NATIONAL INSTITUTIONAL RANKING FRAMEWORK
Engineering Rank - 187
Pharmacy Rank - 97

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Delhi-NCR, Ghaziabad

KIET GROUP OF INSTITUTIONS
Connecting Life with Learning

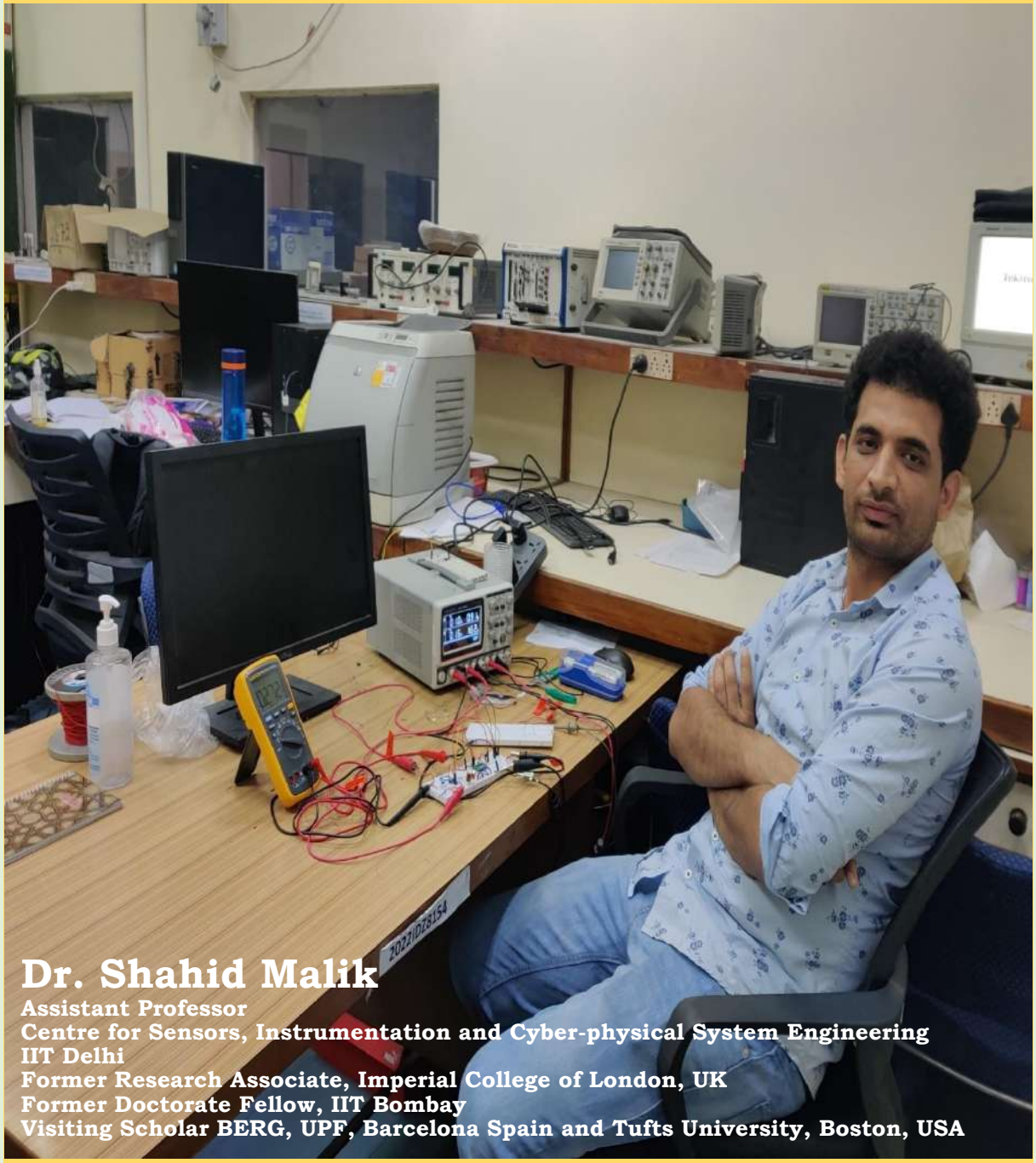
CELEBRATING 25 YEARS OF EXCELLENCE

Accredited by NAAC with Grade "A+"

February 2023
Vol No. 2

अनुसंधान

(KIET Research Magazine)



Dr. Shahid Malik

Assistant Professor
Centre for Sensors, Instrumentation and Cyber-physical System Engineering
IIT Delhi
Former Research Associate, Imperial College of London, UK
Former Doctorate Fellow, IIT Bombay
Visiting Scholar BERG, UPF, Barcelona Spain and Tufts University, Boston, USA

Research and Development

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

KIET – A GLANCE

Overview

KIET Group of Institutions is recognized as one of the best engineering colleges in Delhi-NCR, founded by the members of Krishna Charitable Society in 1998 with a modest number of 180 students. The KIET Group of Institutions has now become a pioneer in the technical education domain with a strength of 6500+ students.

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.

The institute has gained a distinct image as an outstanding educational colossal among the technical institutions of Uttar Pradesh due to its inclination toward innovative and skill-based education. Its consistent belief in 'Achieving High' is aptly reflected in its academics, extracurricular activities, and placements. The success of its belief is brought out in the plethora of Education Excellence Awards bagged by the institute. The institute has been accredited by NAAC with Grade 'A+' and its programs (CSE, ECE, EEE, IT, ME, CE, MCA, MBA and Pharmacy) are NBA accredited.

Editorial Board

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KIET Collaborative Research and Development Committee (CRDC)

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

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

CONTENTS

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Message from the Face of Cover Page

Dear Readers,

I am honored to share my thoughts and insights with such a distinguished group of researchers and scholars. As we navigate the complexities of our world today, it is essential that we continue to push the boundaries of knowledge and uncover new insights that can help us tackle the challenges we face. Whether it's in the realms of science, technology, or social science, there is always more to learn and discover, and I have no doubt that the researchers at this Institute are at the forefront of this quest for knowledge.

It is believed that research is the foundation of progress, and this magazine certainly helps to inspire and educate the readers on the latest developments and breakthroughs in various areas of research. This issue covered a wide range of topics, including technology, medicine, social sciences, and much more. These articles have been written by experts in their respective fields and are sure to provide you with a wealth of knowledge and insights. The magazine also has a student's section which demonstrates the efforts of students in the research and product development activities.

Also, the research statistics of the institute is very impressive. The statistics presented in the magazine are not just numbers on a page - they are the result of countless hours of meticulous research and analysis. KIET team has gone above and beyond to ensure that the presented data is not only accurate, but also presented in a way that is accessible and meaningful to our readers.

The Goal is to provide you with an engaging and informative reading experience that inspires you to think critically and encourages you to explore the world around you. I encourage you to continue exploring the latest developments in your field and to remain committed to the pursuit of knowledge. Whether you are a fellow researcher or a student, or simply someone who is interested in learning more about our work, there is always something new to discover and explore, and I look forward to seeing the more incredible research work and discoveries that will emerge from this Institute in the years to come.

Dr. Shahid Malik

Assistant Professor
Centre for Sensors, Instrumentation and Cyber-physical System Engineering
IIT Delhi
Former Research Associate, Imperial College of London, UK
Former Doctorate Fellow, IIT Bombay
Visiting Scholar BERG, UPF, Barcelona Spain and Tufts University, Boston, USA

Message from Chief Patron

Dear Members of the Research Community,

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

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

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

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

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

Dr. (Col) A Garg

Director

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Message from Patron

Dear All,

It gives me great pleasure, in my capacity as Joint Director of the KIET Group of Institutions, to introduce this research Magazine that focuses on the work that is now being done at our Institute and how it may have an impact on the future. Our goal is to expand the horizons of both knowledge and innovation, and we are confident that our researchers will be able to accomplish this task.

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

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

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

Dr. Manoj Goel

Joint Director KIET

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Message from Editor-In-Chief

Dear Colleagues and Friends,

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

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

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

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

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

Dr. Vibhav Kumar Sachan

Dean (Research and Development)

KIET Group of Institutions

Delhi-NCR, Ghaziabad

Foreword

Academic research and development related to the scientific inquiry and experimentation undertaken by colleges, universities, and other higher education institutions. This research and development aim to further knowledge in a certain 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 be done by bringing 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. It gives us great pleasure to introduce this supplement dedicated to research upgrowth, as filling such gaps may lead to a paradigm shift in research networking and upliftment in the research domain.

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

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

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

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

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

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

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

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

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

Overview of the Research and Development

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

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

Vision

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

Mission

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

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

Glimpses of Month

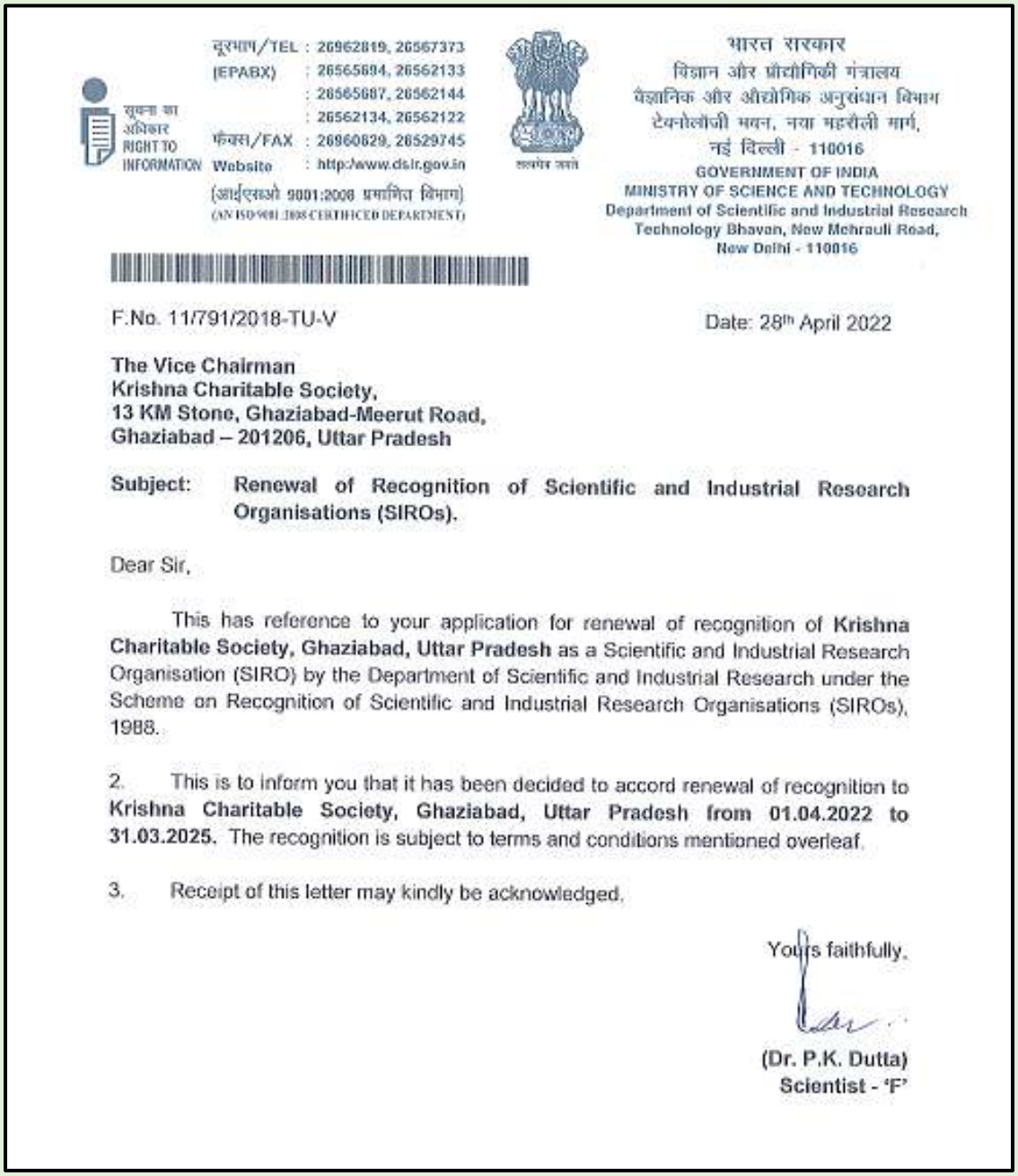
On 2nd & 3rd February 2023, the Office of Research & Development successfully organized a two-day workshop on research grants and funding (Writing, Defense, and Implementation of a Grant Proposal). Dr. Rajiv Kr. Tayal (Scientist-FNAE and former Scientist G- Science and Engineering Research Board of the Department of Science & Technology), served as the workshop's resource person.

On 29 Jan 2023, a group of 11th standard school students had an exciting visit to the Space Technologies Centre of Excellence in the department of ECE at KIET GROUP OF INSTITUTIONS,Delhi-NCR, Ghaziabad. During the visit, the students were given a comprehensive tour of the centre and had the opportunity to observe and learn about various projects and technologies related to space exploration. The students were thrilled to see the advanced equipment used for satellite communication, satellite navigation, and remote sensing.

Statistics of KIET Research and Development Activities

Rankings & Accreditations

- **NAAC - Grade 'A+' (Cycle 2 Assessment) - Accredited for 5 years till 03 Jan 2027.**
- **NIRF 2022 (Pharmacy – Rank 97 & Engineering - Rank 187).**
- **ARIIA 2021 – 3rd Rank in the category "Private Institutions (Technical)".**
- **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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(EPABX) : 26565694, 26562133
: 26565687, 26562144
: 26562134, 26562122
फैक्स/FAX : 26960629, 26529745
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सत्यमेव जयते

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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.

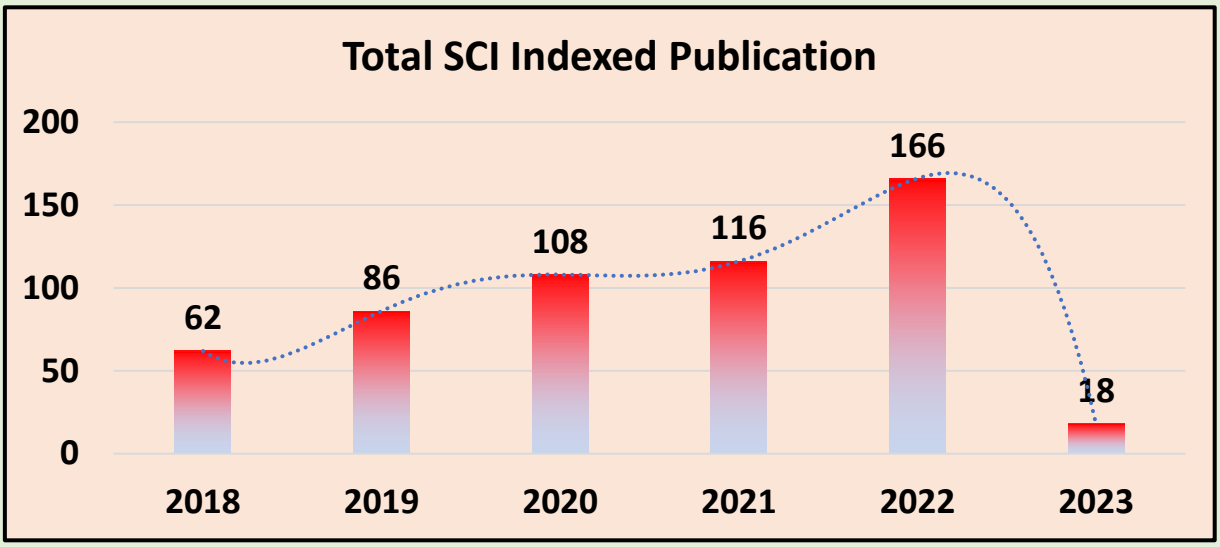
Yours faithfully,

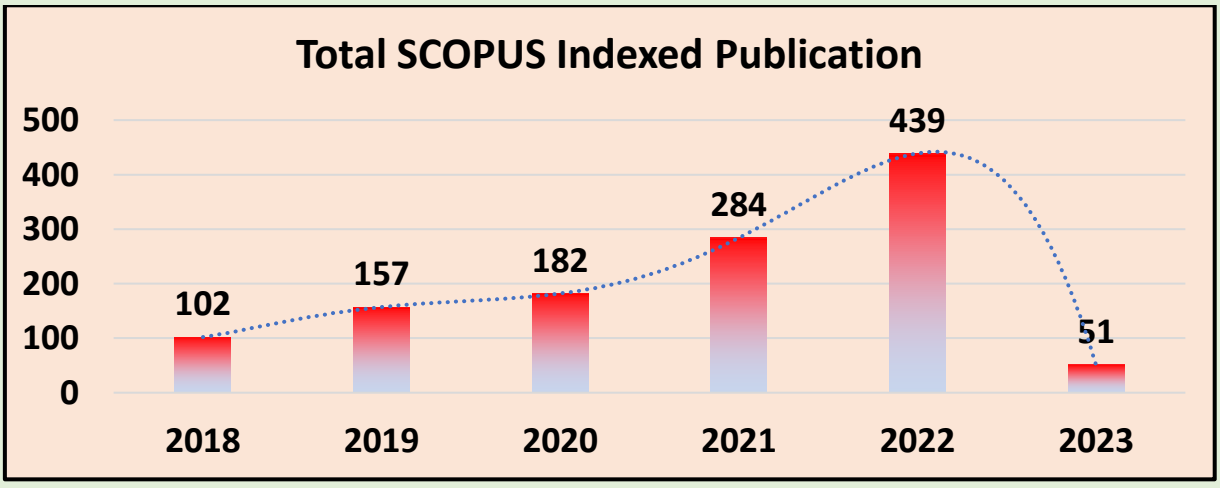
(Dr. P.K. Dutta)
Scientist - 'F'

KIET Research Credentials

Total 556 SCI Research Publications and 1215 Scopus Indexed Research Publications with affiliation of KIET Group of Institutions, Delhi-NCR, Ghaziabad are listed in Web of Science and in Scopus Database till February 2023.

Year	Total Number of SCI Indexed Publications	Total Number of SCOPUS Indexed Publications	Total Number of Research Publications
2018	62	102	164
2019	86	157	243
2020	108	182	290
2021	116	284	400
2022	166	439	605
2023	18	51	69
Total	538	1164	1702





Category	Number of Publication for Jan 2023
SCOPUS Publications	30
Web of Science Publication	10

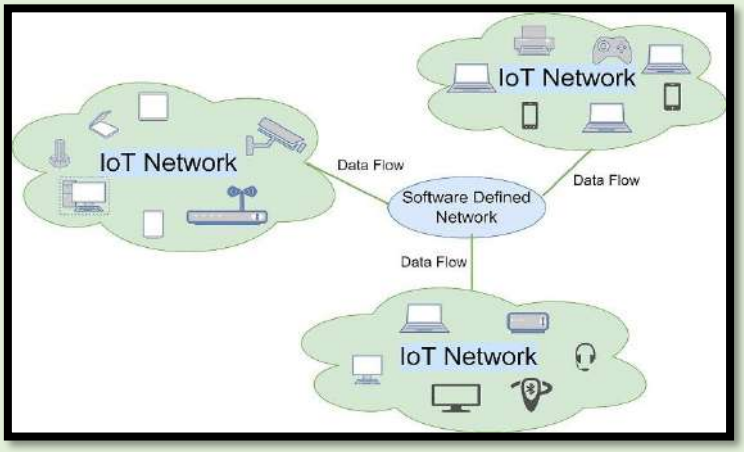
Exceptional Research Publications in Reputed International Journals by KIET Faculty Members

S. No.	Faculty Name	Designation	Deptt.	Title of Research Paper	Name of Journal	IF
1	Mr. Surendra Kumar Keshari	Asst. Prof.	IT	An Intelligent energy efficient optimized approach to control the traffic flow in software defined IoT networks	Journal of Sustainable Energy Technologies and Assessments	7.632
2	Mr. Zohaib Ahmed Khan	Asst. Prof.	CE	Optimization of convergent angle of the venturi meter for best coefficient of discharge	Journal of Water Supply	1.768
3	Mr. Ruchin Gupta	Asst. Prof.	IT	A Novel Metric based Detection of Temporary Field Code Smell and its Empirical Analysis	Journal of King Saud University	8.839
4	Mr. Tejasvi Mishra	Student	KSOP	Neuroprotective potential of ferulic acid against cyclophosphamide-induced neuroinflammation and behavioral changes	International Journal of Food Biochemistry	3.654

Highlights of the Exceptional Research Publications

1. Surendra Kumar Keshari, Vineet Kansal, Sumit Kumar, Priti Bansal, "An intelligent energy efficient optimized approach to control the traffic flow in Software-Defined IoT networks", *Sustainable Energy Technologies and Assessments*, *Elsevier*, Vol. 55, 2023, ISSN 2213-1388, DOI: 10.1016/j.seta.2022.102952.

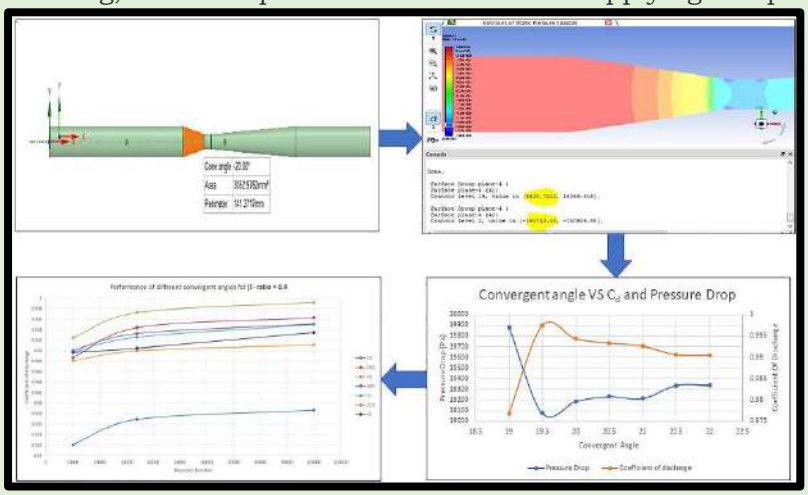
In modern society numerous digital devices play a very significant role in day-to-day life. Digital devices are well connected and easily accessible through multiple sensors and Internet of Things (IoT) devices. Due to the rapid growth of digital devices, large amount of data traffics are being generated, which induces network congestion. To deal with large amount of data traffic a programmable Software Defined IoT (SD-IoT) infrastructure is utilized. For efficient and sustainable network, the data must be transmitted through optimal path in such a way to as to minimize energy consumption. Here, the network is partitioned into clusters to find an optimal path. Finding an optimal path from a set of possible paths is an NP-complete problem. To solve this problem, we propose to find a set of optimal border nodes of each cluster with other clusters in the network, so as to reduce the number of possible paths between clusters. The set of optimal border nodes will be selected in such a way so that they have maximum energy and minimum distances. This paper proposes an intelligent approach to find the set of optimal border nodes using Lion Swarm Optimization algorithm (LSOA). Once a set of optimal border nodes are obtained, an optimal path can be generated using a routing mechanism. The performance of the proposed work is analysed in terms of packet delivery ratio, average latency, network lifetime and energy consumptions.



The results show that the border nodes selected using LSOA finds better routes as compared to the border nodes selected using other state-of-the-art metaheuristics algorithm thereby, increases suitability of the network by energy conservation.

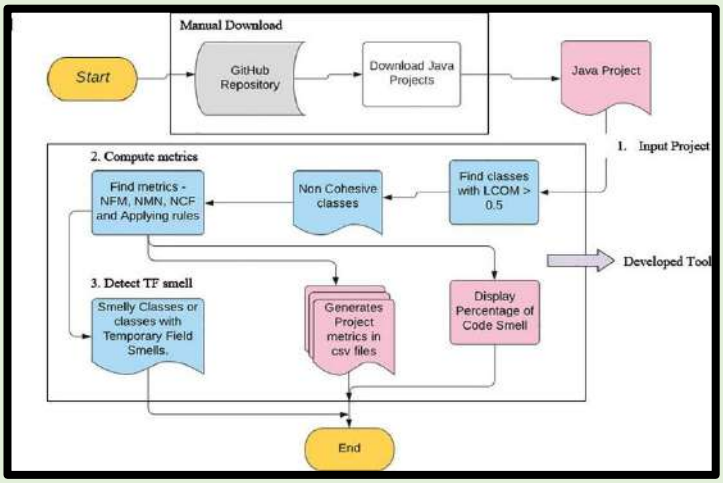
2. Zohaib Ahmed Khan, Naman Jain; Optimization of convergent angle of the Venturi meter for best coefficient of discharge. *Water Supply* 1 December 2022; 22 (12): 9023–9040. DOI: 10.2166/ws.2022.381

Computational fluid dynamics is a compelling apparatus for getting stream flow and anticipating how this flow will react to various limiting boundary conditions. With this learning, the focal point of this research is applying computational fluid elements such as CFD to issues dealing with stream flow measurement/estimation in closed conduits such as pipes utilizing differential stream meters like the Venturi meter. After thorough research from the existing literature, it was determined that the convergent angle (CA) of a standard Venturi meter has not been optimized yet. The range given for a standard ASME Venturi CA is 20–22°. More than 50 models were created and run in ANSYS FLUENT, which was used as a CFD tool. Three β-ratios are taken into consideration here, which are 0.4, 0.5 and 0.6. An optimum value of CA, corresponding to each β, is obtained by finding out the best coefficient of discharge (closest to 0.99) for each test value of CA. Another aspect explored in this research is the relationship between Reynolds number and coefficient of discharge. This is done with the integration of ANSYS FLUENT and laboratory results. The results of this study yield a definite value of CA for each β.



3. Ruchin Gupta, Sandeep Kumar Singh, "A Novel Metric based Detection of Temporary Field Code Smell and its Empirical Analysis", *Journal of King Saud University - Computer and Information Sciences*, Volume 34, Issue 10, Part B, 2022, Pages 9478-9500, ISSN 1319-1578, DOI: 10.1016/j.jksuci.2021.11.005.

Code smell causes side effects in the source code and impact the code quality. It is beneficial to recognize code smells to improve software quality. Despite 22 classical code smells as characterized by Martin Fowler, all classical code smells have not been considered for the identification and refactoring. Temporary field code smell is one such code smell that has not been given an appropriate level of attention so far regarding its detection as well as refactoring. In this paper, we have proposed a novel metric-based method and developed a tool to detect temporary field code smell. The proposed method works on three novel metrics in addition to existing metric TCC (tight class cohesion) and three new rules (R1, R2, and R3) to detect temporary field code smell. Detection rules were tested on ten open-source GitHub Java projects used in the literature. Results demonstrate that projects under the study that had non-cohesive classes have shown the presence of temporary field code smell ranging from 54% to 100%. Findings have additionally demonstrated that for the undertaken projects, there exists a strong positive correlation between the number of classes exhibiting temporary field smell and number of non-cohesive classes present in a project.



4. Mishra T, Nagarajan K, Dixit PK, Kumar V., "Neuroprotective potential of ferulic acid against cyclophosphamide-induced neuroinflammation and behavioural changes", *J Food Biochem.* 2022 Dec, 46(12) : e14436. DOI: 10.1111/jfbc.14436. PMID: 36166506.

In the present study, ferulic acid (FRA) has been explored for possible neuroprotective effects against cyclophosphamide (CP)-induced neurotoxicity in the Swiss Albino mice. Animals were divided into five groups and treated with FRA for fourteen days and a single dose of CP was administered on the seventh day. Animals were subjected to neurobehavioral tests such as the forced swim test and Morris Water Maze test. On day fifteenth, the brain was removed and used for biochemical analysis. The outcome of the study showed that CP administration induced significant neurotoxicity in the form of depression, anxiety, and cognitive dysfunction. Cyclophosphamide administration also reduced the activity of antioxidant enzymes, reduced the level of neurotransmitters (i.e., dopamine, 5-HT, and BDNF), anti-inflammatory cytokines (IL-10), and increased lipid peroxidation and proinflammatory cytokines (IL-1β, IL-6, and TNF-α). Additionally, CP administration increased the level of acetylcholine esterase. Treatment with FRA significantly reversed these behavioural, and biochemical markers towards normal and mitigated CP-induced neurotoxic manifestation. PRACTICAL APPLICATIONS: Ferulic acid has a variety of pharmacological activities viz. anti-inflammatory, antioxidant, antimicrobial activity, anti-cancer, and anti-diabetic effects. The results of the present study showed that FRA mitigates the neurotoxicity (i.e., alteration of neurotransmitters, inflammation, and oxidative stress) induced by CP in mice. Treatment with FRA knowingly overturned the behavioural and biochemical markers in the direction of the moderated CP-influenced neurotoxic demonstration. Thus, FRA can be useful in the prevention of anticancer drugs induced neurotoxicity. Contrariwise, supplementary in-depth studies are obligatory to bring FRA from bench to bedside that it be used as an adjuvant among chemotherapeutically treated patients.

Details of Patents Published/Granted

Title of the Invention: **Feature Engineering to Heterogeneous Cross Software Projects**

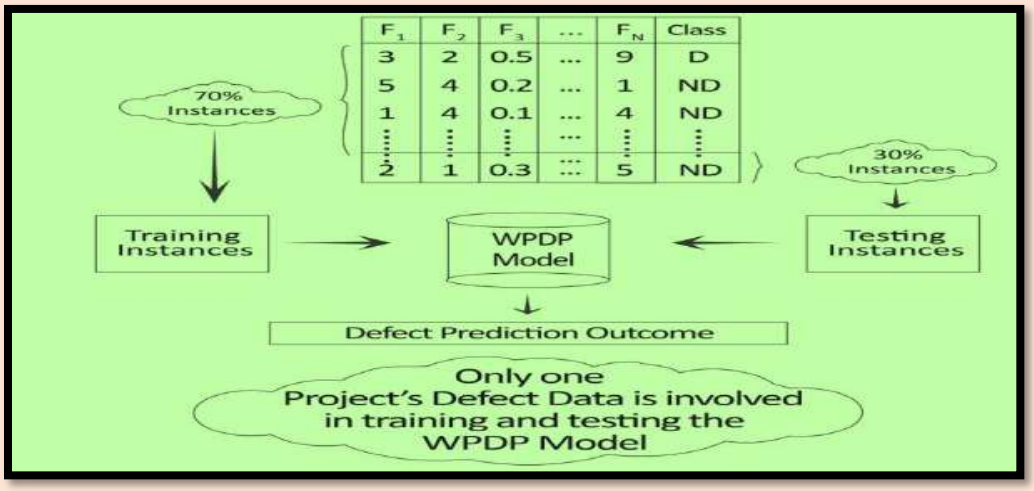


Fig. 2.1 With-in project defect prediction

Application Number: 202211075748 A (Indian Patent Office)
Applicant(s): Mr. Rohit Vashishat and team (KIET Group of Institutions)
Date Of Filing: 27-12-2022
Date Of Publishing: 13-01-2023
Field of the Invention: The present invention is related to the Computer Science field and particularly, machine learning.
Objects of the Invention: By using a defect prediction (DP) model that has been trained using defect data from another source project, heterogeneous cross project defect prediction (HCPDP) tries to anticipate faults in a target project with little historical defect data. The features chosen during the feature engineering (FE) phase have a significant impact on a

DP model's accuracy. The stacking-based ensemble learning method is used in the study to assess the efficacy of the proposed four-phase HCPDP framework, with an emphasis on the FE phase. The suggested study makes use of the auto-encoder (AE), a FE technique built on deep learning. Additionally, two innovative approaches are suggested in this study for handling datasets with imbalances and for figuring out feature connection. Accuracy, recall, F-score, and area under the curve (AUC) are employed as the output parameters for comparison analysis.

Advantages of the Invention:
The present invention has the following advantages:

- Compare and contrast the use of data-driven and deep learning-based Feature extraction strategies.
- Compare the prediction performance of proposed HCPDP framework.
- Pre-processing of datasets is performed in its very first phase to make them compatible for their employment in the model.

Title of the Invention: Health Buddy - A Health Care Website with AI Chatbot
Application Number: 202211071467 A (Indian Patent Office)
Applicant(s): Ms. Akanksha and team (KIET Group of Institutions)
Date Of Filing: 12-12-2022
Date Of Publishing: 30-12-2022
Field of the Invention: The invention generally relates to field of optical character recognition. Converting Image data into a Ms-Excel file, comparing two excel files to determine what is the difference between them.
Advantages Of The Invention: The present invention has the following advantages:
• Higher Productivity
• Cost Reduction
• Editable Documents
• Less time consuming
• High accuracy
• Massively improves Customer service
• Advanced version can even Recreate tables, columns, and even produce sites.

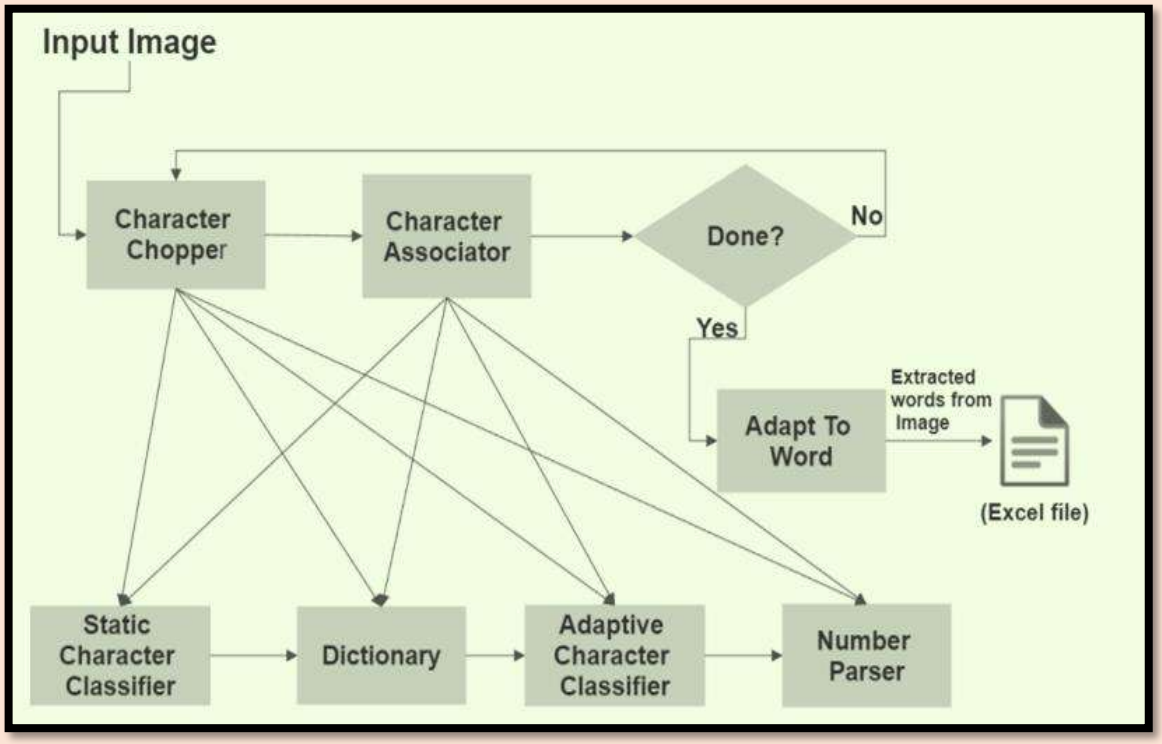


Fig. 2.2 Architecture of the proposed system

Title of the Invention: A Novel Wavelet-Based Multiresolution Method with Optimization Techniques for Process Control and Disturbance Rejection
Application Number: 2021105027 (Australian Patent Office)
Applicant(s): Mr. Abhishek Goyal and team (KIET Group of Institutions)
Date of Filing: 14-01-2023
Date of Publishing: 03-02-2023
Field of the Invention: The present innovation relates to process control and disturbance rejection method and, in particular, to a novel wavelet-based multiresolution method with optimization techniques for process control and disturbance rejection.

Objectives of the Invention: In an aspect, the novel wavelet-based multiresolution method with optimization techniques for process control and disturbance rejection comprises steps of considering an input signal and an error signal in a generalized form, decomposing the resultant of the considered signals using the wavelet decomposition method, scaling the resulting decomposed components by their respective gains, summing up the scaled signal to generate a control signal, controlling the process control plant using the generated control signal. In another aspect, the consideration of the input signal and the error signal is done by summing up the input signal and the negative feedback of the output. In another aspect, the wavelet decomposition is applied to extract the detailed information from the error signal, as well as the cumulative effect of many underlying phenomena such as process dynamics, measurement noise, effects of external disturbances. In the wavelet decomposition, the trend signal captures the high scale low-frequency information, and the detail signal captures the low scale high-frequency information contained in the signal. In another aspect, the wavelet decomposition method comprises steps of computing the trend and detail coefficients by taking up the wavelet transform of the signal, regenerating the trend signal by combining the trend coefficients with the scaling functions, regenerating the detail signal by combining the detail coefficients with the wavelet functions. In yet another aspect, the respective gains of the decomposed components are calculated using the particle swarm optimization technique. The method leads to faster recovery and lower steady-state error. One should appreciate that although the present disclosure has been explained with respect to a defined set of functional modules, any other module or set of modules can be added/deleted/modified/combined, and any such changes in architecture/construction of the proposed system are completely within the scope of the present disclosure. Each module can also be fragmented into one or more functional sub-modules, all of which are also completely within the scope of the present disclosure.

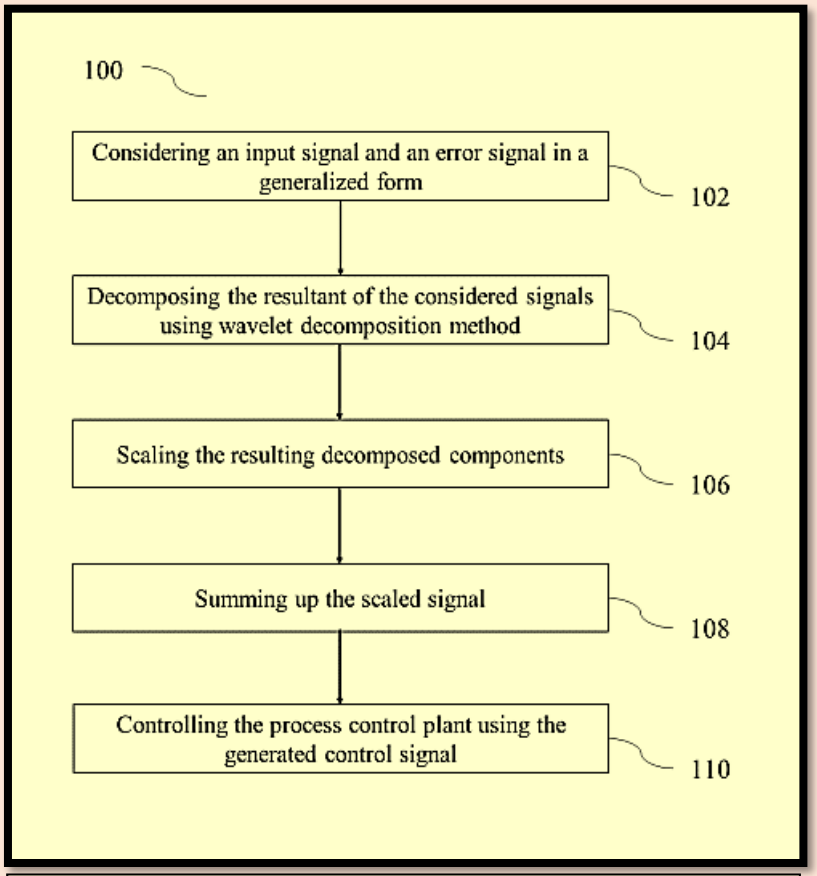


Fig. 2.3 Flowchart of the novel wavelet-based multiresolution method with optimization techniques for process control and disturbance rejection

Title of the Invention: Traffic Management System-Easy Traffic
Application Number: 202311002946 A (Indian Patent Office)
Applicant(s): Mr. Abhishek Goyal and team (KIET Group of Institutions)
Date of Filing: 14-01-2023
Date of Publishing: 03-02-2023
Field of the Invention: The present invention is related to the Computer Science field and particularly, machine learning.
Objects of the Invention:

- To study the impact of traffic jam and congestion on the road. To build an android application to allow the users to register their complaint of traffic jam on the road.
- To develop a web application that monitors the complaint registered, for the administration purpose.
- To analyse the impact of pollution caused due to traffic congestion.
- As the number of private cars increases greatly over the years, traffic congestion occurs when the needed road capacity is not fulfilled. Simple improvements of the road infrastructure can easily solve this problem.
- Since congestion occurs frequently in the cities, local government municipal can consider passing laws on restricting the number of cars owned in a family. This method is in fact, workable and effective.

To provide convenience to the traffic control system and commuters, we will be developing an app that will enable users to register their complaints so that help can reach them as soon as possible.

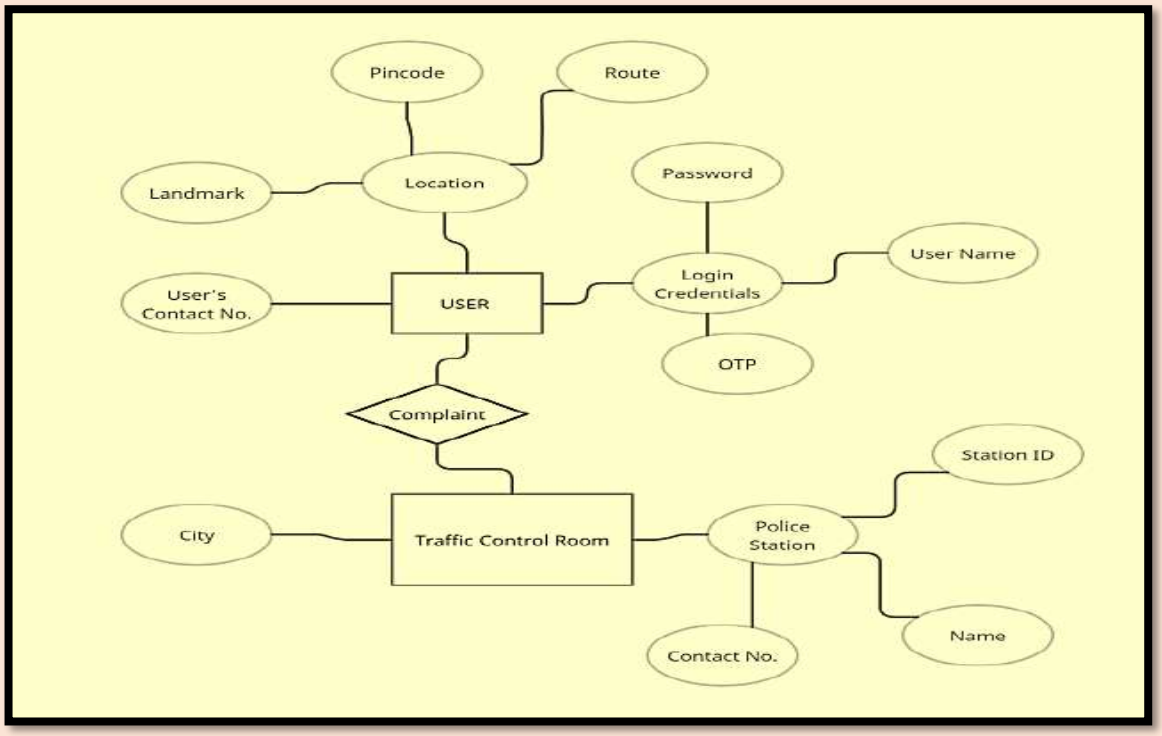


Fig. 2.4 Working model in the present invention with its prototype

PATENTS Published - Jan 2023

S. No.	Title of Patent	Dept.	Name of Applicant	Date of Publication
1.	Health Buddy: A Health Care Website with Ai Chatbot	CSE/CS/CSIT	Ms. Shivani	06-01-2023
2.	Smart Solution for Recycling the Things Thereof	CS	Ms. Ayushi Tyagi	06-01-2023
3.	Method For Developing Skin Carcinoma to Screen an Anticancer Drug	KSOP	KIET Group of Institutions	06-01-2023

S. No.	Title of Patent	Dept.	Name of Applicant	Date of Publication
4.	Secure Framework for Cyber Data	CS (AI/AIML)	Ms. Bhawana	06-01-2023
5.	Feature Engineering to Heterogeneous Cross Software Projects Defect Prediction	CSIT/CSE//CS	Mr. Rohit Vashisth	13-01-2023
6.	Smart Glove for Deaf and Blind Person thereof	CS	Dr. Gaurav Dubey	13-01-2023
7.	Internet Of Things Enabled Temperature Ambient Milk Pan to Avoid Spilling of Milk	MBA	Mr. Mohit Gupta	13-01-2023
8.	Ml, And IoT Based Smart Farming Systems Using Disease Detection and Real Time Monitoring of The Crops	IT	Mr. Manthur	13-01-2023
9.	Technology Integration in Elt At Undergraduate Learners: A Socio-Cultural Perspective	HSS	Dr. Neelam Sharma	13-01-2023
10.	Iot Enabled Smart Assistance for Border Security in Extreme Weather Conditions Using Machine Learning Algorithms	ECE/MCA	Mr. Yash Vijay Kumar	13-01-2023
11.	Smart Intelligent Wheelchair for Assisting Disabled Athletes Using Compensation Algorithm	CSE	Mr. S. Balamurgan	13-01-2023
12.	System And Method for IoT-Based Traffic Optimization System	CS	Dr. Santosh Kumar Upadhyay	20-01-2023
13.	Sentiment Analysis of a Patient Suffering from Severe Disease	CS	Ms. Himani Sharma	20-01-2023
14.	Anti-Obesity Drug Delivery Aid Cum Experimental Tool	KSOP	Dr. Mandeep Kumar Arora	20-01-2023
15.	System And Method for Controlling Smart Phone Using Brain Computer Interface	CS	Mr. Shivam Jha	20-01-2023
16.	A System for Automatic Watering System for Indoor Plants Based on Cloud, Ml & Iot	AS	Dr. Prarthana Srivastave	20-01-2023
17.	An AI, Ml, And Iot-Powered System for Tracking, Diagnosing, And Halting the Spread of Dengue Fever	IT	Ms. Ruchin Gupta	20-01-2023
18.	Broadcasting Of Message Using social media In the Scenario of Emergency	CS	Mr. Anurag Mishra	20-01-2023
19.	Incorrect Gym Exercise Detection Using Machine Learning Algorithm to Identify Deviation	MBA	Mr. Ravi Kant	20-01-2023

Details of Research Incentives for Journals

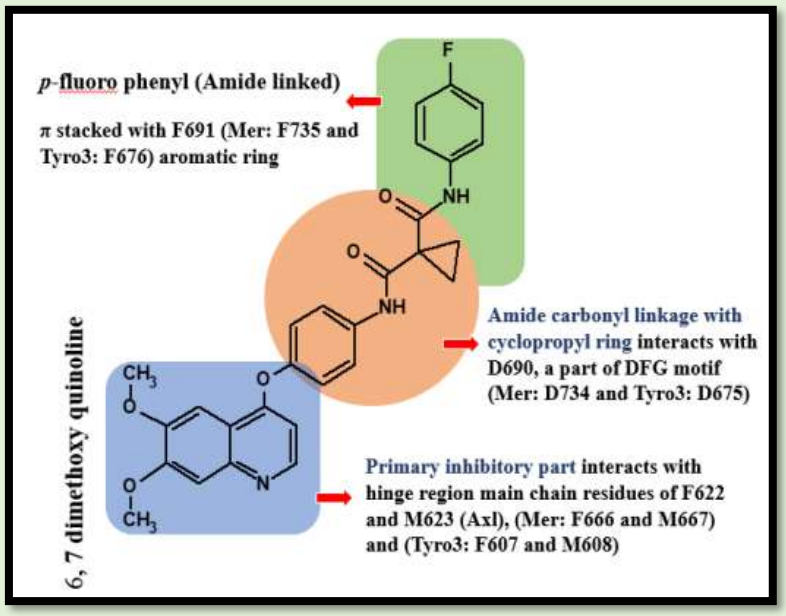
S. No.	Name of Faculty	Designation	Deptt.	Title of Paper and Name of Journal	Impact Factor/Cite Score	Benefits/ Incentives	Index in Journal
1	Mr. Siddharth Tyagi (Student)	Student	KSOP	Mechanism of Action, Synthesis, Properties and Analytical Methods of Cabozantinib, International Journal of Applied Pharmaceutics	1.5	2000	SCOPUS
2	Dr. Neha Bhadauria	Asst. Prof.	ME	A novel technique for surface modification of aluminum alloy using GTAW, The Brazilian society of Mechanical Sciences & Engineering	2.361	11000	SCIE
3	Ms. Radhika Agarwal (Student)	Student	KSOP	A Mini Review on Properties, Mechanism of Action, Pharmacokinetic and Pharmacodynamics and Analytical Methods of Cariprazine, International Journal of Applied Pharmaceutics	1.5	2000	SCOPUS /SCI
4	Dr. Kiran Sharma	Asst. Prof.	KSOP	Artificial Intelligence Assisted Fabrication of 3D, 4D and 5D Printed Formulations or Devices for Drug Delivery, Current Drug Delivery	3.758	11000	SCIE
5	Mr. Sudhir Kumar Singh	Asst. Prof.	EN	Virtual Synchronous Machine using Ant Colony Optimization in Interfaced Distributed Generation (IIDG), Electrical Engineering & Technology (JEET)	1.528	11000	SCI / Springer

S. No.	Name of Faculty	Designation	Deptt.	Title of Paper and Name of Journal	Impact Factor/Cite Score	Benefits/ Incentives	Index in Journal
6	Mr. Piyush Pant	Asst. Prof.	ME	Experimental Investigation in on Micro Electrical Discharge Machining Process for heat treated Nickel Based Nimonic 80A, Materials and Manufacturing Processes	4.78	11000	SCIE
7	Dr. Parul Grover	Assoc. Prof.	KSOP	Current Developments in the Pyran-Based Analogues as Anticancer Agents, Anti-Cancer Agents in Medicinal Chemistry	2.527	11000	SCIE
8	Dr. Vikas Goel	Professor	IT	A blockchain-based Aadhar system: distributed authentication system, TELKOMNIKA Telecommunication Computing Electronics and Control	2.9	4000	SCOPUS
9	Dr. Deepti Katiyar	Assoc. Prof.	KSOP	Ramalin: A Multi-Mechanistic Lichen Metabolite of Pharmacological Importance, Current Bioactive Compounds	1.8	3000	SCOPUS
10	Dr. Deepti Katiyar	Assoc. Prof.	KSOP	Mechanistic elucidations of sesquiterpenes ameliorating viral infections: A review, Food Biochemistry	3.6	11000	SCIE

Highlights of the Published Journal Articles

1. **Dwivedi, A., Khabiya, R., Shrivastava, A., Tyagi, S., Nagarajan, K., & Darwhekar, G. N., "Mechanism of Action, Synthesis, Properties and Analytical Methods of Cabozantinib. International Journal of Applied Pharmaceutics, 15(1), 57–65. DOI: 10.22159/ijap.2023v15i1.46409**

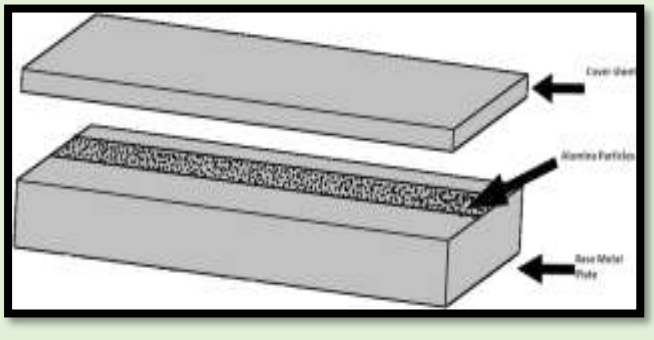
Globally, the burden of cancer is substantial and growing. The impact of the burden of such diseases over society is unpredictable in terms of health lost and cost. Unfortunately, the estimates shown the burden may be increasing in the upcoming decades. Cabozantinib (CBZ) is a newly developed tyrosin kinase inhibitor (TKI) for Differentiated thyroid cancer (DTC), Hepatic Cellular Carcinoma (HCC), Medullary thyroid cancer (MTC) and Renal Cell Carcinoma (RCC). The objective of the presented review is to provide updated knowledge of drugs especially covering analytical methodologies. The review covered the introduction, mechanism of action, pharmacokinetics, synthesis and developed analytical methods by various researchers. The review covered one spectrophotometry and about twenty chromatography methods. The review will be helpful for the scientist working in this area and especially helpful for analytical scientists exploring new analytical methodologies for CBZ.



Interaction of CBZ with TAM Kinasereceptor

2. **Bhadauria, N., Pandey, S., Pandey, P.M. et al., "A novel technique for surface modification of aluminium alloy using GTAW", *J Braz. Soc. Mech. Sci. Eng.* 45, 57 (2023). DOI: 10.1007/s40430-022-04000-0**

The paper proposes a new technique for enhancing the wear resistance of aluminium alloy by developing a composite on the surface of aluminium alloy. Gas tungsten arc welding was used to develop the composite layer on the surface of aluminium 7075 T6 plates by using the bead on plate technique. Arc heat was used to melt the surface of the base metal and the cover plate placed on top of it. Alumina particles were placed between the two. The surface composite was successfully developed on the surface by the said process. Erosive wear test was performed to study the wear behaviour of the base metal and the modified surface. Wear resistance of the modified surface was found to be 3 times of the base metal. The increase of wear resistance is attributed to the refined grain structure and dispersion of alumina on the surface of aluminium alloy. Scanning electron microscopy images exhibited uniform dispersion of alumina particles on the surface of aluminium alloy which is attributed to the melting-disintegration-distribution action detailed further. The wear mechanism for erosive wear in the base metal and modified surface at sample inclination of 30° were found to be intermetallic displacement and ploughing. Application of techniques such as laser surfacing and friction stir surfacing for the surface modification



seems to be infeasible in commercial production and in situ works. The technique developed in the work presented proposes a ready-to-use technology that finds suitable application in commercial in situ manufacturing as it uses conventional GTAW process known for delivering high-quality bonding.

3. **Shrivastava, A., Aggarwal, R., Singh, R. P., & Khabiya, R., "A Mini Review on Properties, Mechanism of Action, Pharmacokinetic and Pharmacodynamics and Analytical Methods of Cariprazine",** ***International Journal of Applied Pharmaceutics*****, *15*(1), 31–35. DOI: 10.22159/ijap.2023v15i1.46651**

Cariprazine (CPZ) being a "D2/D3 receptor partial agonist" is used for schizophrenia treatment. CPZ illustrate different functional study at "dopamine receptors depending on the assay system". This study elaborate review summarizes the structure–activity relationship (SAR), Mechanism of action (MOA), pharmacokinetics, pharmacodynamics and analytical methods published. CPZ was found to be more effective than risperidone. It was analogus with a remarkably longer time to deteriorate than inactive drug in a long-term, phase III, -deteriorate prevention study. This study elaborates the activating and solemn or sedative properties of first-line oral second generation antipsychotics by explore the rates of adverse effect in product labelling for the indications of schizophrenia and ancillary treatment of major depressive disorder (MDD). The common adverse events reported were extrapyramidal disorder, insomnia, dizziness, solemn, anxiety, vomiting and constipation in "fixed dose study of tested 1.5, 3.0, and 4.5 mg/day". The presented review explains about biological properties, pharmacokinetics, pharmacodynamics, and analytical methods of CPZ. Sadly, despite years of research into schizophrenia treatment, a significant number of patients do not experience sufficient improvement. A reduction in symptoms of less than 50% will be experienced by approximately two-thirds of those affected, with most of this improvement occurring in the positive symptoms. The need for more effective treatments and the utility of ERPs to objectively index brain-based treatment response are reflected in several of the papers assembled. Current treatment options are not ideal for improving negative and cognitive symptoms. One of the most difficult psychiatric disorders to manage is bipolar (affective) disorder, which was originally known as manic depressive illness. Even though it has been linked to creativity, it has a negative impact on the majority of patient's lives, and more than 6% commit suicide within two decades of being diagnosed. The presented review article explains the recent updates regarding pharmacodynamic, pharmacokinetic and analytical methods reported about this drug.

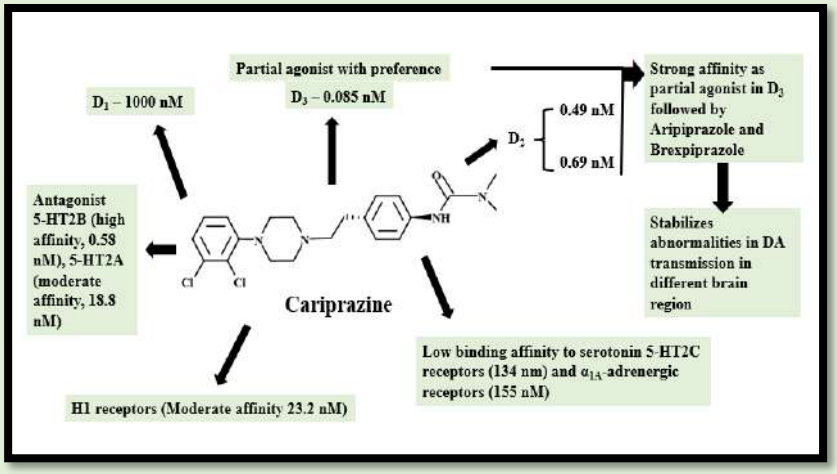


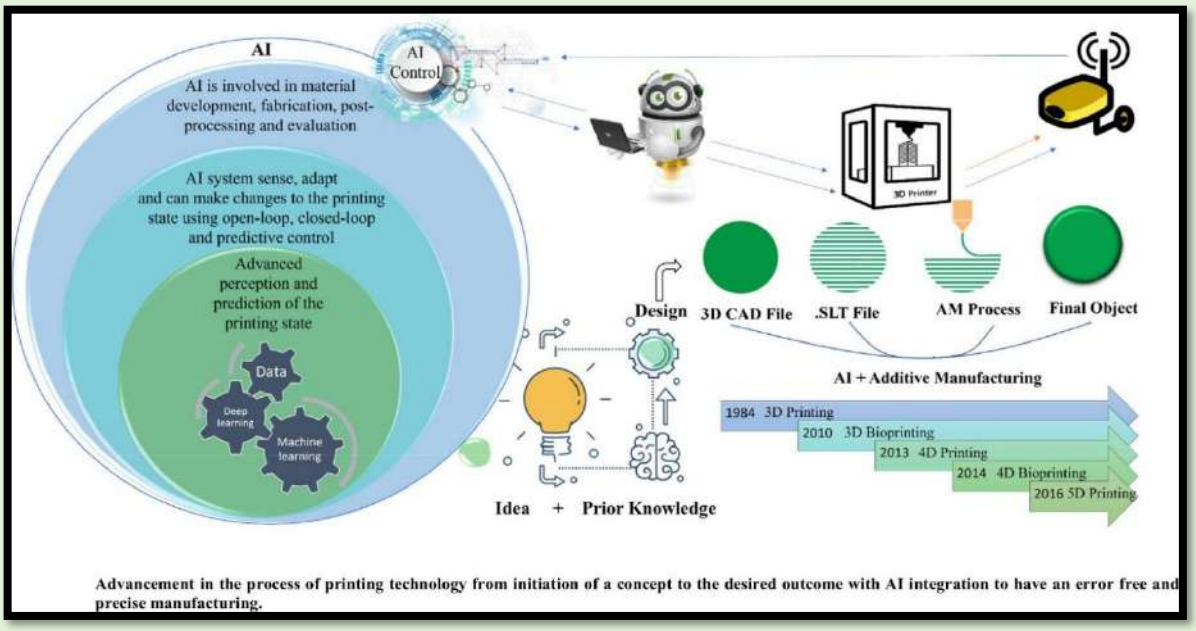
Table 1: Summary of analytical methods

Method	Detector	Column	Chromatographic conditions	LOD	LOQ	Application
HPLC	MS/MS	RP_{18}, 150 mm × 4.6 mm, 5 µm	MeOH–CH_3COONH_3 (10 mmol) (90:10, v/v)	0.05, 0.001 ng/ml	0.1 ng/ml	Plasma and urine
HPLC	MS/MS	C_{18} column (150×4.6 mm, 5 µm)	ACN-MeOH-0.2 M CH_3OONH_3-H_2O (35:25:35:5, v/v/v/v)	20 ng/ml	80 ng/ml	Plasma
HPLC	UV (250 nm)	C_{18} column (300 × 7.8 mm, 10 µm)	ACN: ammonium formaate (0.1 M) (40:60 v: v)	-	-	Brain uptake by injected dose

HPLC	MS/MS	-	-	-	-	Pharmacokinetic characterization
HPLC	PDA	C_{18}, 250 mm×4.6 mm×5µm)	0.05 M CH_3COONH_3 Buffer (pH 4.8): ACN (50:50,v/v)	0.2 µg/ml	0.7 µg/ml	Stability indicating
UPLC	MS/MS	C_{18}, 1.6 µm, 100 Å, 2.1 × 50 mm	H_2O (0.1% v/v CH_3COOH+ACN (0.1% v/v CH_3COOH)	-	-	Detection of drug and metabolites
LC	MS/MS/QTOF	C_{18} 150×4.6 mm, 3.35 µm	MeOH: H_3PO_4 (0.1%), 50:50 (% v/v),	-	-	Stability indicating

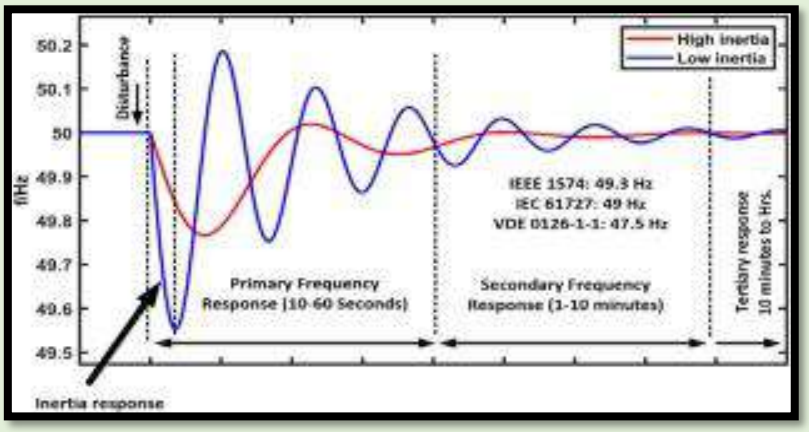
4. **Sharma Singh Kiran*, "Artificial Intelligence Assisted Fabrication of 3D, 4D and 5D Printed Formulations or Devices for Drug Delivery", Current Drug Delivery 2023; 20(6). DOI: 10.2174/1567201820666221207140956**

5D & 4D printings are an advanced version of 3D printing class and are one of the most revolutionary and powerful fabrication methods used for preparing innovative structures and solid substances using precise additive manufacturing technology. It captures the imagination of one with its potential to produce flexible designing and fabrication of innovative products with high complexity and speed. This technology with the assistance of AI (Artificial Intelligence) facilitates real-time sensing, adapting to change, and predicting the state of printing. 3D printing works by employing advanced materials utilizing a computer aided design with tomography scan under AI control which deposits printing material in accordance with the nature of a file usually in STL format, but it requires time for printing. This shortcoming can be overcome by 4D printing where smart materials are incorporated with time as 4th dimension. This technique has self-repair and self-assembly properties that will save around 80% of time. Some printed materials are made sensitive to temperature, humidity, light, and other parameters so that they can respond to stimulus, but it's one limitation of not being able to print complex shapes having curved surfaces can be overcome by utilising 5D printing where additive manufacturing is done by rotation of extruder head and rotation of print bed to print in 5 different axes. This review evaluates the prospective of these techniques with AI interference in medicine and pharmacy, with its effective and efficient production for the required design precision.



Advancement in the process of printing technology from initiation of a concept to the desired outcome with AI integration to have an error free and precise manufacturing.

5. **Singh, S.K., Singh, R., Ashfaq, H. et al., "Virtual Synchronous Machine Using Ant Colony Optimization in Inverter Interfaced Distributed Generation (IIDG)" *J. Electr. Eng. Technol.* 18, 167–179 (2023). DOI: 10.1007/s42835-022-01198-w**

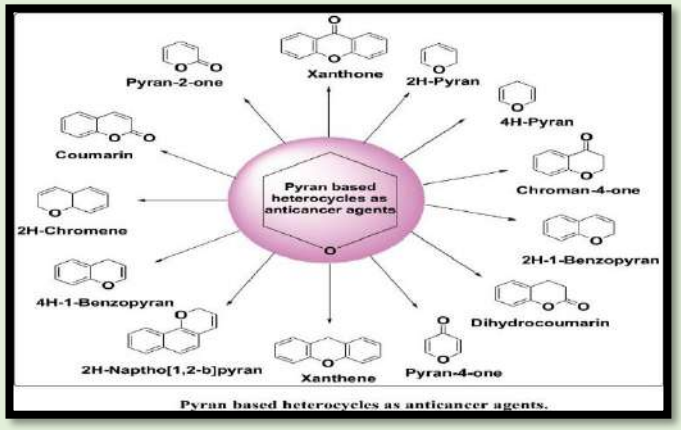


The large-scale proliferation of renewable energy sources (RES) equipped with the converter generation is attributed to the different system responses as compared to the conventional centralized generation and it leads to the dearth of inertia which is essentially required in an electric power system. Aiming at the solutions to improve dynamic frequency response, an innovative controller design is suggested to damp out the stepper variations of frequency and dipper frequency nadir. This work proposes a Virtual synchronous machine (VSM) based on a swarm metaheuristic technique called Ant Colony Optimization (ACO) in alleviating the frequency disturbances in multimachine system. ACO tuned VSM offers flexible inertia depending upon the severity that emerged in the system by optimal adjustment of the emulated inertia. In this suggested VSM, the external loop continuously tracks the system disturbances, and accordingly it modifies the controlled output which is further passed to the internal loop. Now, this loop identifies and computes the exact active power required to supply during transients and its computation is assisted by ACO based correction factor which provides optimal inertia constant to improve the dynamic stability of the system. The performance evaluation and comparison has been done on Kundur's 3-area multimachine system aggregated with 3 areas with 6 synchronous generators and developed in a MATLAB environment which reveals the satisfactory performance of this ACO tuned VSM scheme.

6. **Piyush Pant & Pushpendra S. Bharti, "Experimental Investigation on Micro-Electrical Discharge Machining process for heat treated Nickel-based Nimonic 80A", *Materials and Manufacturing Processes*, 38:1, 1-12, DOI: 10.1080/10426914.2022.2105889**

Nimonic 80 A is a nickel-based alloy having diverse applications in aerospace, automotive, biomedical, and military sectors owing to its immense strength to weight proportion and resistance to corrosion at raised temperatures. As a result of the problems associated with its conventional machining, unconventional machining, in particular, EDM is preferred. Micro-machining has become a key attraction point for manufacturing organizations. This requires to have an understanding of the process in terms of the impact of control factors on the performance characteristics. In the prevailing experimentation, micro holes were drilled on a heat-treated Nimonic 80A plate. Current, pulse-on time and pulse-off time are considered as the control factors, whereas tool wear ratio and drilling rate are considered as the performance variables. The experiments were designed using RSM. ANOVA has been carried out and the SEM analysis of the drilled hole was performed for examining the quality of the holes. The measurement of the thickness of recast layer was performed. Copper and zinc, diffused around the micro-drilled area, were identified through the elemental composition of the drilled sample using EDX. Minimum tool wear ratio and the maximum drilling rate were obtained to be 0.78 and 0.77 mm/sec, respectively.

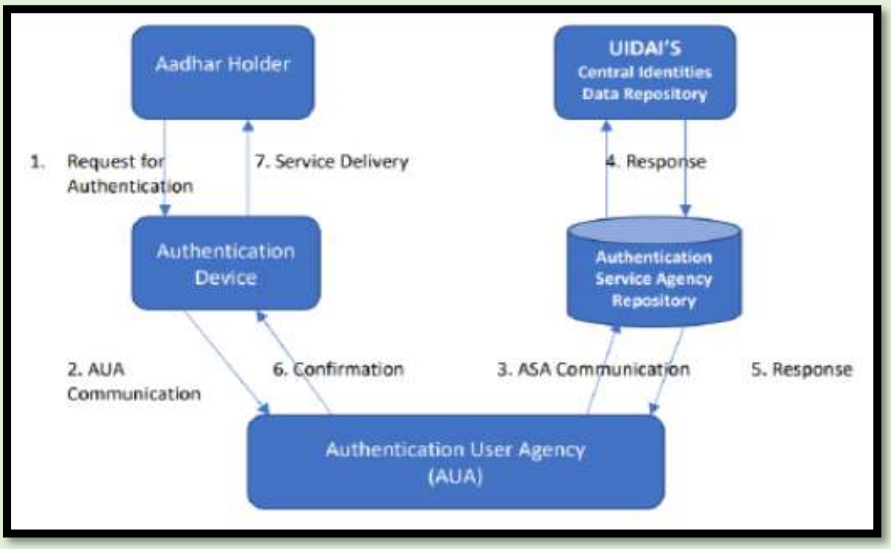
7. **Grover P, Bhardwaj M, Mehta L, Kapoor G, Chawla PA., "Current Developments in the Pyran-Based Analogues as Anticancer Agents", *Anticancer Agents Med Chem.* 2022;22(19):3239-3268. DOI: 10.2174/1871520621666211119090302. PMID: 34802409.**



Heterocyclic compounds offer an enormous area for new lead molecules for drug discovery. Till today, efforts are being continuously made to find appropriate treatment for the management of the deadly disease of cancer. Amongst the large number of heterocycles that are found in nature, heterocycles having oxygen obtained noteworthy attention due to their distinctive and pharmacological activities. 'Pyran' is one of the most significant non-aromatic, six membered ring composed of one oxygen atom and five carbon atoms. It is considered a privileged structure since pyran and its related derivatives exhibit a wide spectrum of biological activities. Pyran derivatives are found to have excellent anti-cancer properties against various types of cancer. The present review focussed on the current advances in different types of pyran-based derivatives as anti-cancer agents. Various in vitro (cell-based testing), in vivo (animal based testing) models as well as molecular docking along with results are also covered. A subsection describing briefly natural pyran containing anticancer compounds is also incorporated in the review.

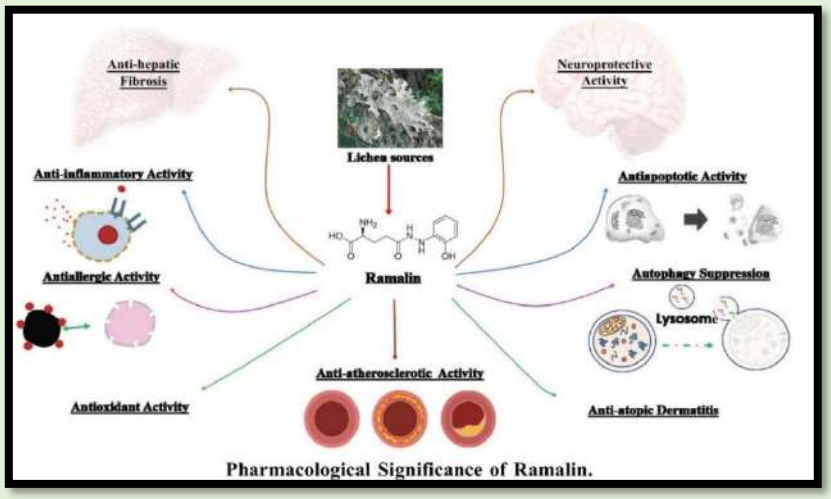
8. Goel, Vikas; Aggarwal, Mukul; Gupta, Amit Kumar; Kumar, Narendra, "A blockchain-based Aadhar system: distributed authentication system", *TELKOMNIKA (Telecommunication Computing Electronics and Control),* Dec2022, Vol. 20 Issue 6, p1239-1247. DOI: 10.12928/TELKOMNIKA.v20i6.24231

An Aadhaar is a unique number issued to every citizen in India. Aadhar's current identity authentication relies on the central identities data repository (CDIR) of the unique identification authority of India (UIDAI), which is at risk of a single-point fault attack. Perhaps worse, internal attacks can tamper with the sensitive data of authenticated devices without being detected. In this paper, the proposed system utilizes emerging technology: blockchain for solving the issue of centralized authentication. The proposed system provides a distributed, secure, and tamper-proof ledger platform for Aadhar in that Aadhar is implemented using blockchain Ethereum technology. The proposed system considers the unique Aadhar identification (ID) for each citizen of India and registered it on the smart contract of Ethereum so that this unique ID may be authenticated by each other in a peer-to-peer network without a central authority. For securing the data, the proposed framework uses hashing technique for significant data (i.e. firmware). Blockchain stores hashed data and instantly any change in the state of the data may be possible to detect.



9. Katiyar Deepti*, Bansal Priya, Kumar Abhishek and Prakash Surya, "Ramalin - A Multi Mechanistic Lichen Metabolite of Pharmacological Importance", *Current*

***Bioactive Compounds*, 19(1):e240322202584, 2023. DOI: 10.2174/1573407218666220324120229**



Pharmacological Significance of Ramalin.

Ramalin (γ-glutamyl-N'-(2-hydroxyphenyl) hydrazide), a nitrogen containing lichen secondary metabolite, was isolated from Ramalina terebrata, an Antarctic lichen. Since then, it has attracted several researchers, thus leading to various research investigations exploring the pharmacological potential of Ramalin. The bibliographic databases were explored for the peer-reviewed research related to the pharmacological importance of Ramalin. Results: The article summarizes the antioxidant, anti-cancer, anti-obesity, antibacterial, and antiallergic activities of this molecule. Additionally, the studies conducted to show the potential of Ramalin in atherosclerosis, atopic dermatitis, neurodegenerative disorders, hepatic fibrosis and its role in autophagy suppression and enzyme inhibition are also described briefly. Moreover, the experimental findings also depict that Ramalin did not show any toxicity. The current review in this research paper shall be beneficial for future researchers interested in working on Ramalin because it summarizes all the relevant publications starting from its first-time isolation to the articles of 2021.

10. Katiyar, D., Bansal, P., Kumar, A., Prakash, S., & Rao, N. G. R., "Mechanistic elucidations of sesquiterpenes ameliorating viral infections: A review", Journal of Food Biochemistry, 46, e14452, 2023. DOI: 10.1111/jfbc.14452

Sesquiterpenes are important in human health because they can treat viral infection, cardiovascular disease, and cancer. Sesquiterpenes have also been shown to increase the sensitivity of tumour cells to conventional pharmacological therapies, in addition to their antiviral effects. The present review article was drafted with an intention to gather information regarding sesquiterpenes and its medicinal importance. The role of sesquiterpenes in the endogenous production of sesquiterpenes by plants and fungi, as well as the mechanisms by which they are effective against viral infection, are discussed in this review. Different online libraries such as PUBMED, Science direct, MEDLINE were assessed to gather information, additionally, books, magazines, journals, and scientific newspapers were also studied to make this article more informative. This review examines novel synthesis mechanisms, their cyclization, purification techniques, and the diverse ecological roles sesquiterpenes play in the plant producer, which varies according to the plant and the chemical under consideration. In this article, we have discussed the consequences of sesquiterpenes and their properties for future crop productivity. We have addressed the many forms of sesquiterpenes that have been shown to have antiviral activity in various diseases. The consequences of sesquiterpenes and their properties are very useful for future crop productivity. We have addressed the many forms of sesquiterpenes that have been shown to have antiviral activity in the treatment of various diseases.

Reimbursement of Conference Registration Fee

S. No.	Name of Faculty	Designation	Dept.	Name of Conference	Title of Paper	Benefits/ Incentives	Published By
1	Ms. Rishika Bangroo	Asst. Prof.	CSIT	International Conference	Cryptocurrency Price Prediction using Machine Learning Algorithm	7080	IEEE
2	Ms. Ruchin Gupta	Asst. Prof.	IT	International Conference	Using Machine Learning for Inter-smell Detection: A Feasibility Study	4000	IEEE
3	Ms. Meenakshi Tyagi	Associate Professor	MBA	International Conference	Impact of Digitization in Banking Services on Customer Habits	7091	Inder science

Book Chapter Publication Incentives

S. No.	Name of Faculty	Designation	Dept.	Title of Book/ Chapter/ Monograph	Incentive Amount	Name of Publishing House
1	Ms. Puja Roshani	Asst. Prof.	MBA	Crisis Management: From a Stage of Shock to Reassurance in the Hospitality Industry	2000	International Publisher
2	Ms. Shivani Agarwal	Asst. Prof.	MBA	Investigation of Human Resource Management Practices After COVID-19: Challenges and Opportunities	2000	International Publisher

Collaborative Research and Development Presentations

S. No.	Dept.	Title of the Presentation	Name of Presenter	Designation of Presenter	Number of Attendees
1.	KSOP	Semiconducting nanoparticles in biomedical applications	Dr. Kiran Sharma	Assistant Professor	16
2.	CSE	Smart Hydroponics Systems	Mrs. Shivali Tyagi	Assistant Professor	18
3.	CSE (AI) & CSE	Convolutional Neural Network	Mr. Nagesh Sharma	Assistant Professor	18
4.	EEE	Different hybrid photovoltaic systems	Mr. Anmol Gupta	Assistant Professor	18

S. No.	Dept.	Title of the Presentation	Name of Presenter	Designation of Presenter	Number of Attendees
5.	EEE	Grid Interaction of Renewable Energy	Dr. Arvind Kumar	Professor	18
6.	CSIT	A Binary Differential Evolution Approach to Extract Business Process Models	Dr. Sonia Deshmukh	Assistant Professor	18
7.	KSOM	Factors Affecting Work Life Balance: With special reference Private Academic Institutions in NCR.	Dr. Arunima Mishra	Assistant Professor	18
8.	CE	Wind effects on High Rise Building	Ms. Shikha Tyagi	Assistant Professor	19
9.	KSOP	Analytical Method Development for forced degradation study of Favipiravir Tablet	Ms. Surbhi Kamboj	Assistant Professor	16
10.	CSIT	IDS using Deep Learning	Mr. Vinay Kumar	Assistant Professor	15
11.	CSE	Prediction of customer satisfaction based on EEG response and sentiment analysis of global reviews	Mr. Rahul Kumar Sharma	Assistant Professor	19
12.	CSE	Early Detection of Lung Cancer using Machine Learning	Mr. Gagan Thakral	Assistant Professor	19
13.	CSE	Supervised and Unsupervised Machine Learning Techniques for Multiple Sclerosis Identification: A Performance Comparative Analysis	Ms. Shikha Jain	Assistant Professor	20
14.	KSOP	Effect of Withania somnifera and Shilajit on alcohol addiction in mice	Mrs. Priya Bansal	Assistant Professor	20
15.	KSOP	QSAR and Molecular Modelling of HIV-1 integrase inhibitor	Ms. Shikha Kaushik	Assistant Professor	18
16.	CSIT	MATERIAL INFORMATICS	Ms. Shivangi Tyagi	Assistant Professor	30
17.	ECE	Analysis and Modelling of DD-DPMZM to Investigate FIMDR	Mr. Balram Tamrakar	Assistant Professor	25

CRDC Presentation Series

The KIET Collaborative Research and Development (CRDC) Presentation Series is an initiative of the KIET CRD committee to promote research culture continuity, in the campus. The series aims to provide a platform to the student's community and faculty members to display their research work, exchange ideas and cooperate on subjects. The series began in September 2021 and held 150+ technical presentations by January 2023.

Presentations cover various engineering, science, management, humanities, and social science subjects. The speakers include both academics, internal and external experts in the industry. The presentations are open to the Kietians, and all interested participants. The sessions are interactive and encourage response and discussion among the attendees.

The CRD presentation series resulted in many positive results for the research community in the KIET. Some of these results are:

- Awareness and interest in research between students and faculty members increased.
- Increased knowledge and skills in various domains of research.
- Better communication and presentation skills of speakers.
- Strong networking and cooperation between researchers of various subjects.
- Increase the visibility and recognition of the KIET as a research-oriented institute.

One of the major achievements of the CRD Presentation Series is the publication of interdisciplinary research papers by students and faculty members. So far, many papers have been published in reputed journals and conferences due to the facility facilitated by the institute and collaborations.

Another important result of the CRD presentation series is submitting project proposals by faculty members to various funding agencies. These proposals aim to address real-world problems through new solutions based on state-of-the-art research.

The CRD Presentation Series is an ongoing activity that will continue to organize more presentations in the future. The series expects more students and faculty members to motivate members to pursue research as a career option or a means of contributing to society. The series also welcomes the suggestions of all stakeholders to improve its quality and impact.

Faculty Articles

KIET ATTAINING SDG GOALS THROUGH INNOVATIVE WASTE MANAGEMENT PRACTICES SINCE 2017

Dr. Minakshi Karwal {Associate Professor, Dept. of Applied Science & Assistant Dean R&D (Promotion and Implementation of Sustainable Development in Research)}

Some critical global environmental issues like climate crisis, increased carbon emissions, global warming, soil degradation, declining nutritious content of the soil, crops, and human health, food insecurity, and environmental pollution are arising because of anthropogenically induced haphazard unsustainable development.

Sustainability is the term that means, meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. (Brudtland Commission in 1987)

In the present world, unsustainability because of pollution has entered everywhere from thoughts to the five basic elements like earth, water, fire, air and space (pancha bhootas) of which the human body is made. There is a crucial need to generate an attachment to nature through playing and connecting with soil, merging deep into the river system, feeling the touch of air, and plants, and watching the wildlife. This movement from attachment to care is utterly required for the sustenance of the environment as well as to bring harmony in relationships. There is a need to bring the light of hope for the upcoming generation, by mitigating the darkness of contamination in the environment as well as harmony in the thoughts. Moreover, grooming within nature is a proven stress reliever therapy too.

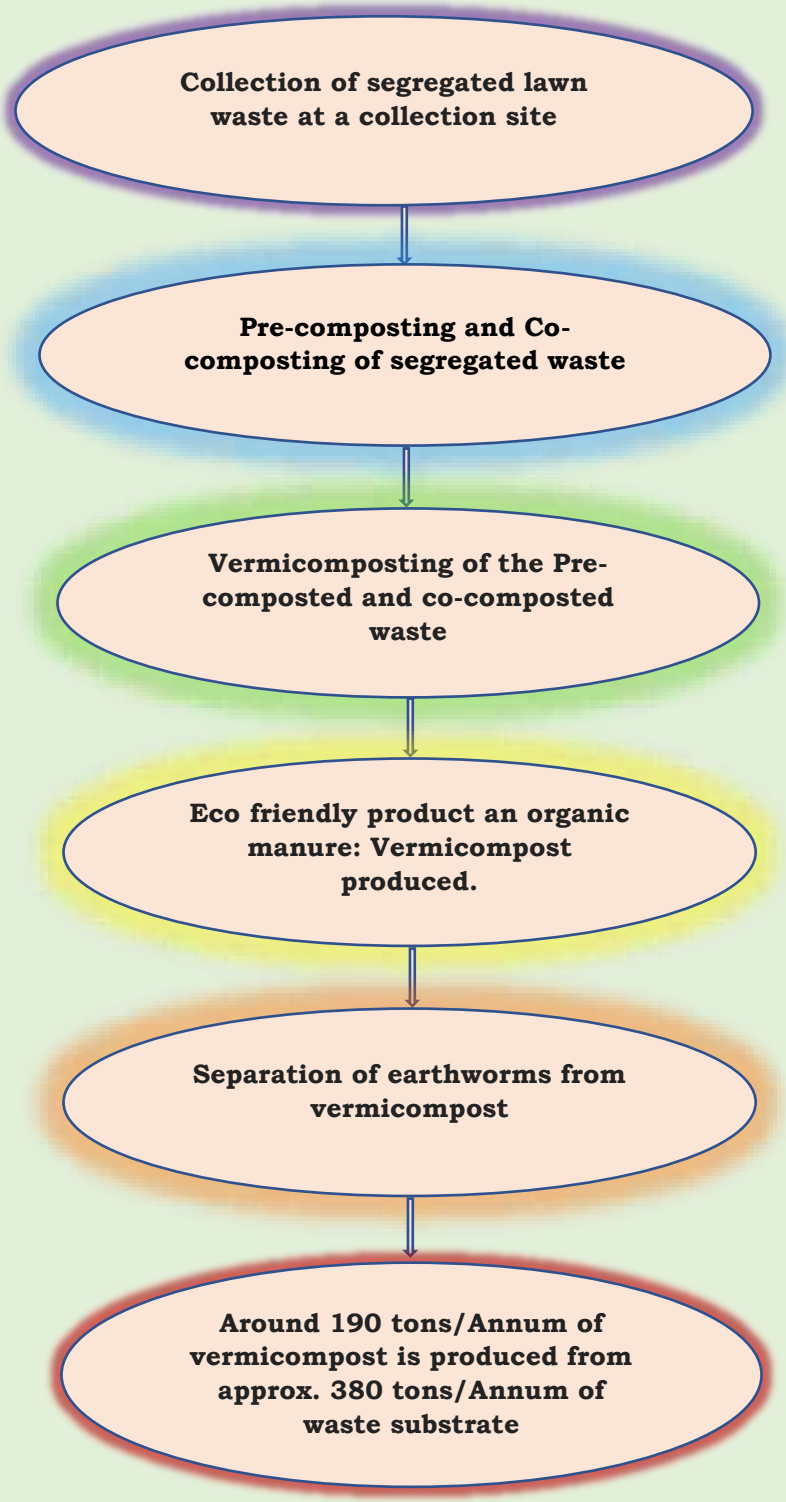
The declining health and harmony among humans and the destruction of the ecosystem gave birth to the global goals for fair and sustainable health from the global biosphere to the local community. These global goals, also known as the Sustainable Development Goals (SDGs), were adopted in 2015 by the United Nations as a universal call to action to protect the planet, end poverty, and ensure that by 2030. The 17 SDGs are integrated, they recognize that action in one area will affect outcomes in others and that development must balance social, economic, and environmental sustainability to protect mother earth and ensure that everyone enjoys peace and prosperity, now and in the future. (http:/www.undp.org).

On the way towards achieving and proliferating sustainability into practice and bringing harmony with nature while reducing the stress of contaminants in the environment, in 2017 KIET Group of institutions established a pilot project on "Converting KIET campus solid waste into black gold" under the initiative taken by Dr. Minakshi Karwal (Associate Professor, Department of Applied Science and Assistant Dean, (Promotion and Implementation of Sustainable Development in Research) as a bit of her contribution to the surrounding.

The project aimed at converting uncooked food waste into organic manure using the 4R rules of solid waste management which are Reduce, Reuse, Recycling, and Refuse.

This effort towards sustainable to attainable was aired through the National TV platform DD Kisan as an environmental Documentary Prakriti ki aur, on 16 May 2017. Link is under given https://www.youtube.com/watch?v=51t50ol7H9s

Later in 2018, an innovated project to sort out lawn waste management problems at the institute level was established, which is still in continuation and is receiving appreciation through various National and International platforms like SWAYAM Prabha Channel, National TV like DD Kisan, DD URDU, Global Summits, MOEFCC, GOI, NTPC, CPWD, IARI, UNDP, NBA team, NAAC team, etc. This project has been patented as well. This biotransformation of biodegradable waste into organic manure is being done through vermi-technology. Vermi-technology is the biomineralization, stabilization, and non-thermophilic process by which earthworms (Eisenia fetida), bioconverts organic material (usually wastes) into a humus-like material known as vermicompost. It depends upon the earthworm's activity to fragment, mix, and promotes the microbial process. The waste management process at KIET Group of Institutions attained the stabilization of the following objectives:



The waste management solution at KIET Group of institutions is providing environmental, social, economic, and green reputational benefits in multiple ways:

- As per Solid Waste Management Rule, 2016, all gated communities and institutions with more than 5,000 sq. area shall, within one year from the date of notification of these rules and in partnership with the local body, ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorized waste pickers or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed-off through composting or bio-methanation within the premises as far as possible. *Just within one year of this govt. policy KIET Group of institutions initiated this project as per the mentioned guidelines in the Solid Waste Management Rule, 2016.* Conventional lawn waste mismanagement process like open burning, open dumping, etc. releases a huge amount of GHG like CH4, CO2 into the environment. This climate change

mitigation technique may provide an eco-friendly solution to the global issue as a local impact.

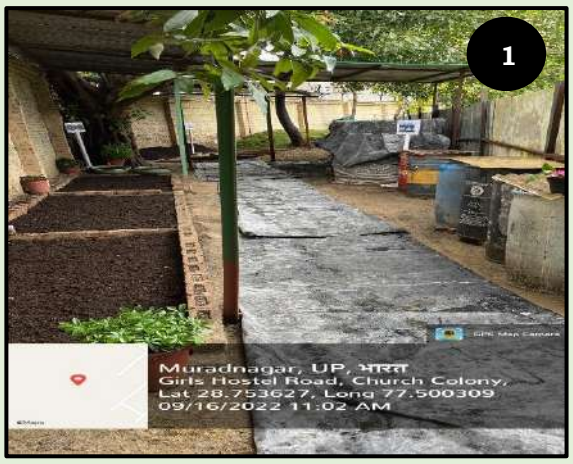
- Employment is generated at the local level, so the socio-economic condition of the surrounding is enhanced.
- Chemical fertilizer has been replaced by organic manure. Thus, groundwater quality is improved.
- Circular economy is generated as cost-benefit analysis results in the advantage of organic manure produced from waste in comparison to chemical fertilizer purchased.
- A sustainable waste management solution that improves soil health, thus enhancing public health.
- Verm technology is a cost-effective technique that cuts down the usage of chemical fertilizers.
- Vermitechnology is a green technology that is eco-friendly, low energy consuming, and minimizes the odour of decomposing manure. The conversion process of biodegradable waste into a valuable nutrient-rich organic manure-Vermicompost is non-polluting as well.
- Faster to produce compared to traditional composting, less labour required, and good quality compost product (fine texture and no foul odour).
- It reduces the pressure on the limited land area of sanitary landfills. This means a reduction of concentrated, toxic leachate and methane gas that is being released into the environment, which equates to a decrease in overall pollution.
- This project is a blueprint of action covering the following SDG goals at KIET Group of institutions:
  Goal 10: Reduced Inequalities: Support the marginal and disadvantaged.
  Goal 11: Make cities inclusive, safe, resilient, and sustainable.
  Goal 12: Responsible Consumption and Production
  Goal 13: Climate Action
  Goal 15: Life on Land
- Let's raise India's indigenous rich culture and bring harmony within self and nature. Our future generation needs more purity in the environment and in our thoughts as well.
- Let's provide a better harmonious environment for our future generation.
- Let's be sustainable in our thoughts, efforts, and action.
- Let's revise our indigenous knowledge and proliferate the same with additional innovative eco-friendly practices.
- "Alone we make a Difference, together we create an Impact". We aim to be the Global catalysts to fulfil the needs of sustainability through developing an eco-friendly attitudes and bring a change to the mindset of consumers to become responsible consumers as well as producers and building a large green community.

Let's See Some of the thoughts/ideas that have been materialized:

1. **Waste Management Project**
2. **MICROBIAL INOCULUM: Prepared at KIET School of Pharmacy**
3. **THERMOPHILLIC RECTORS: To carry out co-composting and thermophilic reactions.**
4. **VERMIRECTORS: Factory for bioprocessing of lawn waste and production of organic manure**
5. **VERMICULTURING: Culturing of earthworms**
6. **Manpower Employed: Manpower indulged during the process.**
7. **VERMICOMPOST HARVESTING: Separating worms from vermicompost.**
8. **HARVESTED VERMICOMPOST: Organic manure generating circular economy.**

(Figures corresponding to each point are shown below)

~ JAI BHARAT JAI BHOOMI ~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7


8

Student's Corner

A **Smart helmet** is a type of headgear that provide a range of features beyond basic head protection with use of advanced technology. These helmets typically include sensors, communication devices, and other electronic components that allow for various functionalities, such as GPS tracking, hands-free communication, and even augmented reality displays. Smart helmets are often used in high-risk occupations, such as construction, firefighting, and military operations, where they can enhance situational awareness and improve safety. Additionally, they are becoming increasingly popular among sports enthusiasts, particularly in the cycling and motorcycling communities, as they can provide valuable data on performance and safety.

Devansh Gupta
Student
Department of ECE

At the ECE Department KIET Group of Institutions, A Smart Helmet interfaced with a prototype of robotic car and a Mobile app has been developed by Devansh Gupta under mentorship of Dr. Himanshu Chaudhary (Assistant Prof. ECE Dept.) and Mr. Atul Kumar (Lab Assistant, ECE Dept.). The developed smart helmet made use of different sensors such as GPS sensor, Alcohol sensor, touch sensor and eye-blink sensor. This project is in the final stage of completion. The final objective of this project is real time testing of smart helmet in synchronization with vehicle and mobile app.

The aim of **Ultratech electronic wheelchair** project is to develop a more accessible and advanced wheelchair that enhances the mobility and independence of people with disabilities. An extensive literature and market survey has been conducted by the team to understand the needs and preferences of potential users. Based on the findings, a Ultratech wheelchair with following unique features has been designed under the mentorship of Dr. Shubham Shukla, Dr. Himanshu Chaudhary (Assistant Prof. ECE Dept.) and Mr. Atul Kumar in ECE Department. These features include obstacle detection and avoidance, Seat elevation, Joystick control, Durability and more energy efficient. The main technical component of the design includes: Permanent magnet DC motors, Linear actuators, Ultrasonic sensors, Lithium Iron phosphate batteries (LiFePo4), Arduino Uno, Relay switch, position switches, and accelerometer.

The team of this project comprises of Anisha Kumari, Devansh Gupta, and Sanchit Jain, has also participated in e-Yantra Innovation challenge competition organized by IIT Bombay and is in the final round of competition.

Sanchit Jain
Student

Devansh Gupta
Student

Anisha Kumari
Student

KIET (R&D) Policies

Promotion of research culture with the formulation of policies by the R&D Committee are 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

Salient Features of KIET (R&D) Research Policy

Presentation of Research Papers in Conferences in India

- The International/National conference must be of repute (viz. IEEE, Springer/Wiley/IPC etc.) and the hosting institutions must be of repute as well (IITs/IISc/NITs/IIITs/Universities/Deemed Universities etc.).
- The faculty would be allowed OD + Registration + T.A. on an actual basis or Rs. 20,000/- whichever is less.
- Only one faculty member may use the facility in the case of joint authorship.
- Each faculty member can present research papers at conferences of repute twice in an academic year with financial assistance (limited to Rs. 20,000/-only).
- The maximum number of ODs is limited to one week during the lean period. Only one one-day OD is allowed in the academic period.
- Authors must also be aware of the KIET Ethics Policy for Students and Faculty Members on academic dishonesty and plagiarism.
- Published paper must have 'KIET Group of Institutions, Delhi-NCR, Ghaziabad.
- Only oral presentation of research papers is acceptable.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is mandatory for the perspective authors to include at least two references of already published Research Papers by KIET faculty in their Research papers.
- A publication claim under Research Incentive Schemes (RIS) of KIET must be made within a month of the publication of a research paper in Conference Proceedings Citation Index-Science (CPCI-S), Conference Proceedings Citation Index-Social Sciences & Humanities (CPCI-SSH) and SCOPUS Indexed Conference Proceedings in the prescribed form.
- Details of the knowledge sharing session must be submitted while making the claim (Annexure III (b)).
- For the Research paper Publication by students (based upon Final Year Project outcome as notified by Dean Academics) in Scopus Indexed Conference, the institute will reimburse 50% of the registration fee to each project group.
- For the Research paper Publication by students (other than Final Year Project outcome) in Conferences by student of I, II, II and IV years, the institute will reimburse Rs. 1000 or T.A (as per Institute policy), registration fees whichever is less.

Presentation of Research Papers in Conferences Abroad

- The faculty must approach AICTE (which provides 100% funding subject to meeting their norms) or other funding agencies of the Govt. of India.
- It has been observed that some of the proposals may not meet AICTE norms, besides the paucity of funds, because of their all-India scope. Therefore, KIET may also consider funding for international conferences on a case-to-case basis, subject to 60% being paid by the candidate and 40% by KIET, with the candidate having at least 5 years of service in KIET. Also, the candidate should register for a Ph.D. after coming as soon as possible.
- This sanction would be allowed depending upon the track record of the faculty member to be adjudged by a panel of at least four research and development.
- To raise the number of citations for improvement of KIET NIRF Ranking, it is mandatory for the perspective authors to include at least two references of already published Research Papers by KIET faculty in their Research papers.
- Published papers must have "KIET Group of Institutions, Delhi-NCR, Ghaziabad" as the affiliation.
- A publication claim under Research Incentive Schemes (RIS) of KIET must be made within a month of the publication of a research paper in Conference Proceedings Citation Index-Science (CPCI-S), Conference Proceedings Citation Index-Social Sciences & Humanities (CPCI-SSH) and SCOPUS Indexed Conference Proceedings in the prescribed form (Annexure III (a)).
- Details of the knowledge sharing session must be submitted while making the claim (Annexure III (b)).

For Attending Workshops/ Seminar/ FDPs

- The faculty would be allowed OD+ Registration+ T.A. on an actual basis or Rs. 10,000/-whichever is less.
- The Workshops/Seminars/FDPs hosting institutions must be institutes of repute (IITs/IISc/NITs/IITs/Universities/Deemed Universities etc.).
- Each faculty member can attend workshops/seminars/FDPs of repute twice in an academic year with financial assistance. However, financial assistance is limited to Rs. 10,000/-only.
- The maximum number of ODs is limited to one week during the lean period. Only one one-day OD is allowed in the academic period.
- The clause of "minimum requirement of 6 months of service in KIET" stands discontinued for claiming any research-related incentives or OD for attending workshops, seminars, or FDPs etc.
- Faculty who attends FDPs outside the university must disseminate knowledge and information by organizing faculty development program (FDP) and student development programs (SDP)/student workshops/summer/winter schools, among other things, for the benefit of faculty and students in their respective departments.
- The OD and registration claim under the Research Incentive Schemes (RIS) of KIET must be made within a month in the prescribed form (Annexure IV (a)).
- Details of the knowledge sharing session must be submitted while making the claim (Annexure IV (b)).

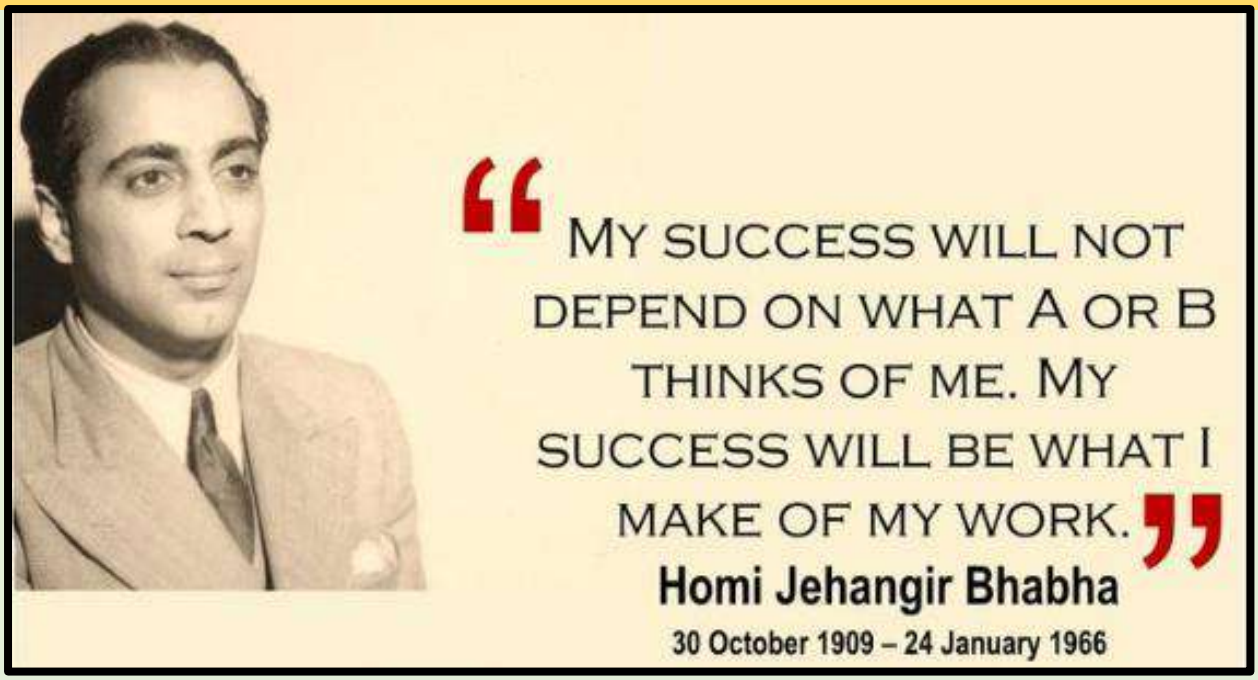
Note: All the Annexure are found in the KIET website under the Research Tab.

Various Research Labs in KIET

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


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


Research and Development Efforts in KIET
A Glimpse of Various Research Labs in KIET
www.kiet.edu



KIET Group of Institutions

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