June 2024

Vol No. 18

अनुसंधान

(KIET Research Magazine)

Dr. Valentina Emilia Balas
Professor, Department of Automatics and Applied Software
Faculty of Engineering
"Aurel Vlaicu" University of Arad, Romania

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

KIET – A GLANCE

Overview

KIET Group of Institutions (KIET) was established in 1998 at Ghaziabad (Delhi-NCR) with an annual intake of 180 students. It is an AICTE-approved Institution affiliated to Dr. A.P.J Abdul Kalam Technical University (AKTU), Lucknow (formerly UPTU). KIET offers UG & PG courses in four disciplines i.e., Engineering, MBA, MCA & Pharmacy. With the glorious legacy of 25 years, the Institute now has 7500+ students and is empowered with 350+ highly qualified full-time faculty to nurture our students. Institute credentials and Centers of Excellence can be viewed @ our website www.kiet.edu.

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.

Assistant Dean, Research Data Management

Dr. Abhishek Sharma

Associate Prof. (ECE)

Assistant Dean, Promotion & Implementation of Sustainable Development in Research

Dr. Minakshi Karwal

Associate Prof. (AS)

Assistant Dean, Research Quality Assurance

Dr. Himanshu Chaudhary

Assistant Prof. (ECE)

Assistant Dean, Industrial & Academia Research Collaboration & Promotion

Dr. Brijesh Singh

Associate Prof. (EN)

Assistant Dean, Intellectual Property Right (IPR)

Dr. Richa Goel

Associate Prof. (KSOP)

Member Secretary (Intellectual Property Right Committee)

Ms. Surbhi Kamboj

Assistant Prof. (KSOP)

KIET Collaborative Research and Development Committee (CRDC)

Chairman

Dr. Vibhav Kumar Sachan

Prof. & Dean (ECE)

Vice – Chairman

Dr. Vipin Kumar

Prof. & Addl. HoD (AS)

Member-Secretary

Dr. Brijesh Singh

Associate Professor (EEE)

Departmental Research Committee

Associate Heads

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

CONTENTS

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Message from the Face of Cover Page

Dear Readers,

It is with great pleasure that I extend my warmest greetings to the esteemed readers of KIET Research magazine. As a Professor of Automatics and Applied Software, I have had the privilege of witnessing the transformative power of research and innovation in our ever-evolving field.

In today's world, where technology permeates every aspect of our lives, the role of research in shaping the future cannot be overstated. The work we do, whether in the realms of artificial intelligence, automation, or software development, is not just about advancing knowledge; it is about creating solutions that have a profound impact on society. Through our research, we contribute to the development of technologies that enhance quality of life, drive economic growth, and address global challenges.

KIET Research magazine serves as an important platform for disseminating cutting-edge research and fostering a community of scholars, practitioners, and innovators. I am confident that the insights and discoveries shared within these pages will inspire new ideas and collaborations, further advancing our collective mission of technological progress.

I encourage you all to engage with the content, explore the various perspectives presented, and consider how the research highlighted can be applied to your own work. Together, we can continue to push the boundaries of what is possible and contribute to a better, more innovative world.

Thank you for your commitment to research and for being a part of this vibrant community. I look forward to the groundbreaking work that will continue to emerge from these pages.

Warm regards,

Dr. Valentina Emilia Balas

Professor

Department of Automatics and Applied Software

"Aurel Vlaicu" University of Arad, Romania

Message from Chief Patron

Dear Readers,

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

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

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

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

Finally, I would like to extend my warmest wishes to all our researchers and partners. Their hard work and dedication make our institute a leading force in the research community, and we are honoured to have you on board. Together, let us build on our collective knowledge and make a lasting impact on the society.

Warm Regards

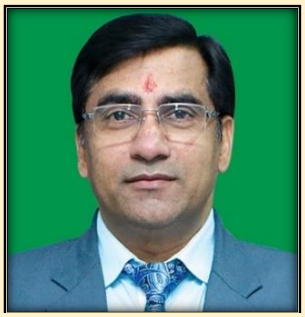
Prof. (Dr) Preeti Bajaj

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

Director General-KIET Group of Institutions

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

Message from Patron



Dear 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. Anil Ahlawat

Director Academics

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

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

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

Dr. Manoj Goel

Joint Director KIET

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

Contact
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Glimpses of Month

'High-Performance Computing (HPC)' under the AICTE-SANKALP scheme

The Department of Computer Science and Engineering at KIET Group of Institutions organized an awareness workshop on 'High-Performance Computing (HPC)' under the AICTE-SANKALP scheme on June 21, 2024. This workshop aimed to enhance awareness and skills among students and faculty regarding the National Supercomputing Mission. AICTE-SANKALP is an initiative designed to foster HPC awareness and skills in technical education institutions across India, aligning with the National Supercomputing Mission's goal of building HPC capacity.

Dr. Akhilesh Verma, an HPC master trainer from AKG Engineering College, delivered sessions covering the evolution of supercomputers in India, the current supercomputing capabilities of the country, and how students and faculty can access these resources for national development. Dr. Anil Ahlawat, Director-in-Charge, encouraged the audience to embrace advanced practical knowledge. Dr. Vineet Kumar Sharma, HoD of CSE, highlighted the power of supercomputing machines. The event was hosted by Dr. Naveen Chauhan, Associate Professor of CSE, who welcomed the workshop speaker and expressed gratitude to AICTE, CDAC, and the Institutions Innovation Council.

Prof. Gaurav Parashar, Prof. Umang Rastogi, Dr. Sartaj Ahmed, Dr. Kiran, and others also participated in the workshop.

MoU between KIET and Soach Global Corporation Limited

We are thrilled to announce that on June 7, 2024, a Memorandum of Understanding (MOU) was signed between KIET Group of Institutions and Soach Global Corporation Limited. We were honored to have Mr. Anubhav Dayal, founder of Soach Global, on campus along with Director In-Charge Dr. Anil Ahlawat, DGM TBI-KIET Mr. Saurav Kumar, Dean IEC Dr. Kunwar Laiq Ahmad Khan, and Consultancy Head Mr. Anuj Pathak.

This partnership aims to bring a visionary project to life, supporting the farmers of India. The initiative is led by Aashish Gupta, a student from the Computer Science department, under the guidance of Mr. Saurav Kumar (DGM TBI-KIET). Together with a dedicated team of 10 members, they are committed to developing and maintaining applications and portals that will drive this initiative forward.

Goal Setting and Career Mapping Workshop in collaboration with HBF Direct Limited

On June 14th, 2024, the KIET School of Management organized a Goal Setting and Career Mapping Workshop in collaboration with HBF Direct Limited for first-year MBA students. The workshop aimed to equip students with essential skills and strategies for setting and achieving their career goals.

The event featured a distinguished panel of guests, each bringing a wealth of experience and insights from their respective fields. The guest list included:

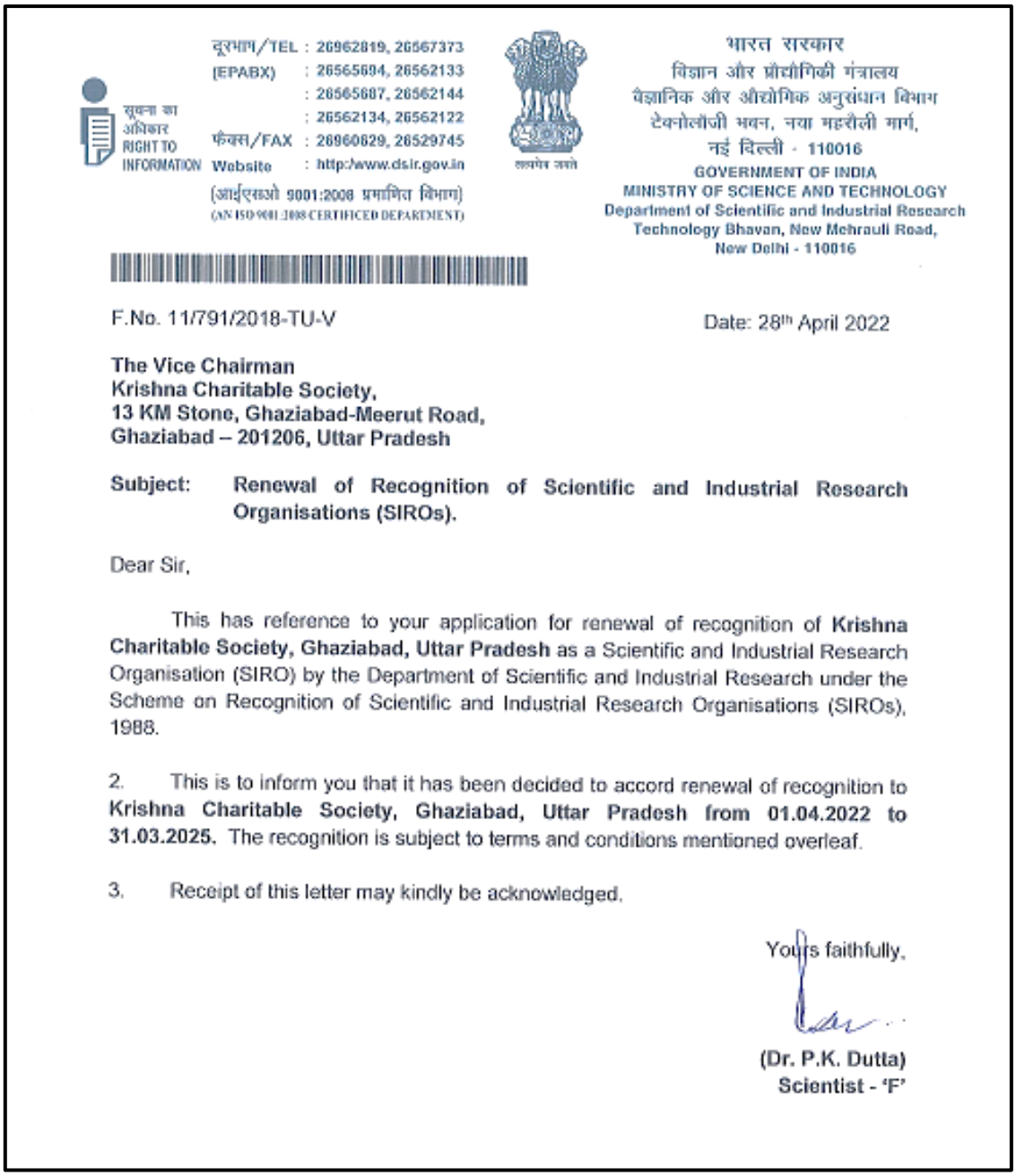
1. Mr. Sandeep Kumar, Senior Vice President of Financial Services at GoKwik.
2. Mr. Rakesh Seth, Leader and HR Coach at International Consulting.
3. Mr. Arvind Sharma, Area Manager at ITC.
4. Mr. Ashish Kumar, Service Delivery Manager at TCS.

The CSIT Department organized a guest lecture titled “Artificial Intelligence as Our Future” on June 11, 2024, for second-year students. The lecture was conducted by Prof. (Dr.) Bhuvan Unhelkar from the University of South Florida, USA, who shared his insights on emerging technologies such as Artificial Intelligence and Big Data.

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)**



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(आईएसओ 9001:2008 प्रमाणित विभाग)
(AN ISO 9001:2008 CERTIFICED DEPARTMENT)

सूचना का अधिकार
RIGHT TO INFORMATION

सत्यमेव जयते

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

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

Date: 28th April 2022

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

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

Dear Sir,

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

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

3. Receipt of this letter may kindly be acknowledged.

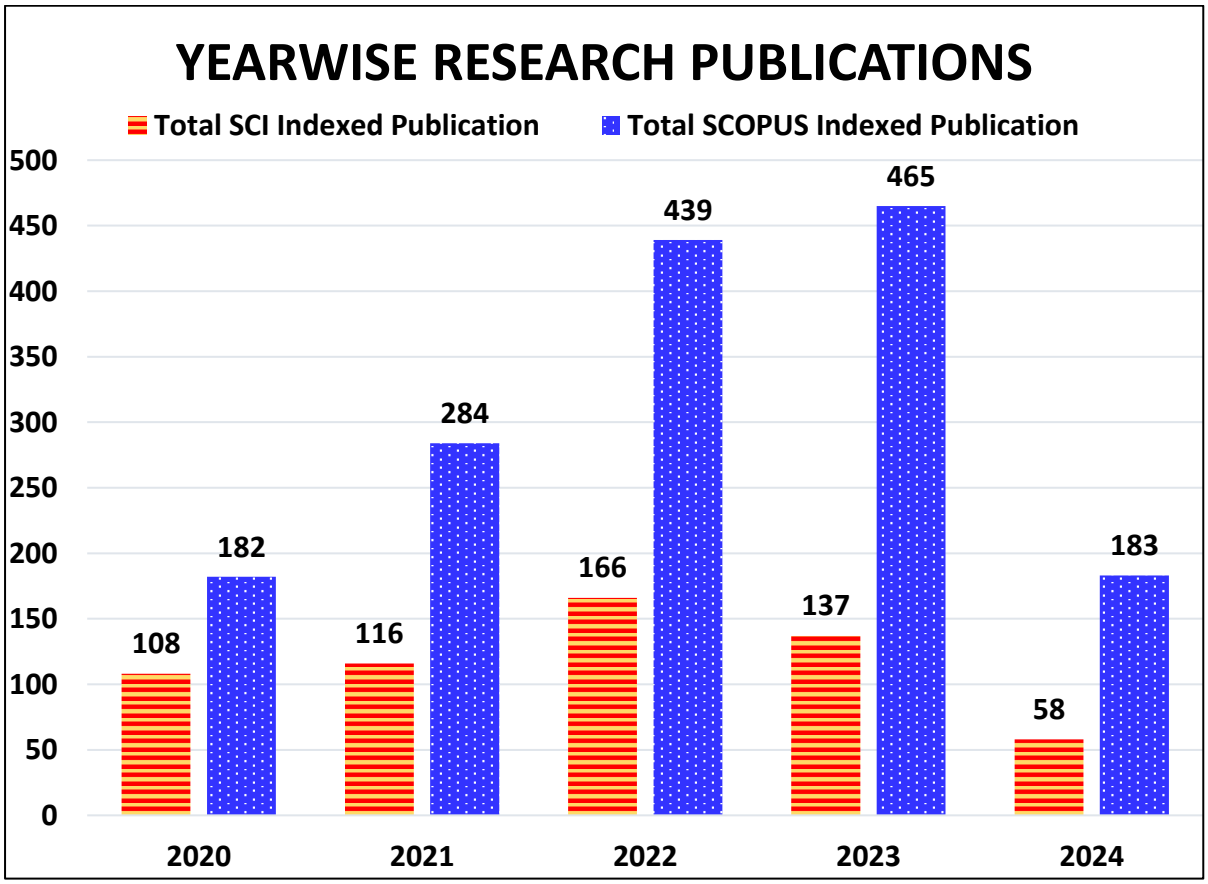
Yours faithfully,

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

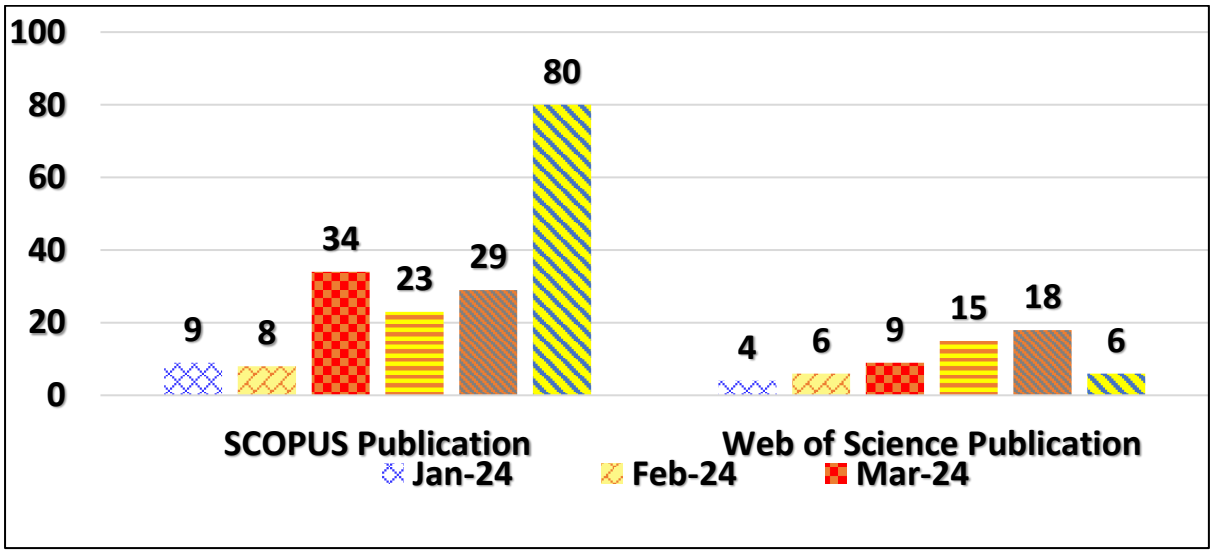
KIET Research Credentials

A total of SCI Research Publications and Scopus Indexed Research Publications with an affiliation of KIET Group of Institutions, Delhi-NCR, Ghaziabad are listed in Web of Science and Scopus Database till June 2024.

Year	Total Number of SCI Indexed Publications	Total Number of SCOPUS Indexed Publications	Total Number of Research Publications
2020	108	182	290
2021	116	284	400
2022	166	439	605
2023	137	465	602
2024*	58*	183*	241*
Total	585*	1553*	2138*



CATEGORY	Number of Publication (2023-24)					
	Jan-24	Feb-24	March-24	April-24	May-24	June-24
SCOPUS Publications	*9*	*8*	*34*	*23*	*29*	*80*
Web of Science Publication	*4*	*6*	*9*	*15*	*18*	*6*



Details of Patents Published/Granted

Title of the Invention: **Environment friendly technology for removal of heavy metal ion from wastewater**

Application Number: 202411043510 A (Indian Patent Office)

Applicant (s): Dr. Sweta Shukla (AS)

Date of Filing: 05-06-2024

Date of Publishing: 14-06-2024

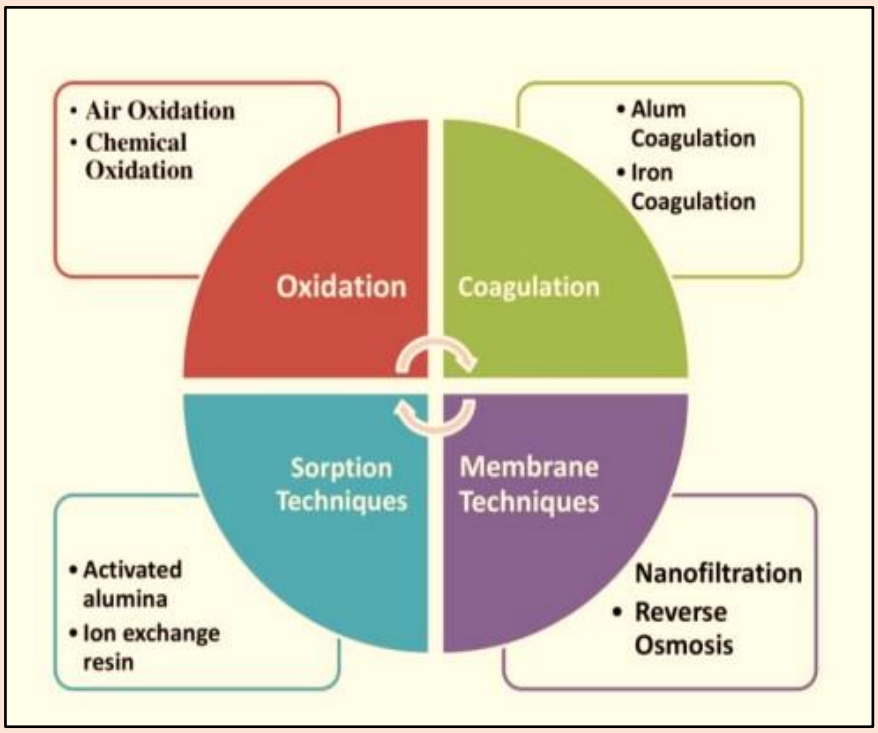
Field of the Invention: The present invention is related to the environmental chemistry field, specifically, the field of an approach of water treatment. The invention relates to a water purification composition. The invention particularly relates to a water purification composition that is especially useful for removal of trace quantities of harmful contaminant heavy metals like Arsenic in addition to removal of microorganisms like virus, bacteria and cyst to make the water suitable for human consumption.

Objects of the Invention: The objective of the present investigation is to provide for a water purification composition that solves most of the problems encountered when using compositions reported in the past. It is another object of the present invention to provide for a water purification composition that provides purified water with low heavy metal content that meets the WHO standards. It is yet another object of the present invention to provide for a water purification composition that also meets the high microbiological removal.

Summary of the Invention: There are many complexities involved in the removal of heavy metals from water. Most of the methods involved in heavy metal removal have some drawbacks. Some are effective but not economically feasible, some are economically feasible but not effective. Some methods are not user friendly and technologically sound. They are energy dependant and require post treatment by skilled manpower. The quality of treated water does not meet the standards required. Despite the drawbacks a variety of technologies have been developed for the removal of heavy metals. Some of the technologies available for heavy metal removal are represented in drawing.

In water crisis all over the world, water technologies are going to play a crucial role in the sustainability of water management. Water technologies are very important aspect of future. Important challenges in the global water situation, mainly resulting from worldwide population growth and climate change, require innovative water technology to ensure a sufficient supply of drinking water and to reduce global water pollution. The advanced nanotechnology offers new opportunities in technological developments for advanced water and wastewater technology processes. The overview of recent advances in nanotechnologies for water and wastewater treatment processes is included, nano-based materials, like nanomembranes, nano-adsorbents, nanometals, and photocatalysts. Nanomaterials have unique size-dependent properties related to their high specific surface area which affects high reactivity, strong sorption and discontinuous properties. The nano - material based characteristics allow the development of novel high-tech materials for more efficient water

and wastewater treatment processes, namely membranes, adsorption materials, nano-catalysts, functionalized surfaces, coatings, and reagents.



Title of the Invention: **The influence of AI on supply chain management: mapping the domain**

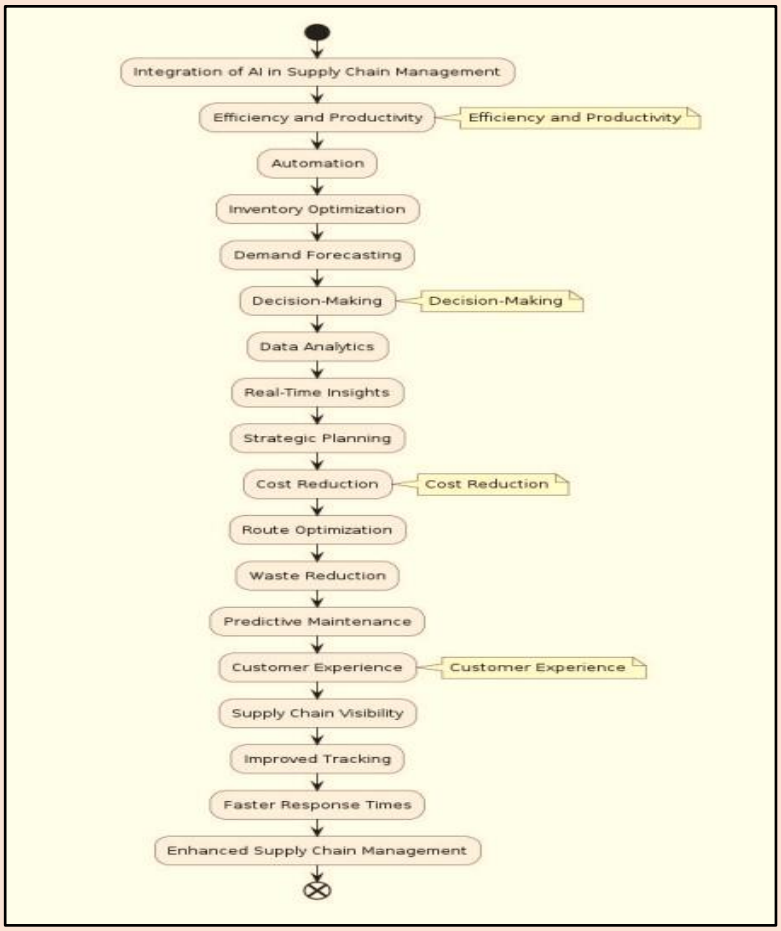
Application Number: 202411043923 A (Indian Patent Office)

Applicant(S): Ms. Arti Pandey (CSIT)

Date of Filing: 06-06-2024

Date of Publishing: 21-06-2024

Field of the Invention: The field of this invention pertains to the application of artificial intelligence (AI) technologies in the domain of supply chain management (SCM). The invention seeks to address the complexities and inefficiencies prevalent in traditional supply chain systems by leveraging AI-driven solutions. Supply chain management encompasses the planning, coordination, and control of goods, information, and financial flows from raw material suppliers to the end consumer. As supply chains become increasingly global and intricate, the necessity for advanced tools to enhance visibility, optimize operations, and improve decision-making has become paramount. This invention focuses on mapping the influence of AI technologies across various facets of SCM, including demand forecasting, inventory management, logistics optimization, and supplier relationship management.



Objective: Utilize AI to analyze historical data and predict future demand trends. • Implement AI-driven dynamic adjustments to inventory levels.

• Use AI for route optimization and real-time traffic analysis.

• Apply AI to evaluate and manage supplier performance and compliance.

• Develop AI platforms providing real-time supply chain insights.

• Employ AI and automation to streamline warehouse operations.

• Leverage AI to identify potential supply chain risks and develop mitigation strategies.

• Use AI to optimize resource usage and reduce environmental impact.

Title of the Invention: **Novel herbal hydrogel formulation of Cordia Dichotoma L. for wound healing activity in Wistar rats**

Application Number: 202411044113 A (Indian Patent Office)

Applicant(S): Dr. Snigdha Bhardwaj (KSOP)

Date of Filing: 06-06-2024

Date of Publishing: 21-06-2024

Field of the Invention: He present invention relates to the field of wound healing and regenerative medicine. Specifically, it pertains to the development of a novel herbal hydrogel

formulation incorporating an extract from the plant Cordia dichotoma L. This formulation is designed to enhance wound healing processes in mammalian subjects, particularly in Wistar rats.

Hydrogel-based wound dressings have gained significant attention due to their ability to maintain a moist environment, facilitate gas exchange, and promote autolytic debridement. The inclusion of herbal extracts in hydrogel matrices introduces bioactive compounds that can further augment the healing process. The invention leverages the medicinal properties of Cordia dichotoma L., known for its anti-inflammatory, antimicrobial, and antioxidant activities, to create a potent wound healing formulation.

Summary of the Invention: The present invention provides a novel herbal hydrogel formulation incorporating an extract of Cordia dichotoma L. to enhance wound healing. The formulation combines the therapeutic properties of Cordia dichotoma L. with the biocompatibility and moisture-retentive capabilities of a hydrogel matrix. This combination is designed to create an optimal environment for wound healing, leveraging the anti-inflammatory and antimicrobial effects of the plant extract.

The hydrogel formulation is composed of biocompatible polymers such as carboxymethyl cellulose (CMC), polyvinyl alcohol (PVA), and polyethylene glycol (PEG), with a cross-linking agent like glutaraldehyde or genipin to stabilize the structure. The inclusion of Cordia dichotoma L. extract enhances the wound healing process by promoting cell proliferation and tissue regeneration while reducing infection risks.

This innovative hydrogel formulation has been rigorously tested in Wistar rats, demonstrating significant improvement in wound healing compared to conventional treatments. The hydrogel not only accelerates wound closure but also enhances collagen deposition and re-epithelialization, indicating its potential as a superior wound healing agent. The present invention thus offers a promising alternative to existing wound care products, harnessing the natural healing properties of Cordia dichotoma L. within a scientifically advanced hydrogel system.

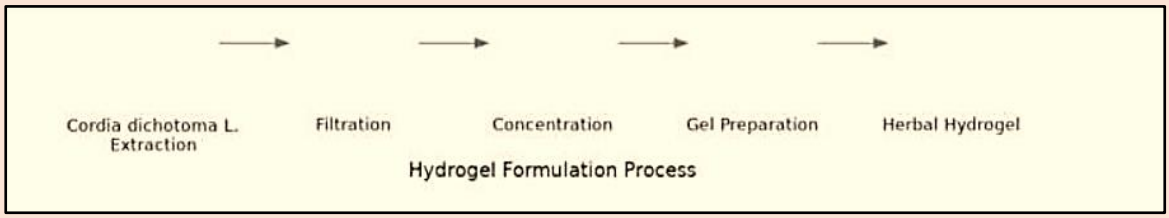


Figure 1: Illustrates the steps involved in creating the herbal hydrogel, from extraction to final formulation.

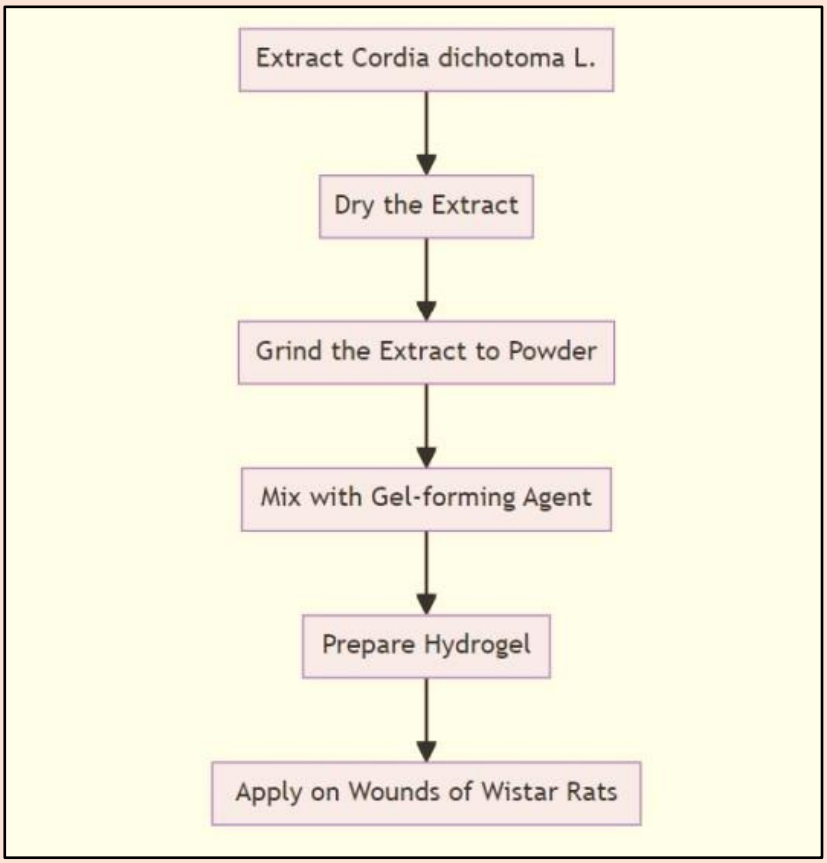


Figure 2: Illustrates a graph diagram of the process flow for the hydrogel formulation and application

Title of the Invention: **A computational material science system based on python powered data analysis**

Application Number: 202411045904 A (Indian Patent Office)

Applicant(S): Dr. Piyush Pant, Mr. Kuldeep Singh (ME)

Date of Filing: 13-06-2024

Date of Publishing: 21-06-2024

Field of the Invention: The present invention relates to a computational material science system based on python powered data analysis.

Objects of the Invention: The background information herein below relates to the present disclosure but is not necessarily prior art.

In the realm of material science, the quest for discovering new materials with enhanced properties and functionalities is perpetual. The advancement of computational methods has revolutionized the way researchers approach this challenge, allowing for the exploration of vast chemical spaces and the prediction of material behaviors with unprecedented accuracy. Python, with its extensive ecosystem of libraries and tools for data analysis and scientific computing, has emerged as a powerhouse in this domain. By harnessing the power of Python-powered data analysis, researchers can delve into complex material systems, analyze experimental and computational data, and uncover insights that were previously inaccessible.

Summary of the Invention: Accordingly, the following invention provides a computational material science system based on python powered data analysis. The Computational Material Science System (CMSS) powered by Python is a cutting edge platform designed to advance research and development in material science through sophisticated data analysis, simulation, and visualization. It integrates data from diverse sources and leverages Python's extensive libraries and high-performance computing capabilities to accelerate the discovery and optimization of materials. Key features include advanced data integration, machine learning for predictive modelling, interactive visualization, customizable workflows, and a collaborative environment supported by shared data repositories and notebooks.

The system's methodology encompasses comprehensive data collection and preprocessing, feature extraction, machine learning model development, and rigorous simulation and analysis. Data is stored in a centralized repository, processed through automated ETL pipelines, and analysed using high-performance computing clusters. The architecture includes a robust visualization engine, web-based dashboards, a notebook server for collaboration, and a secure interface layer ensuring data encryption and compliance with regulatory standards. This integrated approach facilitates efficient and secure material science research, enabling real-time insights and collaborative advancements.

Title of the Invention: **Integrating machine learning with web services for precision agriculture**

Application Number: 202411046385 A (Indian Patent Office)

Applicant(S): Mr. Anurag Mishra (CS)

Date of Filing: 15-06-2024

Date of Publishing: 21-06-2024

Field of the Invention: The present invention is related to the computer science and machine learning field. Modern agriculture increasingly relies on Internet of Things (IoT) devices and sensors to collect vast amounts of data from the field. These sensors monitor soil moisture, temperature, humidity, and crop health in real-time. The integration of Machine Learning (ML) with these web connected devices enables precise analysis and decision-making, enhancing crop management and resource utilization.

Objects of the Invention: Use Machine Learning algorithms to analyze real-time and historical data from various sensors and IoT devices to predict and optimize crop yield and quality. By providing actionable insights on optimal planting times, irrigation schedules, and pest control measures, farmers can make data-driven decisions that increase crop productivity and improve the overall quality of the produce.

Implement Machine Learning models to analyse data on soil conditions, weather forecasts, and crop health to optimize the use of resources such as water, fertilizers, and pesticides. This leads to more efficient resource management, reducing input costs and minimizing environmental impact by preventing overuse of chemicals and water, thus promoting more sustainable agricultural practices.

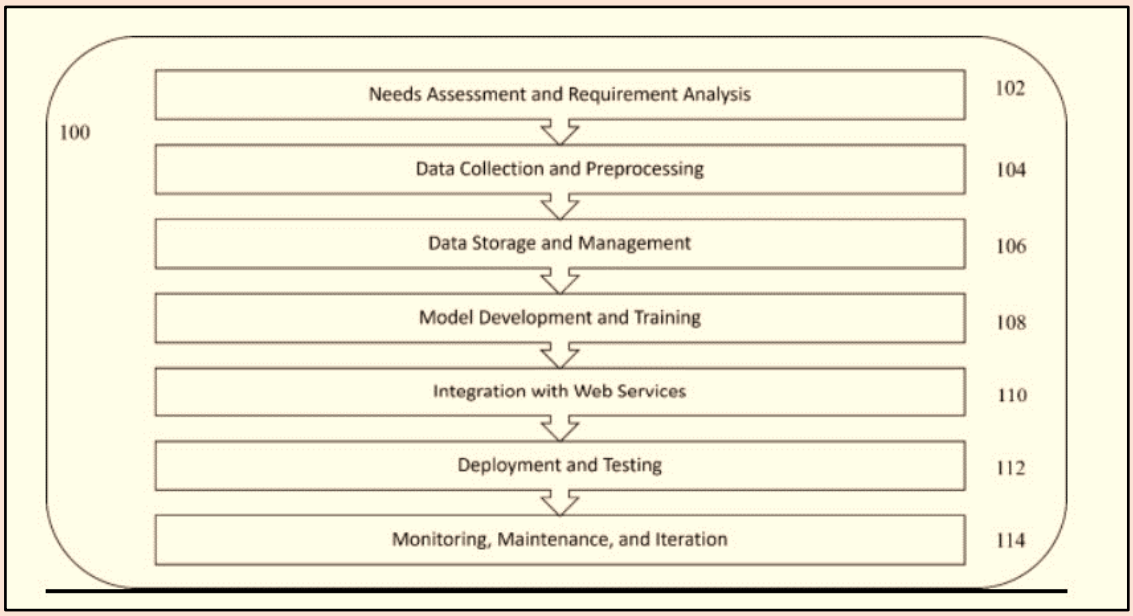


Figure 1: It represents working model in the present invention with its Prototype

PATENTS Published – June 2024

S. No.	Title Of Patent	Dept.	Name Of Applicant	Date Of Publication	Status
1.	Environment friendly technology for removal of heavy metal ion from waste water	AS	Dr. Sweta Shukla	14-06-2024	Published
2.	The influence of AI on supply chain management: mapping the domain	CSIT	Ms. Arti Pandey	21-06-2024	Published
3.	Novel herbal hydrogel formulation of Cordia Dichotoma L. for wound healing activity in Wistar rats	KSOP	Dr. Snigdha Bhardwaj	21-06-2024	Published
4.	A computational material science system based on python powered data analysis	ME	Dr. Piyush Pant, Mr. Kuldeep Singh	21-06-2024	Published

5.	Integrating machine learning with web services for precision agriculture	CS	Mr. Anurag Mishra	21-06-2024	Published
6.	System and method online household services	CS	Mr. Tanishq Vashishth, Mr. Shivam Kumar, Mr. Shivam Dhaiya, Mr. Rahul Kumar, Mr. Harsh Khatter	07-06-2024	Published
7.	System and method for virtual mouse: CLICK - AI	CS	Mr. Vivek Kumar Sharma, Mr. Suryansh Shukla, Mr. Sparsh Dagar, Mr. Sumit Agarwal, Mr. Harsh Khatter	07-06-2024	Published
8.	System and method for women security	CS	Mr. Nishu Gupta, Mr. Riya Bansal, Mr. Vaishnavi Sangal, Mr. Harsh Khatter	07-06-2024	Published
9.	System and method for sepsis detection	CS	Mr. Yash Puri, Mr. Vishal Verma, Mr. Yash Goel, Ms. Neha Shukla, Mr. Harsh Khatter	07-06-2024	Published
10.	System and method for virtual assistant	CS	Mr. Srijan Shahi, Mr. Suraj Gupta, Mr. Sushant Kumar Pandey, Ms.Neha Shukla, Mr. Harsh Khatter	07-06-2024	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.	Deepti Katiyar	Associate Professor	KSOP	Recent Advances in Electrochemical Biosensors Targeting Stress Markers. Comb Chem High Throughput Screen Combinatorial, Chemistry & High Throughput Screening	1.8	11,000	SCI
2.	Deepti Katiyar	Associate Professor	KSOP	Electrochemical Sensors for Detection of Phytomolecules: A Mechanistic Approach Combinatorial, Chemistry & High Throughput Screening	1.8	11,000	SCI
3.	Vipin Deval	Assistant Professor	CSE	Mobile Smart Contracts: Exploring Scalability	3.9	21,000	SCIE

				Challenges and Consensus Mechanisms; International Journal - IEEE Access" indexed in SCIE (Premier Research Publication Incentive) and published by IEEE			
4.	Shipra Singhal	Assistant Professor	KSOP	Recent advances and structure-activity relationship studies of DPP-4 inhibitors as anti-diabetic agents. Bio organic Chemistry" indexed in SCIE and published by Elsevier	5.1	15,000	SCIE
5.	Amit Kumar Arora	Associate Professor	KSOM	A Study of Awareness and Perception Regarding MOOC Courses with Special Reference to NPTEL. International Journal "Prabandhan: Indian Journal of Management"	3.3 (Cite Score)	5,000	SCOPUS
6.	Laxman Singh	Associate Professor	CSE-AIML	Design of an Efficient Integrated Feature Engineering based Deep Learning Model Using CNN for Customer's Review Helpfulness Prediction, Journal -Wireless Personal Communications	2.2	11,000	SPRINGER
7.	Abhas Kanungo	Assistant Professor	ECE	A design an optimized fuzzy adaptive proportional-integral-derivative controller for anti-lock braking systems; Engineering Applications of Artificial Intelligence	8.0	21,000	SCIE
8.	Ameer Faisal	Assistant Professor	EN	Optimization and techno-economic analysis of hybrid renewable energy systems for the electrification of remote areas; Wind Engineering	3.0 (Cite Score)	5,000	SCOPUS
9.	Mohit Tyagi	Assistant Professor	ECE	Performance Optimization of SAR ADC using Dynamic Controlled Comparator at 45 nm Technology for Biomedical and IoT Applications; Wireless Personal Communications	2.2	11,000	SCI

Highlights of the Published Journal Articles

1. Katiyar D, Manish. Recent Advances in Electrochemical Biosensors Targeting Stress Markers. Comb Chem High Throughput Screen 27(13):1877-1886. DOI: 10.2174/0113862073278547231210170007. PMID: 38279751, 2024.

Introduction: When the body experiences a change in its internal environment due to factors such as mood (euphoria, stress) and illness, it releases biomarkers in large quantities. These biomarkers are used for detecting a disease at its early stages. This involves the detection of insufficient quantities of biocomponents, which can be done by using nanomaterials, conventional materials, and biotechnology; thus, scientists can increase the sensitivity of

electrochemical sensors. According to studies conducted in this area, electrochemical sensors have shown promise as a diagnostic tool due to their ability to identify and pinpoint illness biomarkers. The present review article was compiled to gather the latest information on electrochemical biosensors targeting stress markers.

Materials and methods: The authors searched scholarly databases like ScienceDirect, Pubmed, Medline, and Scopus for information on electrochemical biosensors targeting stress markers.

Results: In this article, we looked at the recent developments in electrochemical sensors for stress monitoring. Because of advances in nanomaterial and biomolecule processes, electrochemical biosensors have been developed with the sensitivity to detect several biomarkers in real-time in therapeutically relevant materials.

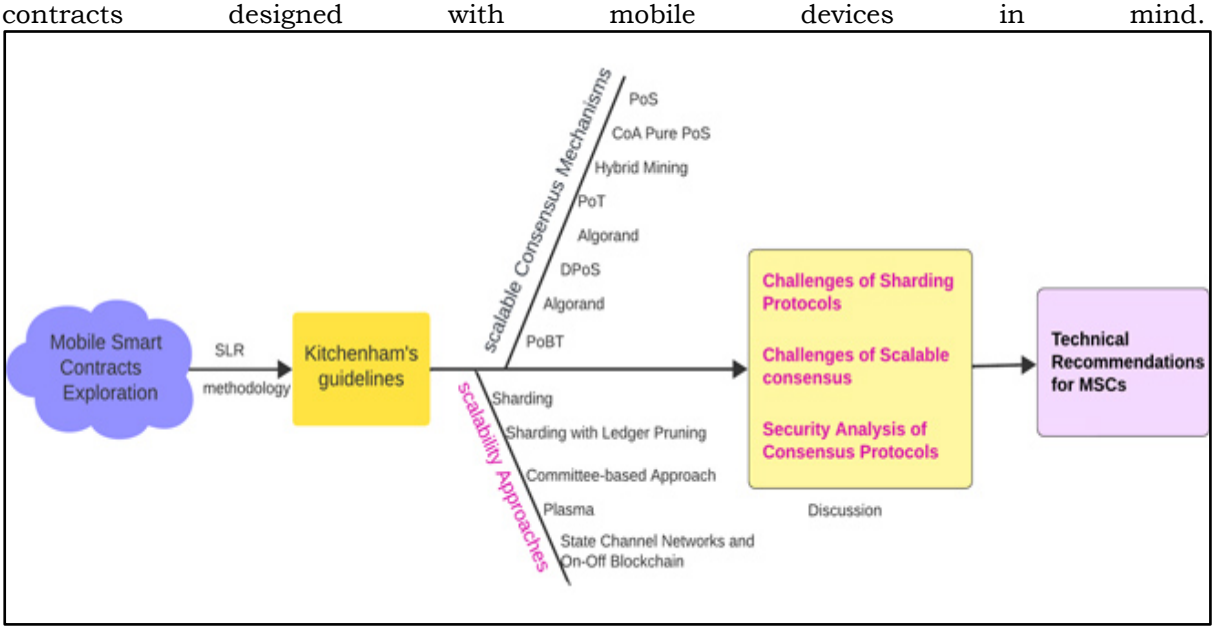
2. Katiyar D, Manish, Pal RS, Bansal P, Kumar A, Prakash S. Electrochemical Sensors for Detection of Phytomolecules: A Mechanistic Approach. Comb Chem High Throughput Screen. 2024;27(13):1887-1899. DOI: 10.2174/0113862073282883231218145941. PMID: 38279749.

High demand and ongoing technological advancements have created a market for sensors that is both varied and rapidly evolving. Bioactive compounds are separated systematically to conduct an in-depth investigation, allowing for the profiling or fingerprinting of different Plantae kingdoms. The profiling field is significant in elucidating the complex interplay of plant traits, attributes, and environmental factors. Flexible technology advancements have enabled the creation of highly sensitive sensors for the non-destructive detection of molecules. Additionally, very specialized integrated systems that will allow multiplexed detection by integrating many hybrid approaches have been developed, but these systems are highly laborious and expensive. Electrochemical sensors, on the other hand, are a viable option because of their ability to accomplish exact compound detection via efficient signal transduction. However, this has not been investigated because of some obstacles to learning minimum metabolites' fundamentals and nonredox properties. This article reviews the electrochemical basis of plants, contrasting it with more conventional techniques and offering both positive and negative perspectives on the topic. Because few studies have been devoted to the concept of merging the domains, we've expanded the scope of this work by including pertinent non-phytochemical reports for better report comparison.

3. V. Deval *et al.*, "Mobile Smart Contracts: Exploring Scalability Challenges and Consensus Mechanisms," in *IEEE Access*, vol. 12, pp. 34265-34288, 2024, DOI: 10.1109/ACCESS.2024.3371901.

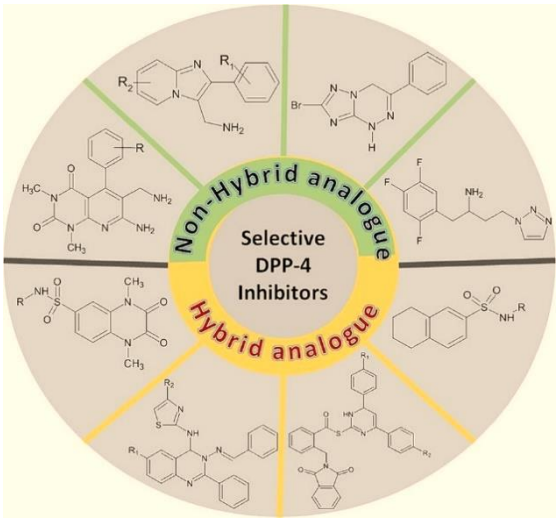
Mobile smart contracts (MSCs) are essential to facilitate quick, safe, and decentralized transactions on mobile blockchain networks. Scalable blockchain solutions facilitate the establishment of a mobile blockchain ecosystem characterized by enhanced resilience and adaptability. This encourages an increase in the number of users and, thus, spreads the adoption of blockchain technology in the mobile domain. With the inception of blockchain technology, a wide range of applications use smart contracts due to their high customizability. However, problems with scalability and resource-intensive consensus procedures prevent their general use. Therefore, this work seeks to identify and analyze these constraints by conducting a systematic survey using Kitchenham's guidelines for available scalable blockchains and consensus methods. Out of a preliminary pool of 2,073 publications, our study, which consists of 25 selected studies, identifies 12 consensus mechanisms and 13 scalable blockchain systems. Our investigation shows that, despite the wide range of techniques, no blockchain solution provides the scalability and lightweight operating requirements to implement smart contracts on mobile devices. This realization draws attention to a significant gap in academic and industry-driven blockchain research that may have implications for creating MSCs. Our findings encourage academics to explore scalable and energy-efficient blockchain technology, targeting creating more approachable smart

contracts designed with mobile devices in mind.



4. Shipra Singhal, Vaishali Manikrao Patil, Saroj Verma, Neeraj Masand, "Recent advances and structure-activity relationship studies of DPP-4 inhibitors as anti-diabetic agents, Bioorganic Chemistry, Volume 146, 107277, ISSN 0045-2068, 2024. https://doi.org/10.1016/j.bioorg.2024.107277

Diabetes mellitus (DM) is one of the largest public health problems worldwide and in the last decades various therapeutic targets have been investigated. For the treatment of type-2 DM (T2DM), dipeptidyl peptidase-4 (DPP-4) is one of the well reported target and has established safety in terms of cardiovascular complexicity. Preclinical and clinical studies using DPP-4 inhibitors have demonstrated its safety and effectiveness and have lesser risk of associated hypoglycaemic effect making it suitable for elderly patients. FDA has approved a number of structurally diverse DPP-4 inhibitors for clinical use. The present manuscript aims to focus on the well reported hybrid and non-hybrid analogues and their structural activity relationship (SAR) studies. It aims to provide structural insights for this class of compounds pertaining to favourable applicability of selective DPP-4 inhibitors in the treatment of T2DM.



5 Amit Kumar Arora, Santosh Kumar, Deepak Bansal, Swati Bansal, "A Study of Awareness and Perception Regarding MOOC Courses with Special Reference to NPTEL, Prabandhan: Indian Journal of Management, Volume 17, Issue 4, April 2024. DOI: 10.17010/pijom/2024/v17i4/173427

Purpose: The study aimed to determine the level of awareness among students regarding NPTEL MOOCs and the reasons for registering or not registering for the courses. Further, this study explored the impact of gender and qualification on the category of aware respondents.

Methodology: The study was a cross-sectional study for which data were collected from the Delhi-NCR region from January to March 2023. The study was based on primary data, considering 379 responses that were collected with the help of a structured questionnaire. The chi-square test and descriptive statistics were used to analyze the data.

Findings: The study found that receiving the certificate, being more convenient regarding timing and location, and having command over the subject were the perceived benefits of doing NPTEL courses. The main reasons for not finishing the course were time constraints, students' poor course selection, and loss of momentum as the course progressed. Gender was found to be independent of the category of aware respondents, while qualification was not found to be independent.

Practical Implications: It was recommended that universities, colleges, and teachers adopt blended learning, which included e-learning as well as face-to-face learning, to help students score more. The NPTEL course providers and teachers should spread awareness regarding the courses, as 31% of the respondents were not aware of NPTEL. The study recommended that students be more careful while choosing the course and complete the course to earn the certificate, which can enhance their curriculum and, in turn, help them get a good job.

Originality: Unlike prior research on the utility of MOOCs, the current work examined the learner's perception toward the NPTEL courses conducted by the premium institutions in India.

7. Sharma, S.P., Singh, L. & Tiwari, R. Design of an Efficient Integrated Feature Engineering based Deep Learning Model Using CNN for Customer's Review Helpfulness Prediction. *Wireless Pers Commun* 133, 2125–2161 (2023). https://doi.org/10.1007/s11277-023-10834-1

Online customer feedback is essential for promoting online buying. The e-commerce sector has experienced exponential growth since COVID-19. Now days the growth of any business in e-commerce industry is highly influenced by the online consumer reviews and a lot of research has been conducted by numerous researchers in this regard to determine the reviews helpfulness for experience and search based products. In the study, the author's aims to develop a convolutional neural network based binary classification model for assessing the usefulness of the products reviews through the analysis of consumer evaluations with reference to products and services in e-commerce. In this experiment, predicting helpfulness is considered as binary research problem in order to determine review helpfulness in association with the structural, emotional, linguistic, emotive, lexical, and voting feature sets. In this study, various machine learning algorithms viz., K-nearest neighbor (KNN), Linear regression (LR), Gaussian naive bays (GNB), linear discriminant analysis (LDA), support vector machine (SVM) and convolution neural networks (CNN) were used to build the classification models and their results were compared with each other and other existing state of art models. From the simulation results, it was observed that CNN outperformed over the above stated algorithms and other existing state-of-the-art classification models, achieving 99.72% and 99.97% accuracy for two different search and experience based datasets. Furthermore, the performance of these models were also evaluated in terms of precision, recall, and F1 score. The findings presented in this paper reveals the importance of machine learning models in selecting the quality products.

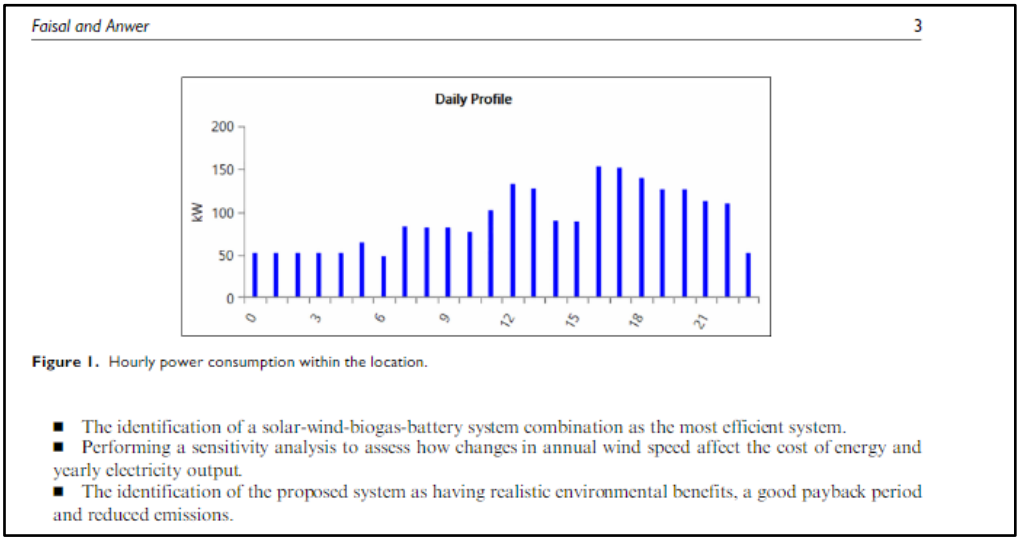
8. Abhas Kanungo, Pankaj Kumar, Varun Gupta, Salim, Nitin Kumar Saxena, "A design an optimized fuzzy adaptive proportional-integral-derivative controller for anti-lock braking systems, Engineering Applications of Artificial Intelligence, Volume 133, Part F, 2024, 108556, ISSN 0952-1976, https://doi.org/10.1016/j.engappai.2024.108556

This paper introduces a new control theory for optimizing anti-lock braking systems (ABS) in automotive applications. Anti-lock systems play a critical role in ensuring vehicle safety during braking by preventing wheel lock-up. However, conventional ABS control algorithms often struggle to adapt to changing road conditions and vehicle dynamics. The error tuning mechanism was not perfect because the occurrence of error is unique based on each application. In response to this challenge, we propose a new approach that combines fuzzy logic and adaptive proportional-integral-derivative (PID) control. The controller more robust to noise and uncertainties in the system. The present research work has concentrated on designing a novel Wavelet Fuzzy adaptive-hybrid Lion-strawberry Proportional-Integral-Derivative (WFA-HLSPID) for the ABS to maximize the control performance while it applied in the vehicle. Simulation results and comparative analysis demonstrate the superior performance of the proposed control theory when compared to traditional ABS systems. The optimized fuzzy adaptive PID control not only enhances vehicle stability during braking but

also improves stopping distance. In all cases, the stopping distance, slip rate, and friction have been validated using MATLAB/Simulink.

9. Ameer Faisal, Naqui Answer, "Optimization and techno-economic analysis of hybrid renewable energy systems for the electrification of remote areas" November 2023Wind Engineering 48(3) 48(3). DOI:10.1177/0309524X231210266

The welfare of the villages is one of the primary objectives of the rural electrification programmes. Compared to electrifying urban regions, electrifying rural areas is more expensive. Energy requirements in rural areas can be met using hybrid energy technologies. This study proposes a cost-effective power solution to reduce the net present cost (NPC), cost of energy (COE), unmet loads and CO2 emissions. Grey Wolf Optimizer (GWO) and Homer Pro are used to optimize the size of the components of the system. The combination of solar, wind and biogas with a battery storage system is cost-effective with zero unmet loads. Of the three combinations considered, the values of COE and NPC for combination-1 were 0.156 ($/kWh) and $2.05 M respectively. The comparative analysis of optimization between the GWO technique and Homer Pro carried out shows that the value of COE and NPC are reduced by 5.45% and 3.30% respectively



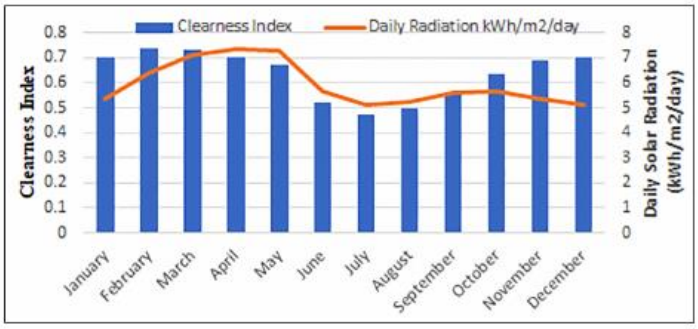


Figure 2. Monthly available average solar irradiation (From Homer Pro).

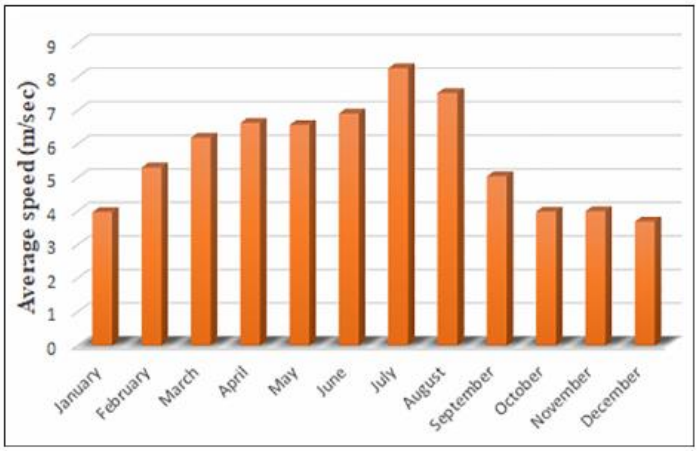


Figure 3. Yearly average wind speed in the proposed area (From Homer Pro).

10. Mohit Tyagi, Poornima Mittal, Parvin Kumar, "Performance Optimization of SAR ADC using Dynamic Controlled Comparator at 45 nm Technology for Biomedical and IoT Applications" Wireless Personal Communications 134(2), March 2024. DOI:10.1007/s11277-024-10971-1

Emerging biomedical applications such as electrocardiography, electroencephalogram, wireless implantable devices have required optimized power-based SAR ADC in them to reduce package cost and to extend battery life. In view of power optimized SAR ADC, a dynamic controlled comparator with novel static power reduction logic incorporated with common mode kickback noise reduction technique is designed at 45□nm technology in CADENCE Virtuoso in this paper. Designed comparator is analyzed in terms of performance parameters; static power dissipation, transient power dissipation, maximum sampling rate, offset voltage and delay. Simulation and behavior modeling analyses of proposed dynamic comparator has resulted in five times reduction in static power dissipation along with optimization of transient power and sampling rate as well compared to previously available double tail dynamic comparator. Moreover, it has been mentioned that proposed dynamic comparator is dissipating 2.36□pW of static power and 3.59nW of transient power with sampling rate of 240□KS/s at 0.5□ V. Further, the kickback noise of proposed design is limited to 4.7 mV with maximum delay of 124□ps. Finally, the novel outcomes of proposed comparator are the optimization in required parameters such as power, delay, offset voltage and kickback noise for biomedical applications as compared to double tail dynamic comparator. The proposed consideration for SAR ADC can become a backbone for low power biomedical applications.

Reimbursement of Conference Registration Fee

S. No	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Incentives	Published By
1.	Ajay Kumar	Assistant Professor	IT	Conference was organized by Amity University, U.P.	A Novel Framework to Evaluate Software Reliability Prediction Models Using Multi-Criteria Decision Making	8,270	IEEE
2.	Neha Shukla	Assistant Professor	CS	The International Conference was organised by Galgotias University, Greater Noida, U.P	Xcelerate5G: Optimizing Resource Allocation Strategies for 5G Network Using ML	7,000	IEEE
3.	Manish Tiwari	B.Tech, (IV Year) Student	CS	International Conference on Innovative Computing and Communication	Youtube Transcript Summarizer: Enhancing Accessibility and Content Discovery	2,575	IEEE
4.	Prateek Kumar	B.Tech, (IV Year) Student	CSE	2024 2nd International Conference on Disruptive Technologies (ICDT)	Yoga Pose Detection Using Artificial Intelligence and Machine Learning	4,000	IEEE
5.	Ayush Pratap Singh	Student B.Tech, 4th Year	CS	2024 2nd International Conference on Disruptive Technologies (ICDT)	Road accident analysis and classification system	4,000	IEEE
6.	Anshika Gupta	Student B.Tech, 4th Year	CSE	International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) 2024	Speech Emotion Recognition using Deep Learning	2,950	IEEE
7.	Rishika Gupta	Student B.Tech, 4th Year	CSE	International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) 2024	Desktop Voice Assistant: Leveraging the Current State-of-the-Art in Speech Processing"	2,950	IEEE
8.	Anamika Mall	Student B.Tech, 4th Year	CSE	International Conference on Reliability,	Supervised Machine Learning in Cardiology: A	2,950	IEEE

				Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) 2024	Predictive Model for Heart Disease		
9.	Abhay Gupta	Student B.Tech, 4th Year	CSE	2024 2nd International Conference on Disruptive Technologies (ICDT)	IOT-Based Automatic Bed Vacancy Detection in Hospital	4,000	IEEE
10.	Chirag Arora	Associate Professor	ECE	Conference was held at Cardiff School of Technologies, Cardiff Metropolitan University, Cardiff, UK	Periodic Rampart Line Inspired Circular Micro Strip Patch Antenna	12,500	Springer
11.	Harsh Khatter	Associate Professor	CS	2024 2nd International Conference on Disruptive Technologies (ICDT) was organized by Department of Computer Science & Engineering, GL Bajaj Institute of Technology & Management, U.P, India	Blind Image Restoration and Data Augmentation	8,000	IEEE
12.	Abha Kiran	Associate Professor	CSE-AIML	2nd International Conference on Disruptive Technologies (ICDT - 2024) was organized by GL Bajaj Institute of Technology & Management, Greater Noida U. P	A Comprehensive Analysis of Block Chain - Based Crypto Currency Systems for Real World Adoption	8,000	IEEE
13.	Kaustubh Gupta	B.Tech, (IV Year) Student	CSIT	International Conference on Computing for Sustainable Global Development	Binary Classification of student's dropout behaviour in Universities using machine learning algorithm	4,000	IEEE
14.	Harsh Srivastava	B.Tech, (IV Year) Student	CSE	International Conference on Reliability, Infocom Technologies and Optimization (Trends and	Facial Recognition-Based Student Attendance System	2,950	IEEE

				Future Directions) (ICRITO) 2024			
15.	Ayush Singh	B.Tech, (IV Year) Student	CSIT	International Conference on Innovative Computing and Communication	Sentimental analysis using chatbot	2,500	IEEE
16.	Rohit Yadav	B.Tech, (IV Year) Student	CSE	International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) 2024	ACNE DETECTION CARE SYSTEM USING DEEP LEARNING	2,950	IEEE

Highlights of the Published Conference Papers

1. Kumar, A. K. Singh and A. Garg, "A Novel Framework to Evaluate Software Reliability Prediction Models Using Multi-Criteria Decision-Making," *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, Noida, India, 2024, pp. 1-5, DOI: 10.1109/ICRITO61523.2024.10522124.

Software Reliability is one of the most important factors to consider when assessing a software product's quality. Numerous researchers have developed several software reliability prediction (SRP) models to aid in maintenance and replacement. However, each model may have varying capacity to predict software reliability in the context of many competing accuracy criteria. As the evaluation of SRP models involves various criteria, the problem of selecting the best SRP model can be modelled as the multi-criteria decision making (MCDM) problem. This study's goal is to propose a framework based on MCDM to assess the effectiveness of several SRP models taking into account a variety of competing accuracy measures as a whole. An experimental study was carried out for assessing the performance of ten SRP models over a software failure dataset considering four performance measures altogether in order to validate the proposed approach. Based on MCDM ranking, the model SOMFTS is suggested as the most suitable SRP model. According to the study's experimental findings the proposed MCDM based method may be successfully utilized as a decision-making tool to choose the best prediction model for predicting the software reliability.

2. N. Shukla, A. Siloiya, A. Singh and A. Saini, "Xcelerate5G: Optimizing Resource Allocation Strategies for 5G Network Using ML," *2024 IEEE International Conference on Computing, Power and Communication Technologies (IC2PCT)*, Greater Noida, India, 2024, pp. 417-423, DOI: 10.1109/IC2PCT60090.2024.10486750.

As we embrace the transformative era of 5G technology, promising unprecedented data rates, minimal latency, and extensive device connectivity, the need for effective resource allocation becomes paramount. This research delves into the realm of machine learning, specifically exploring linear regression, support vector machines (SVM), and k-nearest neighbor (KNN) models to optimize resource allocation in 5G networks. Examining previous research, we uncover a focus on training models to assess incoming traffic and predict network slices for unknown device types using key performance indicators (KPIs) [1]. To enhance resource utilization, our study introduces and compares three machine learning models: linear regression, SVM, and KNN. These models forecast optimal resource allocation based on past network data and user trends. While linear regression offers simplicity, SVM and KNN present more sophisticated and adaptive models. In the dynamic conditions of 5G networks, machine learning-based resource allocation outperforms traditional methods, excelling in bandwidth

efficiency, user satisfaction, noise reduction, and signal strength. Key considerations include accuracy, scalability, and resource distribution for various application types. This study underscores the significance of machine learning techniques, contributing to a deeper understanding of resource allocation in 5G networks. It provides comprehensive insights into the advantages and limitations of linear regression, SVM, and KNN models, empowering network operators and researchers to make informed decisions that enhance the overall performance and efficiency of evolving 5G networks across diverse use cases.

3. Chauhan, Vishakha and Tiwari, Manish and Bharadwaj, Harsh and Goswami, Ishita and Pareeka, Shreela, YouTube Transcript Summarizer: Enhancing Accessibility and Content Discovery (May 17, 2024). http://dx.doi.org/10.2139/ssrn.4832193

In the digital age, YouTube has become a vital platform for sharing a wide range of content, including educational and entertaining videos. The vast video content inventory on the network poses challenges for users seeking brief and informative summaries. This study offers a fresh solution: a YouTube transcript summarizing tool that operates automatically. This summary tool uses machine learning and natural language processing techniques to automatically construct concise and coherent summaries of YouTube video transcripts. The system uses speech-to-text technology to transcribe audio content. Next, it employs advanced text summarizing algorithms to extract key concepts, ideas, and insights. By providing a quick and efficient means of understanding the video's content, the summaries aim to make YouTube more accessible to users with varying accessibility needs or time constraints. The study analyzes the Automatic YouTube Transcript Summarizer's design concepts and technical specifications. It also assesses the summarizer's accuracy, coherence, and efficiency. It also looks at how this technology might affect user engagement, accessibility, and content discovery. The results show that by assisting users in identifying films that rapidly suit their interests and requirements, the summarizer can increase content discovery and make YouTube content much more accessible. This study contributes to the increasing corpus of research focused at boosting user experience on sites like YouTube and making online multimedia material more accessible. In the end, both content producers and users stand to gain from the Automatic YouTube Transcript Summarizer's viable approach to effectively summarizing and navigating the abundance of information available on the platform.

4. R. Singh, P. Kumar, M. H. Ansari and M. Dwivedi, "Yoga Pose Detection Using Artificial Intelligence and Machine Learning," *2024 2nd International Conference on Disruptive Technologies (ICDT)*, Greater Noida, India, 2024, pp. 887-892, DOI: 10.1109/ICDT61202.2024.10489410.

The study of yoga pose detection with the help of AI and ML aims to develop automatic structures that are capable of spotting and classifying yoga poses solely based on visible input. This age can help yoga experts, teachers, and fans by introducing ongoing criticism, customized direction, and, in general, execution checking. The site's artificial intelligence model can accurately identify various stances thanks to its extensive dataset of yoga poses. The proposed web application can help yoga professionals who need to improve their accuracy and educators who need to remotely monitor their students' progress. The crucial elements encompassing the positions of significant body joints are vital for a comprehensive understanding of each pose. Annotation plays a pivotal role in educating the machine learning model, where experts manually label key factors within the dataset and associate them with specific yoga poses. This annotated dataset serves as the cornerstone for education and evaluation in the development process.

5. P. Singh, A. Srivastava, A. Jain and H. Khatter, "Road Accident Analysis and Classification System," *2024 2nd International Conference on Disruptive Technologies (ICDT)*, Greater Noida, India, 2024, pp. 27-31, DOI: 10.1109/ICDT61202.2024.10489515.

Road accidents persist as a critical global concern, resulting in substantial loss of life and economic burden. This research paper delves into the underlying causes of these accidents, which often stem from a multitude of factors including weather conditions, road surface conditions, and driver behavior. Leveraging machine learning algorithms and data visualization tools, we have developed a predictive model that identifies accident severity. The

system integrates real-time weather data, providing a dynamic and comprehensive view of road conditions. By accurately forecasting accident severity, we aim to significantly reduce response times for emergency services and enhance overall traffic safety. This paper provides an overview of our approach, detailing the technologies employed and their potential impact on mitigating the pervasive issue of road accidents.

6. D. Garg, A. Singh, A. Gupta and S. Sharma, "Speech Emotion Recognition using Deep Learning," *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, Noida, India, 2024, pp. 1-6, DOI: 10.1109/ICRITO61523.2024.10522204.

Speech Emotion Recognition (SER) is an emerging field that involves recognizing emotions conveyed in speech. Emotions expressed through speech can greatly impact decision-making. This paper delves into the topic of speech emotion recognition (SER) and its focus on interpreting emotions conveyed through spoken language. The importance of SER lies in its potential to improve human-computer interaction, cognitive analysis, and psychiatric assessment. The study combines and preprocesses audio data from various datasets, such as RAVDESS, CREMA-D, TESS, and SAVEE, and uses log mel spectrograms to effectively extract features. Various methods including CNN models, and standard and optimized feature extraction techniques are used. The results suggest that SER has significant real-world applications and the approaches provided effectively identify emotional and voice signals.

7. Pandit, Saksham et al. "Desktop Voice Assistant: Leveraging the Current State-of-the-Art in Speech Processing." *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)* (2024): 1-5.

Virtual voice assistants have transformed the way humans interact with computers, especially with mobile devices. This study examines the latest advancements in speech processing technologies to create a virtual voice assistant for desktop users. We examine the latest progress in speech recognition, natural language processing, and dialogue control. Important factors to consider are precision in quiet environments, compatibility with current desktop processes, and customization that suits user choices. We examine the possible advantages and obstacles of this approach, as well as identify areas for future research. This study proposes to connect mobile and desktop voice assistants using modern speech processing technologies, providin4g users with a smooth and effective method to control their computers through voice commands.

8. Mall, A. Singh, A. Bansal and H. K. Gupta, "Supervised Machine Learning in Cardiology: A Predictive Model for Heart Disease," *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, Noida, India, 2024, pp. 1-7, DOI: 10.1109/ICRITO61523.2024.10522122.

One of the worst diseases in the world, heart disease takes a great toll on lives every year. In order to treat this potentially fatal illness, a tool or gadget must be practical, accurate, and dependable. This will allow for prompt detection or prediction, which will lead to efficient treatment and a decline in death rates. The heart is the most important organ in the human body, second only to the brain, and it is vital to the circulation of blood to all organs. A swift and accurate diagnostic method is imperative to mitigate the high mortality associated with cardiac disorders. Predicting the incidence of these disorders holds paramount importance in the medical domain. In the contemporary era, machine learning techniques prove invaluable for predicting and automating the interpretation of extensive and intricate datasets in various fields, including medicine. This research introduces a statistical model for heart disease, aiding medical examiners and cardiac practitioners in forecasting based on fundamental aspects of a patient's health history. The model, constructed using a Decision Tree, achieves an impressive accuracy of approximately 97%. The crucial functions of machine learning, data analytics, and data mining highlight how important these technologies are to improving the diagnosis and treatment of cardiac disorders.

9. A. Gupta, A. Gupta, P. Vashisht and M. Dwivedi, "IoT-Based Automatic Bed Vacancy Detection in Hospital," *2024 2nd International Conference on Disruptive*

***Technologies (ICDT)*, Greater Noida, India, 2024, pp. 893-897, DOI: 10.1109/ICDT61202.2024.10489486.**

An efficient bed availability tracking system is necessary. In India, the availability of beds in hospitals is a big problem. Many times, people face issues related to the availability of many things. Whether it pertains to sleeping arrangements, seating options, or any other type of physical location, this has been perceived as a challenge by our team. This project aims to develop a system using IoT and the Web. That would be able to detect the availability of beds. It will not only be beneficial for the person who is looking for a bed but also for the hospital administration to manage and distribute it in a well-mannered way. The condition of bed availability in India is very poor. People look for treatment for many days. This situation in rural areas has even worsened, where many people die due to a lack of proper treatment and ignorance by the hospital. If they can book a bed from their place in advance, then it will be best for people and hospitals. And this is also beneficial for hospitals, as they can extend the beds for emergencies. We completed this project with the help of a sensor (an IR sensor) to detect the presence of a person, Arduino as the heart of the system, and different kinds of IoT devices.

10. Arora, C. (2023). Periodic Rampart Line Inspired Circular Microstrip Patch Antenna. In: Bhateja, V., Carroll, F., Tavares, J.M.R.S., Sengar, S.S., Peer, P. (eds) Intelligent Data Engineering and Analytics. FICTA 2023. Smart Innovation, Systems and Technologies, vol 371. Springer, Singapore. https://doi.org/10.1007/978-981-99-6706-3_18

In this paper, authors have designed a conventional circular microstrip patch antenna, which resonates at 3.8 GHz WiMAX applications. This conventional patch antenna forms a two-layer stacked structure by loading a periodic leaky wave structure in its dielectric layer to improve its gain and bandwidth. Conventional circular patch antenna resonates at 3.8 GHz with gain and bandwidth of 4.5 dBi and 350 MHz. However, under loaded conditions, the same antenna presents the gain and bandwidth of 6.4 dBi and 450 MHz, respectively, for same resonant frequency. FR-4 substrate measuring 1.48 mm thick makes up both the layers.

11. H. Khatter, N. Tyagi, A. Tayal and P. Gupta, "Blind Image Restoration and Data Augmentation," *2024 2nd International Conference on Disruptive Technologies (ICDT)*, Greater Noida, India, 2024, pp. 32-37, DOI: 10.1109/ICDT61202.2024.10489715.

This paper introduces an innovative method and system that harnesses the collaborative potential of Generative Adversarial Networks (GANs), specifically GFP-GAN (GFP Generative Adversarial Network), and StyleGAN, to significantly enhance image pixel quality, with a primary focus on facial images. Concurrently, it facilitates the streamlined creation of augmented datasets, fostering advancements in a multitude of applications. At its core, the proposed method embodies two pivotal functions: Leveraging the capabilities of GFP-GAN; this function orchestrates the intricate process of pixel-level detail restoration, imperfection rectification, and visual quality enhancement in facial imagery. The outcome is a transformative enhancement of pixel precision, revolutionizing the landscape of image processing. Seamlessly integrating StyleGAN with GFP-GAN's output; this function efficiently generates augmented datasets. These datasets, marked by their dynamism and complexity, emerge as indispensable assets in the realm of machine learning, powering applications ranging from facial recognition to object detection and image synthesis. The proposed method's inherent strengths encompass its ability to redefine image pixel enhancement, elevate the standards of facial imagery, and expedite the production of augmented datasets. It capitalizes on the harmonious synergy between GFP-GAN and StyleGAN, delivering a comprehensive and cohesive solution that transcends traditional image processing boundaries. As an outcome, the paper represents a pioneering leap forward in image processing and machine learning, offering an unprecedented combination of pixel enhancement and dataset augmentation capabilities, particularly in the context of facial imagery and its multifaceted applications.

12. K. Rajpoot, K. Gupta, G. Agrawal and R. Kashyap, "A Comprehensive Analysis of Block Chain-Based Crypto Currency Systems for Real-World Adoption," *2024 2nd*

***International Conference on Disruptive Technologies (ICDT)*, Greater Noida, India, 2024, pp. 699-704, DOI: 10.1109/ICDT61202.2024.10489555.**

This article provides a thorough analysis of block chain-based crypto currency systems for actual widespread adoption. It provides a thorough analysis of the cryptographic protocols used in these systems and how they are applied in the context of business. Additionally, it offers an assessment framework that considers all of the security and usability characteristics of crypto currencies and lets you examine their likelihood of becoming widely adopted globally. The study takes into account a number of important factors, including law, privacy, scalability, and individual experience, in an attempt to accurately determine whether a crypto currency machine is feasible. The analysis's conclusions suggest that the highest levels of protection and usability can be achieved by currently available block chain-based complete systems. Nonetheless, their scalability, policy compliance, and user experience continue to be challenging issues that require thoughtful attention to ensure a successful genuine global adoption.

13. K. Gupta, K. Gupta, P. Dwivedi and M. Chaudhry, "Binary Classification of Students' Dropout Behaviour in Universities using Machine Learning Algorithms," *2024 11th International Conference on Computing for Sustainable Global Development (INDIACom)*, New Delhi, India, 2024, pp. 709-714, DOI: 10.23919/INDIACom61295.2024.10498546.

Higher Education institutions throughout the globe face challenges in maintaining their student retention. Therefore, there is a need for a mechanism to find students who might be susceptible to leave their studies. The research paper focuses on minimising the occurrences of university dropouts in higher educational institutions by identifying students who maybe at a higher chance of failing in the university path. The research employs a dataset acquired from an institute, encompassing information that was accessible at the beginning of students' enrollment, including their university background, demographic characteristics, and socio-economic circumstances. The dataset consists of Target variable categorized into Graduate, Dropout and Enrolled classes. The important features with respect to Target variable were extracted for building the model. The model is built using the observations of Graduate and Dropout class in the dataset for constructing the model and then classify the Enrolled class students into Graduate and Dropout class. Eight machine learning algorithms were deployed for building the model and the best algorithm was selected for classification of the enrolled students. These findings would enable the university administration to deploy prompt assistance programmes to aid the currently enrolled students which are likely to dropout in future in order to minimize the number of dropouts in university.

14. Raj, H. Srivastav, S. Shukla, Vipin and N. Gupta, "Facial Recognition-Based Student Attendance System," *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, Noida, India, 2024, pp. 1-5, DOI: 10.1109/ICRITO61523.2024.10522165.

Face recognition holds significance in image processing and serves as a vital application in the technical domain. Its role is pivotal, particularly in authentication tasks, such as recording student attendance. A system for tracking attendance utilizing facial recognition involves the identification of students through the analysis of their facial characteristics, employing advanced monitoring technology and computer algorithms. The creation of this system aims to modernize the conventional method of recording attendance, which typically entails verbally calling out names and manually keeping track of attendance using pen and paper. The existing manual method for recording attendance is laborious and consumes a significant amount of time, and there's a risk of attendance data being altered easily. Traditional methods of recording attendance, along with current biometric systems, are susceptible to being bypassed by proxies. This paper presents a solution to tackle these challenges. The proposed system incorporates SVM, Haar classifiers, CNN, KNN, Gabor filters, and Generative Adversarial Networks for facial recognition. Post-facial identification and attendance records are produced and saved in Excel format. The system undergoes testing across different scenarios, including varying light conditions, head motions, and changes in the distance between the student and the camera. Following thorough testing, the system's overall complexity and accuracy were assessed. The proposed solution has

demonstrated effectiveness and resilience as a tool for classroom attendance management, eliminating the need for manual labor and time consumption. The system is economically efficient and needs only minimal installation.

15. Singh, Ayush and Singh, Akshay Pratap and Kushwaha, Akash and Gupta, Aman Kumar and Vashisht, Dr. Rohit, Sentimental Analysis Using ChatBot (May 18, 2024). Available at SSRN: http://dx.doi.org/10.2139/ssrn.4832562

"A lot of people appear to be under stress due to constant work or overanalyzing. Individuals could feel alone and unable to communicate their feelings to other people. In this situation, a chatbot system that can identify an individual's emotion from text should be developed. A system like this should make it easier to identify the emotions of other individuals and provide a way for them to communicate and convey their feelings to the chatbot. The goal of this research project is to create a conversational chatbot that can help people communicate effectively. We are utilizing the NLP technique to identify a person's emotions through chatbot conversations."

16. R. Yadav, A. Jain and S. Sharma, "Acne Detection Care System using Deep Learning," *2024 11th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO)*, Noida, India, 2024, pp. 1-5, DOI: 10.1109/ICRITO61523.2024.10522412.

Millions of people worldwide suffer from acne, a common dermatological ailment that frequently causes both physical and psychological discomfort. The prevalence of acne, a common skin condition, poses a significant challenge to dermatologists and individuals seeking effective skincare solutions. This research introduces 'Acne Care', an innovative system that leverages deep learning techniques and Reset18 application for the detection and personalized care of acne. This model analyse various skin abnormalities and make a severity detection system based on the classification using deep learning algorithms. This ensemble model could accurately predict the number, location, and severity of acne at the same time. It might also be a useful tool for the patient to self-test and help the doctor diagnose them. This paper presents the development, methodology, and potential impact of this model, addressing the growing need for more efficient and effective acne management. The findings of this research paper contribute to the development and advancement of deep learning-based regression models to assess the severity level of acne lesions from selfie images and their management.

Innovation Spotlights of the Month

Curative Therapies

A fundamental shift is occurring in the approach to treating illnesses, moving from disease management to achieving complete cures. Curative treatments, including cell and gene therapies, are transforming the treatment landscape for chronic and complex conditions by negating the necessity for prolonged therapy.
Gene therapy involves the introduction of genetic material into cells to counteract defective genes or to produce a beneficial protein. Viruses that have been genetically modified typically serve as the primary vectors in gene therapy applications.

Mogrify – Cell Therapy

Mogrify is a British startup that develops a proprietary direct cellular conversion platform to transmogrify any mature human cells. The platform technology identifies the transcription factors or small molecules required to convert any mature cell into any other mature cell type by analyzing sequencing data and regulatory networks. Mogrify develops novel cell therapies for musculoskeletal, auto-immune, and cancer immunotherapy, as well as ocular and respiratory diseases.

Lacerta Therapeutics – Gene Therapy

The US-based Lacerta Therapeutics is a clinical-stage gene therapy startup working on cures for the central nervous system and lysosomal storage diseases. The startup's proprietary adeno-associated virus (AAV) vector technology platform develops novel AAV vectors with improved transduction, tissue- or cell subtype-selectivity, and immune escape profiles. Lacerta further offers novel capsid variants and a scalable vector manufacturing platform with limited production components.

Mogrify looks to transform cell therapy development

Source: **https://www.startus-insights.com/**

Saturn Ejects Comet A117uUD into Interstellar Space

In 2024, scientists made a significant discovery when they announced that comet A117uUD had been ejected from our solar system after a close encounter with Saturn.

Discovery of Comet A117uUD
The comet, A117uUD, was discovered by the Asteroid Terrestrial-impact Last Alert System (ATLAS) on June 14, 2024. Researchers studied its path around the Sun using 142 tracking observations.

Impact of Saturn's Gravity

In 2022, A117uUD had a close encounter with Saturn. The planet's strong gravity changed the comet's path, sending it into a very elongated orbit and eventually ejecting it from the solar system at a speed of about 10,800 km/h. This event is only the second time scientists have documented a comet being thrown out of the solar system by a planet's gravity. The first time was with Comet C/1980 E1 (Bowell) and Jupiter in 1980.

Insights from the Ejection

Studying A117uUD's path provides valuable insights into how gravity affects objects in space. This event suggests that comet ejections might happen more often than previously thought, challenging the idea that they are rare. As A117uUD travels into interstellar space, it joins a growing list of objects from outside our solar system, helping scientists learn more about space mechanics and the chances of future encounters with similar objects.

Role of ATLAS

The ATLAS system played a crucial role in discovering and monitoring A117uUD, highlighting its importance in expanding our knowledge of the solar system and unusual celestial events. Scientists will continue to observe A117uUD to uncover more mysteries about our solar system and prepare for possible future encounters with interstellar objects.

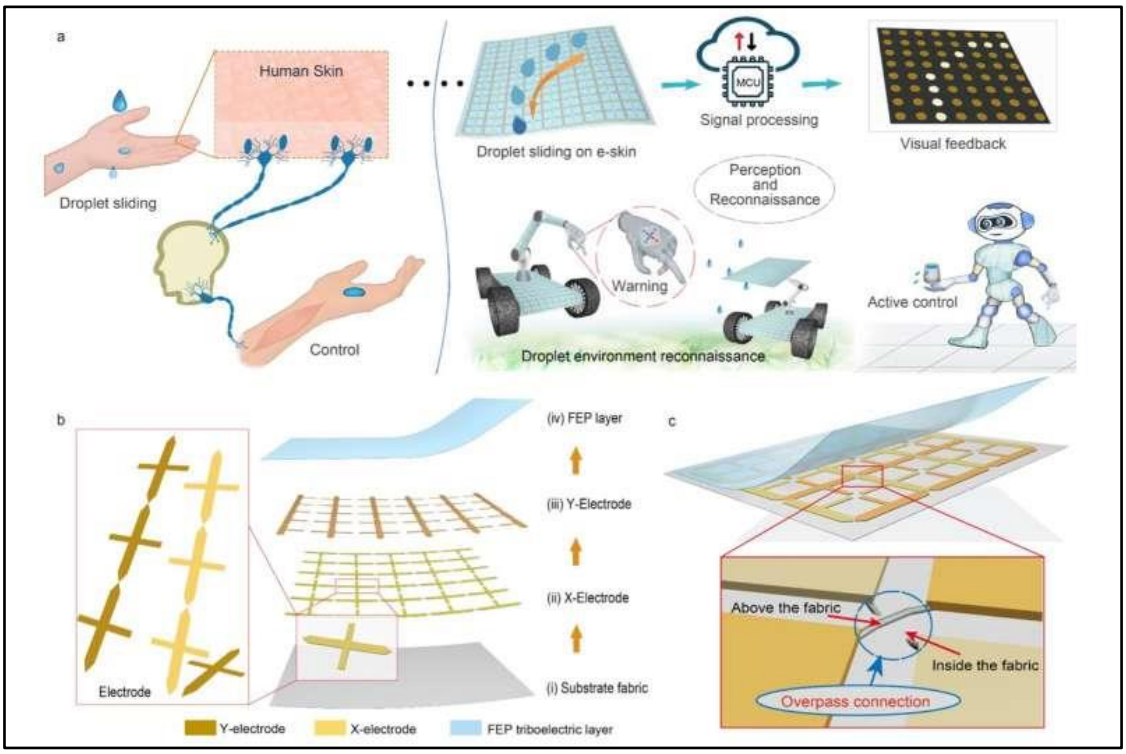
Saturn Facts:

- **Size and Rings:** Saturn is the second-largest planet in our solar system, famous for its spectacular rings made of ice and rock.
- **Moons:** It has 83 confirmed moons, with Titan being larger than the planet Mercury.
- **Winds:** Saturn's winds can reach speeds of 1,100 miles per hour.
- **Composition**: It is a gas giant primarily made of hydrogen and helium.
- **Density**: Despite its size, Saturn is so light that it could float in water.
- **Color:** The planet's yellowish color comes from ammonia crystals in its atmosphere.

Source: https://www.gktoday.in/saturn-ejects-comet-a117uud-into-interstellar-space/

E-Skins That Detect Liquid Movement On Robots

Researchers from Donghua University & the National University of Singapore have developed an e-skin that detects liquid movement on surfaces and converts it into electrical signals.



Numerous research groups have recently focused on developing electronic artificial skins for humanoid robots, smart prosthetics, and bio-inspired systems. These skins would detect object textures and tactile qualities, helping systems make decisions based on the tactile information gathered.

A team from Donghua University and the National University of Singapore recently created an electronic skin (e-skin) capable of detecting surface liquid movement. The e-skin translates the motion of sliding droplets into electrical signals, which are fed to an indicator.

Humans naturally sense the movement of liquid droplets on their skin, a helpful skill for handling tasks in moist environments. To mimic this ability in their electronic skin, Bai and his team were inspired by a common sight: a soccer ball rolling across a floor tile.

The Dynamic Electronic Skin (DES) developed by the research team features a network of interwoven electrodes. These electrodes can detect different dynamic sliding behaviours of droplets and convert the friction generated into electrical signals.

The ability to perceive the sliding behaviour of droplets is primarily due to the clever design of a network of co-layered, interlaced electrodes. This network features two separate series of electrodes on the same layer, which do not conduct to each other. Additionally, the design maintains an equal induction distance between the droplet and each series of electrodes.

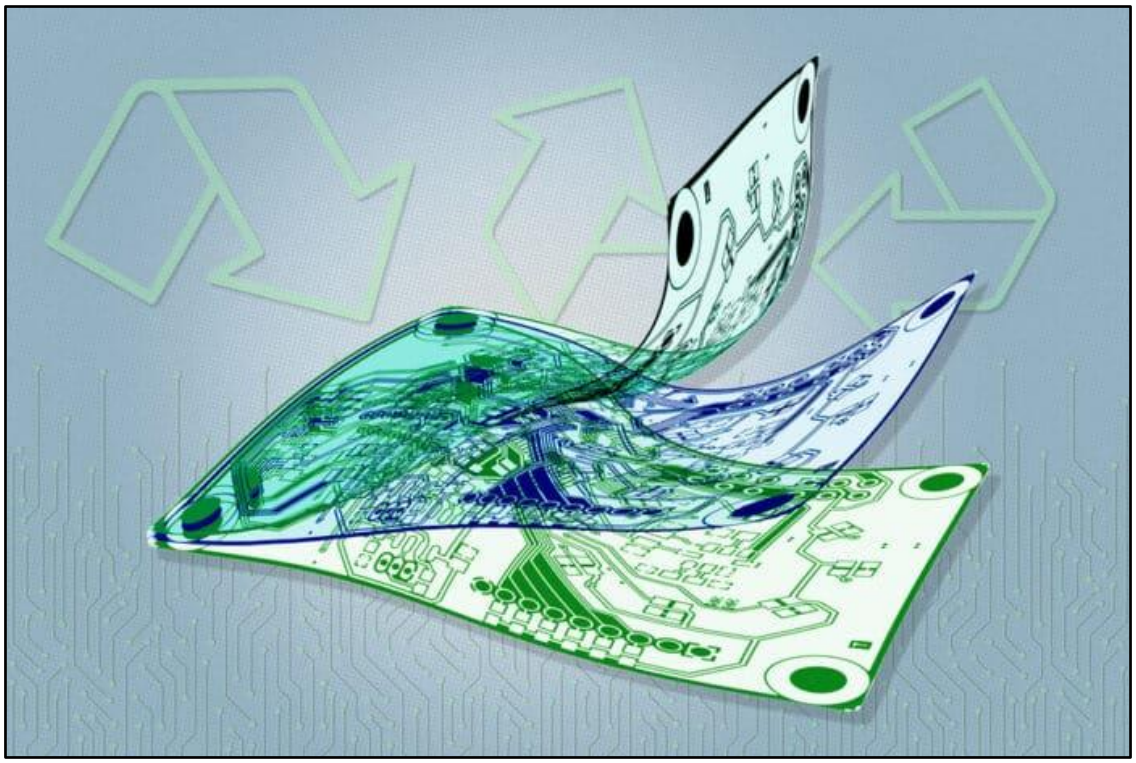
Once the e-skin transforms the sliding droplet movements into electrical signals, it transmits a visual representation of these movements to an indicator. Additionally, the skin is capable of tracking the direction of droplet flow and managing water leakage.

The e-skin described in this recent study may soon be implemented in robotic systems for further performance evaluations. Looking ahead, it has the potential to enhance humanoid robots by providing them with more sophisticated tactile sensing abilities, thereby narrowing the sensory perception gap between humans and robots.

Reference: Yunlong Xu et al, Bionic e-skin with precise multi-directional droplet sliding sensing for enhanced robotic perception, *Nature Communications* (2024). DOI: 10.1038/s41467-024-50270-8

New Material for Flexible Electronics Could Reduce E-Waste

Degradable materials are emerging as a solution to the fast-growing issue of electronic waste, enabling the recycling of components from various single-use and wearable devices.



Electronic waste is a rapidly growing global problem, expected to worsen with the production of new flexible electronics for various applications, including single-use devices. A new flexible substrate material developed at MIT, the University of Utah, and Meta enables the recycling of materials and components at the end of a device's life and facilitates the scalable manufacture of more complex multilayered circuits.

Most research has focused on entirely different polymer materials, but this approach overlooks the commercial reasons behind the initial choice of materials, explains Wallin. Kapton, for example, is widely used due to its excellent thermal and insulating properties and the ready availability of its source materials. Due to its high heat tolerance, the polyamide market, projected to reach $4 billion globally by 2030, is pervasive in electronic devices, including flexible cables in cellphones and laptops and in aerospace applications.

Despite its advantages, Kapton cannot be melted or dissolved, making reprocessing impossible and complicating the manufacture of advanced multilayered electronics. Traditional Kapton production requires heating to 200-300 degrees Celsius, a slow process taking hours, according to Wang.

The team developed an alternative polyimide-based material compatible with existing manufacturing infrastructure. This light-cured polymer, akin to dental materials that harden quickly under ultraviolet light, cures rapidly at room temperature. This new material could serve as a substrate for multilayered circuits, significantly increasing the number of components in a small form factor.

Unlike Kapton, which requires layers to be glued together, adding steps and costs, the new material can be processed at low temperatures and hardens quickly on demand, creating new multilayer devices.

For recyclability, the team incorporated subunits into the polymer backbone that can be quickly dissolved by an alcohol and catalyst solution, allowing for the recovery and reuse of precious metals and entire microchips from the solution for new devices.

References: **https://www.electronicsforu.com/news/new-material-for-flexible-electronics-could-reduce-e-waste**

Newspaper: Monthly Technical Spotlights

Railways to install optical fibre-based system to detect elephant crossing

Abdul Latheef Naha
PALAKKAD

The Railways will soon install an optical fibre-based intrusion detection system (IDS) along the elephant infested 33-km stretch between Kottekkad and Madukkarai to prevent elephant deaths on the tracks. The Southern Railway is installing the system for the first time after its successful implementation in the Northeast Frontier Railway (NFR).

Palakkad Divisional Railway Manager Arun Kumar Chaturvedi said the ₹15.4-crore work would be done on a war footing. "We expect to finish the work by this December," Mr. Chaturvedi told *The Hindu*.

A wild elephant crossing the railway track at Kottekad, where the Railway is planning to install intrusion detection system. FILE PHOTO

According to railway officials, the project is likely to be costlier as it involves laying of optical fibre cable along both sides of the A and B rail lines between Kottekkad and Madukkarai. In effect, the cable network has to be laid for about 130 km.

The optical fibre network will detect the presence of animals, big and small, through vibrations and send real-time alerts to the intrusion monitoring cell, stationmasters and loco pilots. "We will soon calibrate the signals for a variety of animals as well as vehicles. If it's a deer, the signals will say it. And if it's a jeep, it will be identified," Mr. Chaturvedi said.

There will be no cameras for the IDS. It will rather be depending on acoustics and optics. The exact location of the encroaching elephants will be passed to loco pilots and stationmasters.

Ideally the cable has to be laid about 100 metres wide of the tracks on both sides. However, officials are worried about the lack of enough railway land. "If the fibre is laid close to the tracks, then loco pilots may not get enough time to respond to an alarm. Elephants sometimes step on to the tracks out of nowhere," said Mr. Chaturvedi.

A ND-ND

#GenerationRestoration Movement

Embracing Environmental Responsibilities

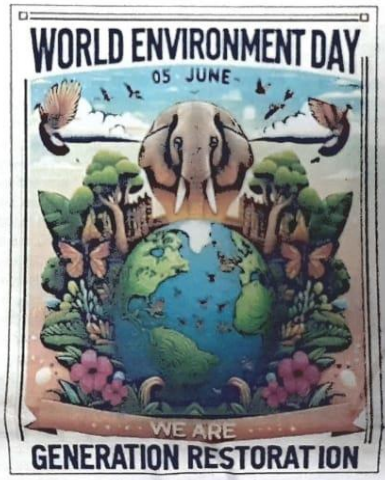
Neha Tripathi

As we mark World Environment Day on June 5th, it's clear that there is a universal concern on the state of environment. However despite the uncertainties, the efforts made over the years have given us hope for the future.

In addressing the imperative of "Our Earth, Our Future," a heightened sense of responsibility is warranted. Our generation is actively engaged in ongoing endeavours to preserve and protect the environment, with the goal of leaving a clean environment for future generations. However, in light of prevailing circumstances, it is imperative that future generations also remain actively involved. They must receive continuous education on environmental conservation, cultivate sustainable habits, and perpetuate these practices over the long term. To launch the UN Decade on Ecosystem Restoration, UNEP has released synthesis report as a call to action for all to join the #GenerationRestoration movement to prevent, halt and reverse the degredation of ecosystems worldwide. This collective endeavour signifies the inception of a "Generation Restoration," wherein successive generations unite to rectify environmental degradation. In undertaking this restoration, a thorough understanding of the current environmental landscape, its associated challenges and possibilities is paramount.

Soaring Temperatures

Scientific reports confirm that global temperature have increased significantly over the past few decades. In 2023 and 24, temperatures in many places have broken



previous records. For instance, temperatures in parts of India exceeded 50 degrees Celsius, while several European countries also experienced unusually high temperatures. This temperature rise is not coincidental but rather the consequence of escalating levels of greenhouse gases in our atmosphere.

According to scientists, the global average temperature is projected to rise by approximately 1.2 degrees Celsius between 2023 and 2024, leading to a surge in the frequency and intensity of natural disasters, impacting millions of people. Deforestation, pollution, biodiversity loss, and climate change are driving our planet towards destruction. Melting glaciers, rising sea levels, and escalating natural disasters serve as clear indicators that immediate action is imperative. In this regard, Generation Restoration can play a pivotal role.

Every Step is a Challenge

Air Pollution

Air quality in big cities like Delhi, Mumbai and Bengaluru has reached dangerous levels. The levels of pollutants in Delhi's air often exceed World Health Organization standards by several times. Its main causes are vehicular smoke, industrial emissions, and construction activities. Health problems like asthma, bronchitis, and heart disease are on the rise due to air pollution.

Water Crisis

Water crisis is a serious issue in many parts of India. Water shortage is continuously increasing in metropolitan cities like Chennai, Bangalore, and Hyderabad. The main causes of water crisis are excessive water exploitation, uncontrolled use of water resources, and lack of water conservation. Many rivers, such as the Ganga and Yamuna, are vulnerable to pollution, leading to shortage of potable water. Drought conditions in states like

Continued on page 22

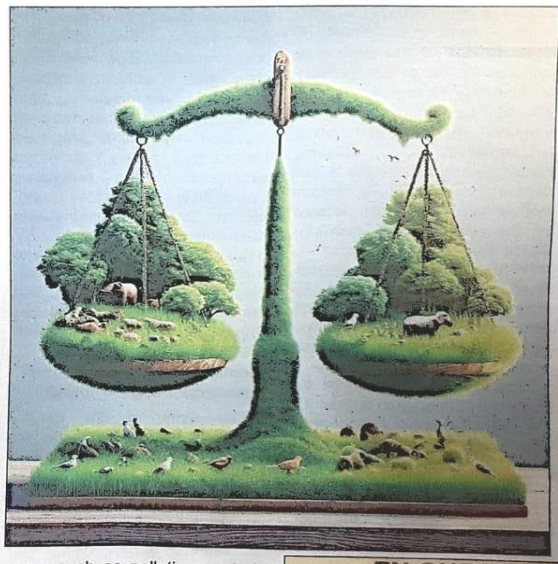
Harbingers of Change

Exploring Careers in Environmental Laws

Jyoti Tiwari

As we commemorate World Environment Day, it is crucial to acknowledge the pivotal role of environmental protection in shaping our future. Governments and NGOs globally are amplifying their efforts to safeguard our planet, recognising it as vital for sustainable development and human well-being. From pollution to climate change, environmental challenges span across borders, impacting communities worldwide. Hence, environmental preservation has become a top priority. Environmental Laws lead this charge, as nation states as well as international bodies require robust legal framework to regulate activities and mitigate harm. By addressing current challenges and preparing for future threats, Environmental Laws aim to balance development goals with ecological sustainability.

In India, Environmental Laws have witnessed significant evolution, encompassing diverse areas such as pollution control, wildlife conservation, climate change mitigation, and environmental impact assessment.



Environmental Laws in India

Amidst a global awakening to environmental concerns, India has undergone a profound transformation in its perception. Once viewed as a hurdle to economic progress, the environment is now revered as a vital ally. This shift, rooted deep in Indian culture, echoes through time, resonating in constitutional mandates, legislative measures, and policy frameworks.

Prior to India's independence in 1947, a nascent framework of environmental legislation existed, laying the groundwork for more comprehensive measures that followed in the wake of the UN Conference on the Human Environment in Stockholm in 1972. It was this landmark event that catalysed the establishment

Continued on page 3

EN QUESTION OF THE WEEK
Readers' views elicited on important issues
Last date for entry submission: 12/06/2024
FREE SUBSCRIPTION FOR WINNERS
Best entry on page 23

For complete news, refer Employment news paper of page no. 1 - 7 June 2024.

'We Need to Rely on Homegrown Tech More to Avoid Crowdstrike-like Blip'

Regulations should lay down a roadmap for a self-sufficient Digital India, says Sify MD

Annapurna Roy & Surabhi Agarwal

New Delhi: India needs to continuously encourage homegrown technologies and reduce its dependence on foreign companies to prevent being affected by incidents like the recent Windows outage, Raju Vegesna, chairman and managing director of Sify Technologies, told ET.

He pointed out that China was not affected by the global outage last Friday, causing millions of Windows systems across the world to display the 'blue screen of death' due to a botched software update from security vendor Crowdstrike.

"Why is China not affected? Because they have their own homegrown stuff," Vegesna said. "I hope India will reach a point like that. If you're not aiming for that target, don't participate in the game."

While the Indian government does encourage indigenous technologies, it should not take its foot off the pedal in pushing this vision forward, he said.

Regulations like the upcoming Digital India Act should lay down the roadmap for a self-sufficient Digital India, he said. This would be imperative for India to reach its goal of being a developed nation by 2047, he added. Vegesna said developing physical infrastructure alone will not help a country like India—with a huge population and high density of population—achieve the growth it is looking for. "My belief is only digital infrastructure is what is going to be required for India to catch up and exponentially grow," he said.

RAJU VEGESNA
Chairman & MD, Sify Technologies

My belief is only digital infrastructure is what is going to be required for India to catch up and exponentially grow...

According to the chief of the Chennai-based information and communication technology (ICT) solutions and services company, the future and growth of Digital India depends on three factors — scalability, productivity, and security. "If we are going to become the third-largest economy in the world, we are competing with the likes of the US, China, Japan...so, our productivity has to be increased," he said. "That means we have to apply modern tools for automation, AI/ML and predictive analysis."

Vegesna began as a serial tech entrepreneur in Silicon Valley. He took over Sify in 2006 and turned the company that started the cyber cafe wave in the country in late 1990s and early 2000s into an enterprise tech giant. Sify registered a revenue of ₹942 crore for the first quarter of 2024-25, growing 10% year on year. It reported ₹3,563-crore revenue for the year ended March 2024.

This year marks 25 years of Sify being listed on the Nasdaq. Vegesna said the company in its 'Sify 4.0' avatar is planning to expand in North India in the next 2-3 years. It is considering locations like Lucknow, Chandigarh, Patna and Indore to set up data centre facilities.

KIET (R&D) Policies

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

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

For details, kindly refer -
https://www.kiet.edu/Research%20and%20Development%20Policy

RESEARCH POLICY FOR STUDENTS

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

1. Objectives of Research-

- **Enhancing Knowledge-** New avenues for knowledge discovery can be reached through conducting research and producing research papers. Research will have a chance to develop your writing abilities when writing a research paper, and in the future, you will be able to produce a better piece of writing that will impress others. These skills would certainly be useful for getting high package placements.

- **Adds Value to Your Resume-** A research paper helps you to find more knowledge about the field you are researching, so you can learn something new and fascinating about the discipline that you can use for work later. Besides expanding your knowledge in each field, Research will enhance your CV and make you stand out as a candidate. Therefore, research is essential since it enhances the value of your CV and demonstrates the talents you currently possess—skills that they may be seeking for.

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

2. The Vision of the Institute for Research

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

3. The Mission of the Institute for Research

a. To motivate faculty members and students to concentrate on research-related activities to publish research articles in reputed journals and Scopus indexed conferences

b. To pursue efforts to write books and monographs for publication by international andnational publishers of repute.

c. To spark faculty members' interest in joint research projects with colleagues at prestigiousnational and international universities.

d. To encourage faculty members and students to submit proposals and secure funded research projectsfrom various funding agencies in India and abroad.

e. To undertake consultancy projects sponsored by the government as well as private, industrial, and other organizations.

f. To encourage creativity in the minds of the faculty members and students so that they make originalcontributions by way of products, concepts, etc., and obtain patents.

g. To reach out to national and international professional societies.

4. Policy of Research Incentives Scheme

4.1 Scope of the Scheme

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

4.2 Incentives for Research Publications in Journals

To further promote the intensive research culture among the students of KIET, it is intended to adopt the incentive policies under the vision of the research institution. KIET has already adopted the incentive policies for SCI, SCIE, SSCI, AHCI, SCOPUS, eSCI and CCR Expanded indexed international journals, but to make the research more adaptive, it is required to give more freedom in the regulation of SCI publications. In view of the above, **students may claim a maximum of 5 Research Publications incentives for Journals in an academic year as mentioned in different categories of Table-1.** The primary objective of this incentive

scheme is to motivate the students of our Institution to undertake quality research and other related activities.

Requirements to be fulfilled by students for claiming the Incentives

- The current/present impact factor, indexing (SCI/SCIE/SSCI) and other information will be taken from Clarivate analytics for evaluation of the papers. For indexing in Scopus, Cite Score and other information will be taken from scopus.com.
- The student requesting the incentive must be the first author in the research paper and other author may be his/her supervisor(s) only.
- Published papers must have "**KIET Group of Institutions, Delhi-NCR, Ghaziabad**" as the affiliation.
- Students needs to claim the incentive only after the volume number, issue number, and page number have been assigned to the research paper by the journal.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is advised for the perspective authors to include at least two references of already published Research Papers by KIET faculty/students in their Research papers.
- Authors must also be aware of the KIET Ethics Policy for Students on academic dishonesty and plagiarism
- Students shall take the responsibility of screening the paper for plagiarism, ethics approval, and background checks on the potential, possible, or probable predatory scholarly open access journals before communicating the research publication to Beall's list of predatory publishers.
- A publication claim under the Research Incentive Schemes (RIS) of KIET must be made within amonth of publication in the prescribed form to the Head of Department (**Annexure I)**.
- Students after publication of the research paper with volume, issue and page no. must submit the application along with the following documents to Head of the Department within one month of publication-

1. Annexure I
2. Copy of College ID card
3. Proof of Volume/ Issue/ Page Number allotted by the respective journal.
4. PDF of the research manuscript.
5. Indexing of the journal

1. Scopus Valid proof (if journal is Scopus indexed)
2. SCI Valid proof (if journal is SCI indexed)

- The Head of the Department will send the file with recommendations to the Office of Dean R&D for further processing within one week of receiving the application from the students.
- Dean R&D will take the approval from Director, KIET Group of Institutions and will submit the approval note to the account's office for final disbursement of registration fees within a week.

Presentation of Research Papers in Conferences in India

- **Reimbursement of Conference Registration Fees-**

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

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

- The International/National conference must be of repute (viz. IEEE, Springer/Wiley/IPC etc.) and the hosting institutions must be of repute as well (IITs/IISc/NITs/IIITs/Universities/Deemed Universities etc.).
- Authors must also be aware of the KIET Ethics Policy for Students and Faculty Members onacademic dishonesty and plagiarism.
- Published paper must have '**KIET Group of Institutions, Delhi-NCR, Ghaziabad**' as the affiliation.
- Only oral presentation of research papers is acceptable.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is advised for the perspective authors to include at least two references of already published Research Papers by KIET faculty/students in their Research papers.
- Only one student may use the facility in the case of joint authorship.
- A publication claim must be made within a month of the publication of a research paper (available online) in the prescribed form to the Head of the Department (**Annexure II**).
- Students after publication of research paper online must submit the application along with the following documents to Head of the Department within one month of publication-

1. Annexure II
2. Copy of College ID card
3. Valid proof of published paper in conference
4. Valid proof of presentation certificate
5. Valid proof of Scopus Indexing
6. PDF of the research manuscript
7. Page number of the research paper if published as book chapter
8. ISSN/ ISBN number
9. Valid proof of registration/fee receipt

- The Head of the Department will send the file with recommendations to the Office of Dean R&D for further processing within one week of receiving the application from the students.
- Dean R&D will take the approval from Director, KIET Group of Institutions and will submit the approval note to the account's office for final disbursement of registration fees within a week.

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

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

Various Research Labs in KIET

S. No.	Research Lab/Centre of Excellence	Department
1.	Centre of supercomputing equipped with NVIDIA DGX A100	CS (AI ML)
2.	Centre of Robotics and Mechatronics	ECE
3.	KIET NI LABVIEW Academy	ECE
4.	Bio-Medical Instrumentation MBS	ECE
5.	Space Technologies	ECE
6.	D-Link Global Center of Excellence	IT, CS, MCA
7.	Centre for Automotive Mechatronics in association Mercedes Benz	ME
8.	CAD/CAM Lab	ME
9.	Material Science & Testing Lab	ME
10.	IC Engine and Automobile Lab	ME
11.	Maker's Space Innovation Lab	All Branches
12.	Central Instrumentation Lab	Pharmacy
13.	Pharmacology research Lab	Pharmacy
14.	Center of Excellence for Renewable Energy based Power System for Electrical Power Supply and Transportation	EN
15.	Centre of Excellence in latest art of structural analysis and design facilities viz. STAAD PRO, E-TABS, SAP, ANSYS, PLAXIS, Primavera etc.	CE
16.	Centre of Excellence in Process Control and Industrial Automation	EN
17.	Finance Lab	MBA


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.


SAARTHI

Narinder Singh Kapany (**31 October 1926 – 4 December 2020**) was an Sikh-American physicist best known for his work on fiber optics.

He served as an Indian Ordnance Factories Service officer, before going to Imperial College London in 1952 to work on a Ph.D. degree in optics from the University of London, which he obtained in 1955.

Fortune named him one of seven "Unsung Heroes of the 20th Century" for his Nobel Prize-deserving invention.

He was awarded India's second highest civilian award, the Padma Vibhushan, posthumously in 2021

Kapany's research and work encompassed fiber-optics communications, lasers, biomedical instrumentation, solar energy and pollution monitoring. He had over 120 patents, and was a member of the National Inventors Council.

He was an International Fellow of numerous scientific societies including the Royal Academy of Engineering, the Optical Society of America, and the American Association for the Advancement of Science.