or other sources.

2. How to avoid plagiarism

The following guidelines should be taken to avoid plagiarism, self-plagiarism and other questionable writing practices:

Guideline 1: An ethical writer always acknowledges the contributions of others to his/her work.

Guideline 2: Any verbatim text taken from another source must be enclosed in quotation marks and be accompanied by a citation to indicate its origin.

Guideline 3: When we summarize others' work, we use our own words to condense and convey others' contributions in a shorter version of the original.

Guideline 4: Whether we are paraphrasing or summarizing we must always identify the source of our information.

Guideline 5: When in doubt, as to whether a concept or fact is common knowledge, provide a citation.

Guideline 6: Follow the basic elements of copyright law, as it has been found that some instances of plagiarism, self-plagiarism, and even some writing practices that might otherwise be acceptable (e.g., extensive paraphrasing or quoting of key elements of a book) can constitute copyright infringement.

Guideline 7: Only those individuals who have made substantive contributions to a project merit authorship in a paper.

Guideline 8: Faculty-student collaborations should follow the same criteria to establish legal authorship. Mentors must exercise great care to neither award authorship to students whose contributions do not merit it, nor to deny authorship and due credit to the work of students.

Guideline 9: Give oneself enough time when writing a report/thesis/research paper. It is easy to miss something when we are rushed.

Guideline 10: Proofreading is required to avoid plagiarism.

Guideline 11: Don't use another student's essay without their consent. Also, don't pass it as your own work.

Guideline 12: Include a reference page at the end of the report/thesis/research paper/PPTs.

Guideline 13: Cite the online sources used.

Guideline 14: Facts or common knowledge need not be cited.

3. Plagiarism Checking Process

The plagiarism-checking process shall contain the following steps:

1. The submitted B.Tech. project reports/M.Tech. thesis/Journal and conference research papers shall be checked for plagiarism through **Turnitin** software available in the KIET by choosing "10 continuous similar words".
2. For B.Tech. and M.Tech. project report/thesis, "**Literature Review**" chapter must be included in plagiarism checking.
3. The maximum similarity index should not be more than 20% for a complete project report/thesis and should not be more than 5% in case of individual references including references from the author's own previous works.

4. Self-plagiarism

If an essay or dissertation builds on an individual's previous work, it is essential that this is clearly identified in the text and is appropriately referenced as if it were written by a different person. The assessors should be in no doubt as to what work the student has completed in his/her current degree course that will be assessed. When submitting a project report/thesis, students will declare that no part of their work has already been submitted, or is being submitted, for any other project work of this or another university for any academic program. Self-plagiarism occurs when a student submits his or her own previous work, or mixes parts of previous works, without permission from all professors involved. Self-plagiarism also applies

to submit the same piece of work for assignments in different classes without previous permission from the professors.

5. Levels of Plagiarism

Plagiarism would be quantified into the following levels in ascending order of severity for the purpose of its definition:

i. Level 1: Similarities above 20% to 40% (invokes moderate penalty)
ii. Level 2: Similarities above 40% to 60% (invokes substantial penalty)
iii. Level 3: Similarities above 60% (invokes severe penalty)

Note: All references, bibliography, table of content, preface, acknowledgement, generic terms, laws, keywords, standard symbols, and equations **must be excluded** from the plagiarism check.

6. Penalties

Penalties in the cases of plagiarism shall be imposed on students pursuing studies at the level of UG, PG, and faculty and staff only after academic misconduct on the part of the offender has been established without doubt, when all avenues of appeal have been exhausted and individual in question has been provided enough opportunity to defend himself or herself in a fair or transparent manner.

(a) Penalties for Students

(i) **Level 1: Similarities above 20% to 40%-** Such students shall not be given any mark and/or credit for the plagiarized script and shall be asked to submit a revised script within a stipulated time not exceeding 1 month.

(ii) **Level 2: Similarities above 40% to 60%-** Such student shall be asked to submit a revised script within a stipulated time not exceeding 1 month and 10% marks shall be deducted from the scored marks.

(iii) **Level 3: Similarities above 60%-** Such student shall be asked to submit a revised script within a stipulated time not exceeding 1 month and 20% marks shall be deducted from the scored marks.

Note 1: Penalty on repeated plagiarism: Such a student shall be punished for the plagiarism of one level higher than the previous level committed by him/her. In case where plagiarism of the highest level is committed then the punishment for the same shall be operative.

Note 2: Penalty in case where the degree/credit has already been obtained: If plagiarism is proved on a date later than the date of award of degree or credit as the case may be then his/her degree or credit shall be put in abeyance for a period recommended by the DRC and approved by the RDC.

(b) Penalties for Faculty, Staff, Researcher

Level 1: Similarities above 20% to 40%- Shall be asked to withdraw the manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of one year.

Level 2: Similarities above 40% to 60%- Shall be asked to withdraw manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of two years and shall be denied a right to one annual increment and shall not be allowed to be a supervisor to any UG, PG student for a period of two years.

Level 3: Similarities above 60%- Shall be asked to withdraw manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of three years and shall be denied a right to two successive annual increments and shall not be allowed to be a supervisor to any UG, PG student for a period of three years.

Note 1: Penalty on repeated plagiarism: Shall be punished for the plagiarism of one level higher than the previous level committed by him/her. In case where plagiarism of the highest level is committed then the punishment for the same shall be operative. In case the level 3 offence is repeated then the concerned person shall be dismissed.

Note 2: Penalty in case where the degree/credit has already been obtained: If plagiarism is proved on a date later than the date of award of benefit or credit obtained as the case may be then his/her benefit or credit shall be put in abeyance for a period recommended by the DRC and approved by the RDC.

7. Appeal

Penalties in the cases of plagiarism shall be imposed on students pursuing studies at the Bachelor's and Master's level only after academic misconduct on the part of the individual has been established without doubt, when all avenues of appeal have been **exhausted** and

the individual in question has been provided enough opportunity to defend himself or herself in a fair or transparent manner.

8. Detection/Reporting/Handling of Plagiarism

If any member of the academic community suspects with appropriate proof that a case of plagiarism has happened in any document related to the submission of a **Bachelor's and master's project report/thesis/dissertation and research papers**, he or she shall report it to the Research and Development Committee.

9. Departmental Research Committee (DRC)

i. All departments shall form a DRC whose composition shall be as given below:

a. Chairman: Head of the department.

b. Member: Senior Academician who has good credentials in Research (SCI Papers, Funded projects, Patents, etc.) to be nominated by the Head of the department.

c. Member: A person well versed with anti-plagiarism tools, to be nominated by the Head of the department.

ii. The DRC shall motivate the faculty members and students for publishing research papers in Indexed journals- SCI/SCI-E/SSCI/ESCI/SCOPUS and full papers in Conference Proceedings/ presenting papers in Conferences, Seminars, Workshops, Symposia (conferences in association with IEEE/ Springer/ Elsevier/ ACM/ Wiley/ IPC.

iii. DRC shall also motivate the faculty members for writing research proposals for various government agencies and for publishing patents which in turn improve the NIRF Ranking.

iv. All faculty members are required to motivate and involve students in writing Research papers.

v. Faculty members shall inform the members of DRC about the submission of Research papers in reputed Journals/ Conferences.

vi. The DRC shall have the power to give recommendations including penalties with due justification for Bachelor's/ Master's project reports/thesis/dissertations submitted by a student as well as research papers of students submitted for academic credits.

vii. The DRC shall send the report after investigation and the recommendation on penalties to be imposed, to the Research and Development Committee within a period of 30 days from the date of receipt complaint /initiation of the proceedings.

viii. Final course of action should be decided by the Head of the Institution.

ix. Faculty shall submit the reprint of the paper published in the Journal/ Conference along with the Plagiarism report to DRC. The respective HoD shall submit the recommendation to the office of Dean R & D and Associate Dean, Implementation of Research and Development shall verify the credentials submitted by the respective HoD and he shall put up the recommendation to Dean R & D. Faculty member shall upload the published paper in achievement section of KIET ERP only after getting the approval from Dean R & D.

x. Student shall submit the reprint of the paper published in a Journal/ Conference with application to Chairman DRC/HoD along with proofs of registration, TA-DA. The DRC shall check the Plagiarism and recommend it to the Registrar's Office. The Registrar's office shall draft the link page and maintain the data of each student and shall submit the recommendation to the office of Dean R & D and Associate Dean,

Implementation of Research and Development shall verify the credentials and shall put up the recommendation to Dean R & D to further approval from Director Office.

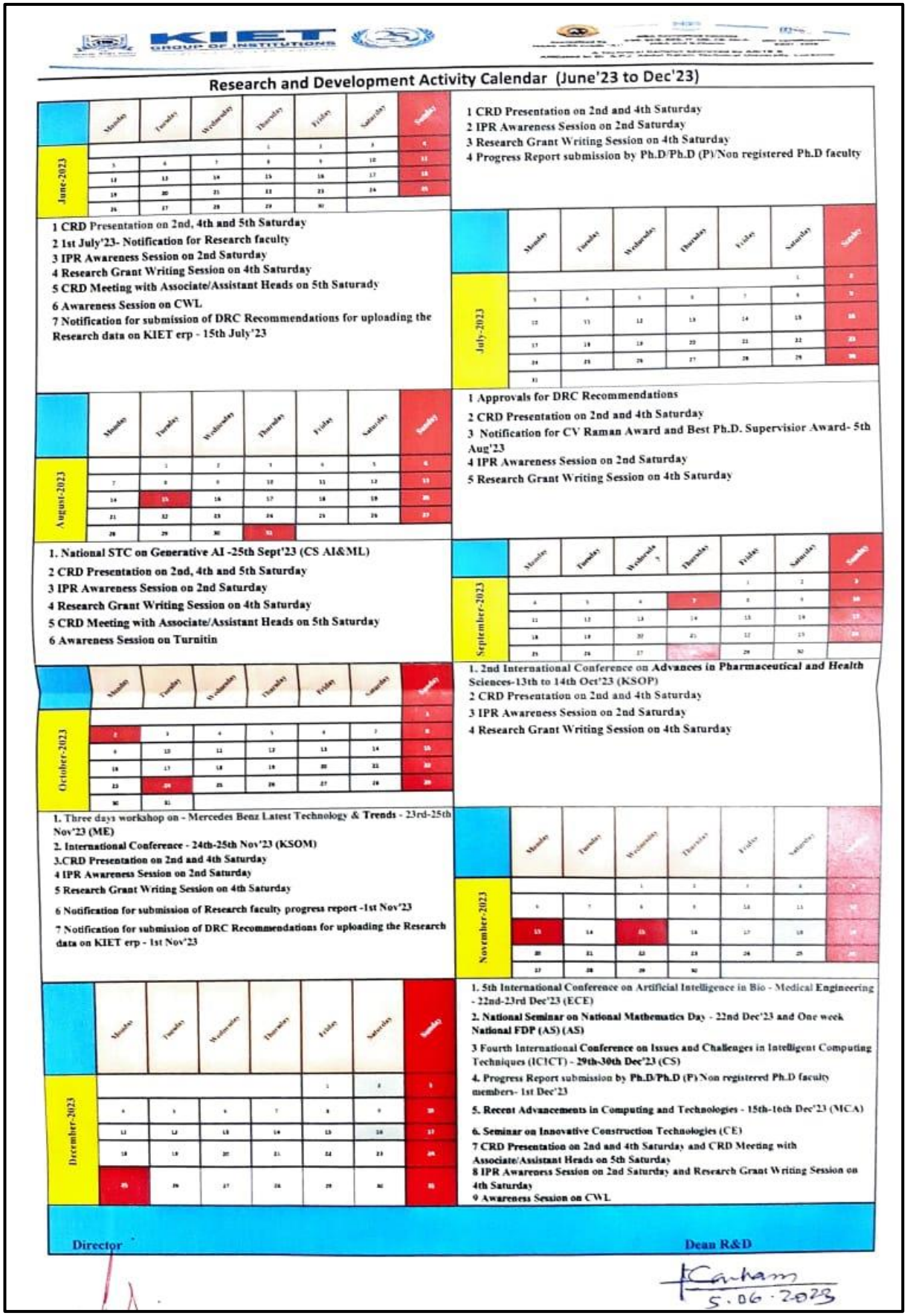
10. Research and Development Committee

i. A panel of the following member:
   a. Dean R & D
   b. Associate Dean, Implementation of Research and Development
ii. The R&D Committee shall follow the principles of natural justice while deciding about any allegation of plagiarism against a student or faculty.
iii. The R&D Committee shall have the power to assess the level of plagiarism and recommend penalties accordingly within a period of 30 days.
iv. Dean R & D shall put up the recommendation for further approval of necessary action for violating the Ethics policy to the Director.

11. Some points to curb plagiarism

i. Undertaking should be taken from students indicating original and plagiarized free work. Plagiarism report should be made available in the form of a certificate that must be generated from the tool used to check the thesis/report, which subsequently will be attached to the thesis/document during submission.
ii. Each supervisor shall submit a bonafide certificate indicating the original and plagiarism-free work of a student.
iii. Department must maintain the softcopies of submitted documents/reports in their databases for any kind of future reference.
iv. Undertaking shall be taken from all the faculty members of the Institute.
v. If a faculty member is mentioning KIET name or taking advantage of any document/ paper etc., then he/she is bound by the ethics policy.

Research and Development Activity Calendar (June 2023 – Dec. 2023)



KIET GROUP OF INSTITUTIONS

Research and Development Activity Calendar (June'23 to Dec'23)

June-2023

1 CRD Presentation on 2nd and 4th Saturday
2 IPR Awareness Session on 2nd Saturday
3 Research Grant Writing Session on 4th Saturday
4 Progress Report submission by Ph.D/Ph.D (P)/Non registered Ph.D faculty

July-2023

1 CRD Presentation on 2nd, 4th and 5th Saturday
2 1st July'23- Notification for Research faculty
3 IPR Awareness Session on 2nd Saturday
4 Research Grant Writing Session on 4th Saturday
5 CRD Meeting with Associate/Assistant Heads on 5th Saturady
6 Awareness Session on CWL
7 Notification for submission of DRC Recommendations for uploading the Research data on KIET erp - 15th July'23

August-2023

1 Approvals for DRC Recommendations
2 CRD Presentation on 2nd and 4th Saturday
3 Notification for CV Raman Award and Best Ph.D. Supervisior Award- 5th Aug'23
4 IPR Awareness Session on 2nd Saturday
5 Research Grant Writing Session on 4th Saturday

September-2023

1. National STC on Generative AI -25th Sept'23 (CS AI&ML)
2 CRD Presentation on 2nd, 4th and 5th Saturday
3 IPR Awareness Session on 2nd Saturday
4 Research Grant Writing Session on 4th Saturday
5 CRD Meeting with Associate/Assistant Heads on 5th Saturday
6 Awareness Session on Turnitin

October-2023

1. 2nd International Conference on Advances in Pharmaceutical and Health Sciences-13th to 14th Oct'23 (KSOP)
2 CRD Presentation on 2nd and 4th Saturday
3 IPR Awareness Session on 2nd Saturday
4 Research Grant Writing Session on 4th Saturday

November-2023

1. Three days workshop on - Mercedes Benz Latest Technology & Trends - 23rd-25th Nov'23 (ME)
2. International Conference - 24th-25th Nov'23 (KSOM)
3.CRD Presentation on 2nd and 4th Saturday
4 IPR Awareness Session on 2nd Saturday
5 Research Grant Writing Session on 4th Saturday
6 Notification for submission of Research faculty progress report -1st Nov'23
7 Notification for submission of DRC Recommendations for uploading the Research data on KIET erp - 1st Nov'23

December-2023

1. 5th International Conference on Artificial Intelligence in Bio - Medical Engineering - 22nd-23rd Dec'23 (ECE)
2. National Seminar on National Mathematics Day - 22nd Dec'23 and One week National FDP (AS) (AS)
3 Fourth International Conference on Issues and Challenges in Intelligent Computing Techniques (IC1CT) - 29th-30th Dec'23 (CS)
4. Progress Report submission by Ph.D/Ph.D (P)/Non registered Ph.D faculty members- 1st Dec'23
5. Recent Advancements in Computing and Technologies - 15th-16th Dec'23 (MCA)
6. Seminar on Innovative Construction Technologies (CE)
7 CRD Presentation on 2nd and 4th Saturday and CRD Meeting with Associate/Assistant Heads on 5th Saturday
8 IPR Awareness Session on 2nd Saturday and Research Grant Writing Session on 4th Saturday
9 Awareness Session on CWL

Director

Dean R&D

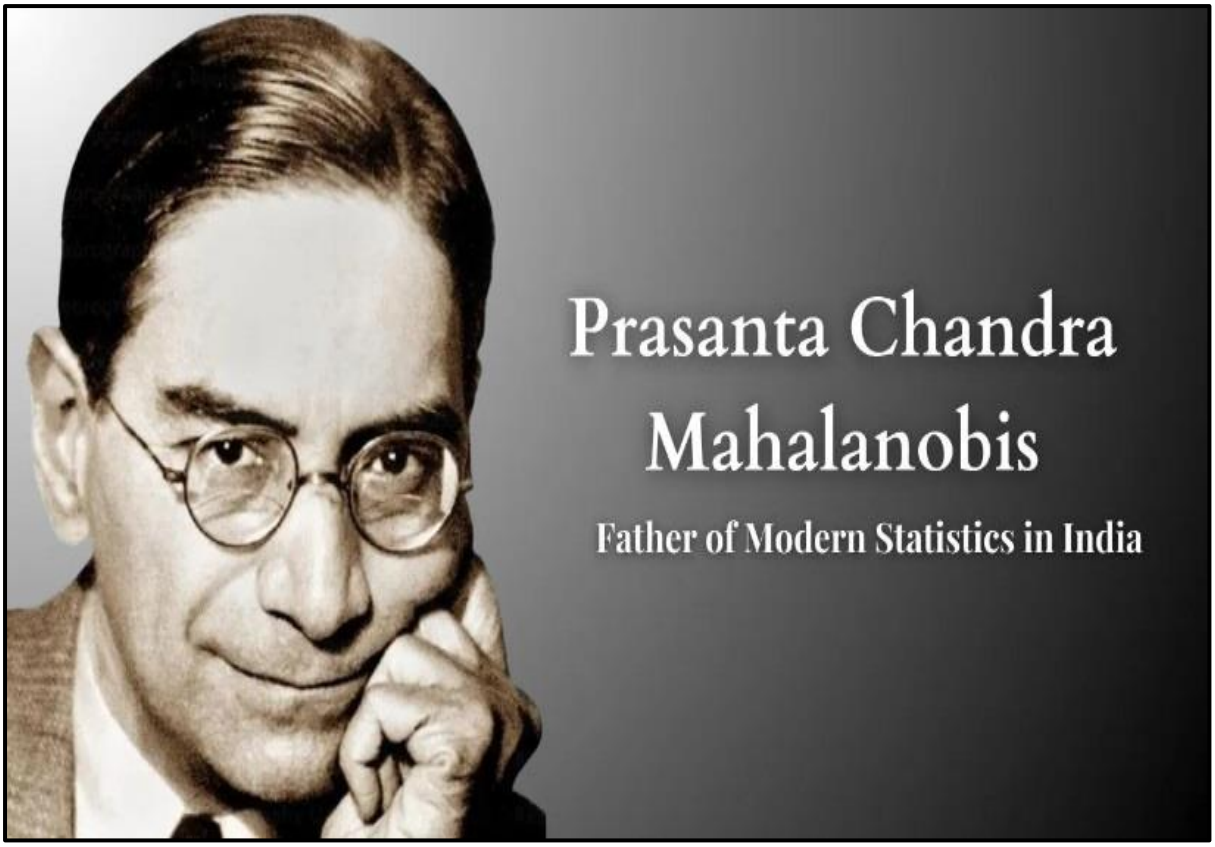
5.06.2023

Various Research Labs in KIET

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


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


A Glimpse of Collaborative Research and Development Presentation
GPS Map Camera
Muradnagar, Uttar Pradesh, India
KIET Group of Institutions, IT Department,Muradnagar, Ghaziabad, Uttar
ZT Architecture in 6G



An Indian scientist and applied statistician named **Prasanta Chandra Mahalanobis (1893-1972)** built the groundwork for India's institutional economic planning.

He was the first to apply statistical methods to anticipate, plan, analyze, and evaluate social and economic welfare operations in the country, as a member of the first Planning Commission of independent India.

He was the founder of the **Indian Statistical Institute (ISI)** in Kolkata and the founder of the prestigious **Sankhya Journal**.

The heavy industries were emphasized in the Second FYP. It was written by a group of economists and planners led by P. C. Mahalanobis.

He was a founder of The Indian Econometric Society and the first Indian elected member of the Econometric Society, as well as the first fellow elected from India (1951).

Sir Ronald Aylmer Fisher (R.A.Fisher) recognized D2 Statistics concept by naming it the **'Mahalanobis D-square' or 'Mahalanobis distance,'.**

KIET Group of Institutions

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