

**SKCET**



**06<sup>th</sup> July - 12<sup>th</sup> July 2024**



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## *INSIDE THE ISSUE*

**INSTITUTIONAL EVENTS** : PG 03 - 06

**STUDENTS PROGRESSION** : PG 07 - 08

**RESEARCH AND DEVELOPMENT** : PG 09 - 14

**FACULTY PROGRESSION** : PG 15 - 16

**FACULTY CERTIFICATIONS** : PG 17 - 22

**ALUMNI CORNER** : PG 23 - 24

**CREATIVE CORNER** : PG 25 - 30

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**INSTITUTIONAL  
EVENTS**



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## EEE | PRINCIPAL INTERACTION



**Dr.K.Porkumaran**, Principal interacted with the faculty members of **EEE** Department on 08.07.2024 and appreciated the department faculty members for their recent accolades in Hackathon/ Kart winnings, research fellowships, R&D grant and motivated everyone to excel in Research. The faculty members introduced themselves and highlighted their individual contributions to the department and Institution. Dr. K. C Ramya, HOD, EEE welcomed the Principal and faculty members and highlighted the milestones and best practices of the department.

## COMPUTING SCIENCES | PRINCIPAL INTERACTION



**Dr.K.Porkumaran**, Principal interacted with the faculty members of Computing Departments on 10.07.2024 with an aim to establish a collaborative and supportive environment and identify the key areas of development and improvement. Principal in his interaction highlighted the Developing strategies for transforming patents into marketable products, supporting entrepreneurship and innovation within the institution and Incubation Centre (CDIIC) Projects Dr. R. Ramesh Kumar, Dean Computing, welcomed the gathering and highlighted the achievements of the Department.

## MCT | PRINCIPAL INTERACTION



**Dr.K.Porkumaran**, Principal interacted with the faculty members of **MCT** on 09.07.2024 and highlighted the significance of Research outcomes and innovation. Principal congratulated the faculty members for their achievements and contributions. He specially congratulated the achievement of student A. Benjamin (IV MCT A) for being selected for advanced internship training in Taiwan. Dr. M. Lydia, welcomed the gathering and highlighted the achievements of the Department.

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# STUDENTS PROGRESSION



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## MECH/MCT | AUTODESK - INDIA DESIGN



Students of **Mechanical** and **Mechatronics** Engineering departments participated in the first training session of the “Autodesk - India Design Week 2024” on 27<sup>th</sup> June 2024.



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## R&D | JOURNAL PUBLICATION | MECH

International Journal on Interactive Design and Manufacturing (IJDeM)  
<https://doi.org/10.1007/s12008-024-01980-2>

ORIGINAL ARTICLE



### Simulation based swarm intelligence optimization to develop manufacturing distribution plan

G. Gokilakrishnan<sup>1</sup> · P. Ashoka Varthanan<sup>2</sup> · B. N. Sreeharan<sup>3</sup> · C. Nidhyapathi<sup>4</sup> · N. Kavitha<sup>5</sup> · C. Rajendran<sup>2</sup>

Received: 9 February 2024 / Accepted: 26 June 2024

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#### Abstract

Integrated manufacturing-distribution planning increases profitability of business and reduces the cost incurred in the management of any supply chain. This kind of planning is very much essential for various divisions that operate in different parts of the world in order to satisfy customer demand. Therefore, it is a vital part of supply chain management. The present research was carried out to investigate an integrated manufacturing-distribution planning problem under stochastic demand scenario. Uncertainty in demand is a universal problem in all types of businesses. In this paper, a simulation-based heuristic discrete particle swarm intelligence method is used to develop manufacturing-distribution plan taking into account of regular time manufacturing strategy, overtime manufacturing strategy and outsourced manufacturing costs including backlog, inventory carrying, recruiting/dismissing and distribution expenses. The obtained result is also benchmarked with that of the solution of simulation based heuristic binary coded genetic algorithm. The quality cost under stochastic demand scenario is considered in this research work for the first time. The mixed integer linear programming model is implemented for a popular bearing-production company situated in India. Near optimum solutions for the stochastic demand case is obtained by the simulation-based optimization approach. This research ensures the entire lots of Near optimum solutions for the stochastic demand case is obtained by the simulation-based optimization approach. parts delivered are of good quality.

**Dr.P.Ashoka Varthanan,** Dean, R&D and Innovation, has published a research article titled “**Simulation based swarm intelligence optimization to develop manufacturing distribution plan**”, in the International Journal of Interactive Design and Manufacturing. It is indexed in Scopus with an Impact Factor of 2.2.

## R&D | JOURNAL PUBLICATION | CIVIL

**Mr. R. Vighnesh,** Assistant Professor, Department of **Civil Engineering**, has published a research article titled “**Multi-factor thermal analysis of phase change material integrated roofing element**” in the Architectural Science Review, a Q1 journal (Taylor and Francis). It is indexed in Scopus and WoS.

ARCHITECTURAL SCIENCE REVIEW

<https://doi.org/10.1080/00038628.2024.2368662>



### Multi-factor thermal analysis of phase change material integrated roofing elements

Rameshkumar Vighnesh<sup>a,b</sup>, Parol Viswanath<sup>a</sup> and Kalpathy Balakrishnan Anand<sup>a</sup>

<sup>a</sup>Department of Civil Engineering, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, India; <sup>b</sup>Department of Civil Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

#### ABSTRACT

In the present study, the PCM layer is integrated into the roof, analyzed, and compared for its thermal behaviour in terms of Indoor Air Temperature Reduction (IATRI), Thermal Load Levelling (TLL), and Lag Time (LT) to determine the ideal position, thickness, and type of PCM. The observations from the experimental analysis were validated using COMSOL Multiphysics v6.0 with available literature. The results showed that PCM-integrated roofs reduced the interior temperature by around 30%. Furthermore, the fluctuations in the interior temperatures were reduced to 6.1% with PCM integration within the roof. A lag time of 5–8.25 h was observed for the PCM roofs. The study also found that the material properties impact the overall thermal behaviour of the PCM-integrated roofs. These properties were further explored using continuous cyclic thermal loading and variation of latent heat over a period of four days for three climatic zones in India.

**Abbreviations:** PCM: Phase Change Material; CC: Conventional Concrete; AAC: Autoclaved Aerated Cement; TMY: Typical Meteorological Years; epw file: Energy Plus Weather File; mPCM: Microencapsulated Phase Change Material; PTC: Positive Temperature Coefficient; DHT: Digital Temperature And Humidity; IATRI: Indoor Air Temperature Reduction (%); TLL: Thermal Load Levelling (%); LT: Lag Time (hours)

#### ARTICLE HISTORY

Received 8 January 2024  
 Accepted 7 June 2024

#### KEYWORDS

PCM integration; building envelope; cyclic thermal loading; latent heat variation; thermal comfort; Microclimate

## R&D | JOURNAL PUBLICATION | MECH

**Mr.J.Baskaran,** Assistant Professor, Department of **Mechanical Engineering**, has published a research article titled **“Performance evaluation of luffa-sugarcane bagasse-based polymer-reinforced composites using Taguchi’s method”**, in Biomass Conversion and Biorefinery Journal. It is indexed in Scopus with an Impact Factor of 3.5.

Biomass Conversion and Biorefinery  
<https://doi.org/10.1007/s13399-024-05886-7>

ORIGINAL ARTICLE

**Performance evaluation of luffa-sugarcane bagasse-based polymer-reinforced composites using Taguchi’s method**

B. Ramesh<sup>1</sup> · P. Sivamurugan<sup>2</sup> · K. R. Kavitha<sup>3</sup> · D. Apparao<sup>4</sup> · D. Murali<sup>5</sup> · Santhosh Gotagunaki<sup>6</sup> · J. Baskaran<sup>7</sup> · R. Kamalakannan<sup>8</sup> · T. Vishnu Vardhan<sup>9</sup>

Received: 21 February 2024 / Revised: 20 June 2024 / Accepted: 22 June 2024  
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**Abstract**  
Due to concerns about environmental safety, studies of natural fibre-reinforced polymer composites and cost-effective options for synthetic fibre-reinforced composites are explored widely. In this work, composite material using luffa fibre and sugarcane bagasse reinforced into polymer resin is fabricated. The fabrication is carried out using the hand lay-up method. The luffa and sugarcane bagasse are considered in different weight percentages such as 5%, 15%, and 25%. Further, the length of the chopped sugarcane and luffa fibre was considered in three levels such as 1 cm, 2 cm, and 3 cm. The combinations are optimised using L<sub>9</sub> orthogonal array and the results are discussed. Based on it, nine different hybrid composite samples were fabricated and characterised for tensile, compressive, flexural strengths, and hardness. The morphological analysis was carried out using SEM images. Based on the results, the Multi Response Performance Index (MRPI) method was used to identify the optimal levels in the factors of consideration and the results are discussed.

## R&D | JOURNAL PUBLICATION | CIVIL

<https://doi.org/10.3311/PPci.24030> | Creative Commons Attribution 4.0

Periodica Polytechnica Civil Engineering

**Strength Behavior Analysis of Self-healing Concrete Using Bacteria and Silica Gel: A Comparative Study**

Ramakrishnan Subramanian<sup>1</sup>, Sanjay Kesavan<sup>1</sup>, Sathrapathi Sevugaperumal<sup>1</sup>, Shanthanu Sivakumar<sup>1</sup>

<sup>1</sup> Department of Civil Engineering, Sri Krishna College of Engineering and Technology, Kuniamuthur, Sugunapuram East, B.K. Pudur Post, 641008 Kuniamuthur, Coimbatore, Tamil Nadu, India  
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Received: 09 December 2023, Accepted: 27 May 2024, Published online: 27 June 2024

**Abstract**  
Concrete cracking is a significant worry in the construction sector, and infrastructure maintenance is becoming increasingly important in the present landscape. The expenditures of inspections, repairs, and maintenance are not only unwelcome but also have negative environmental consequences. The availability of self-healing agents in self-healing concrete (SHC) may be handled in these conditions with solid integrations. Self-healing concrete has the specific benefit of detecting the emergence of fractures in SHC-made concrete pieces and initiating a self-repair process without human involvement. This paper compares two alternative concrete healing methods and offers the findings of a complete experimental examination of self-healing concrete. In this study, silica and polymer-based gels were used along with *Bacillus subtilis* bacteria in separate experiments as weight-based alternatives for cement. The mechanical properties of various concrete mixes were evaluated using the self-healing studies by silica-based polymers and bacillus bacteria. The optimum dose level has been identified for the usage of silica gel and bacillus bacteria in the concrete. These findings provide vital insights into deploying self-healing concrete and its potential to handle concrete cracking concerns more effectively.

**Keywords**  
cracks, self-healing agent, concrete, *Bacillus subtilis*, strength properties

**Dr. S. Ramakrishnan,** Associate Professor, Department of **Civil Engineering**, along with **Final** year students, **Sanjay K, Sathrapati S and Shanthanu S** has published a research article titled **“Strength Behavior analysis of self-healing concrete using bacteria and silica gel: A comparative study”** in Periodica Polytechnica Civil Engineering. It is indexed in Scopus and WoS.

## R&D | JOURNAL PUBLICATION | ECE

**Dr.G.Ranjitham,** Associate Professor, Department of **ECE**, has published SCI and Scopus indexed Journal titled “**Deep optimized hybrid beamforming intelligent reflecting surface assisted UM-MIMO THz communication for 6G broad band connectivity**” in the Journal, Telecommunication Systems. DoI: <https://doi.org/10.1007/s11235-024-01157-y>.



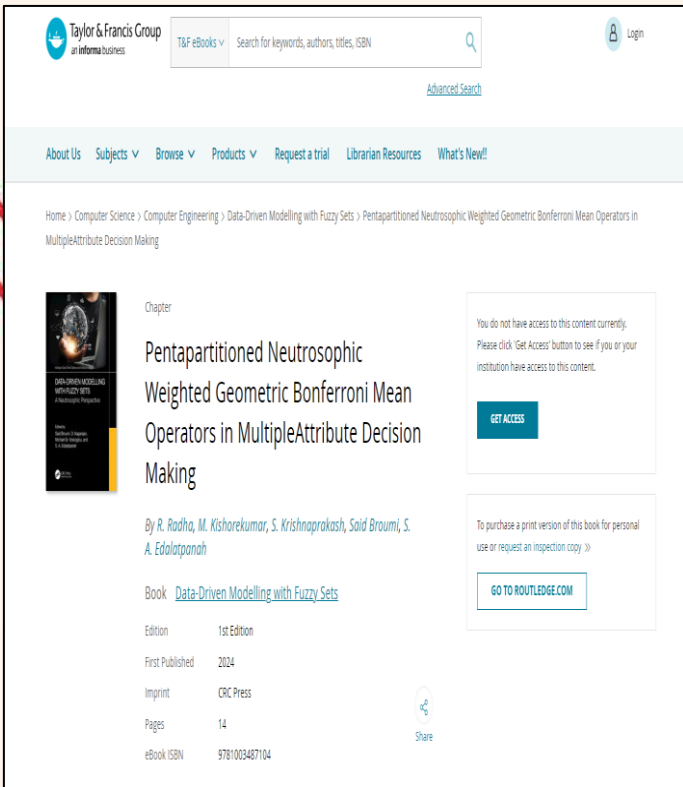
## R&D | PATENT PUBLICATION | CSE



Patent titled “**Wall Mounted Face Mask Detection Device**” filed by **Dr. D.Rasi** Professor, CSE, has been granted by Certificate of Registration of Design, Government of India, Design Number:389407-001, Grant Date :4-7-2024

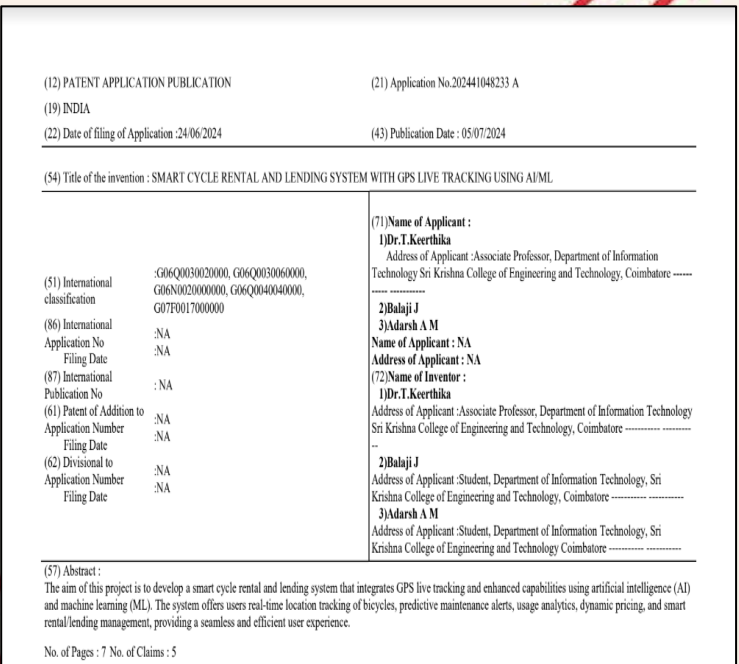
# R&D | BOOK CHAPTER PUBLICATION | S&H

**Dr. Krishnaprakash S**, Assistant Professor, **Department of Science and Humanities** has published a book chapter entitled **“Pentapartitioned Neutrosophic Weighted Geometric Bonferroni Mean Operators in Multiple Attribute Decision Making”** in the book **Data-driven Modelling with Fuzzy Sets** with eBook ISBN 9781003487104 in **Taylor & Francis Group**.



# R&D | PATENT PUBLICATION | IT

**Dr.T.Keerthika**, Associate Professor, **IT** has published a patent titled **“Smart Cycle Rental and Lending System with GPS Live Tracking Using AI/ML”** on 05-07-2024.



# R&D | JOURNAL PUBLICATION | S&H

**AIP Publishing** AIP Conference Proceedings

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Volume 3122, Issue 1  
18 June 2024

RESEARCH ARTICLE | JUNE 18 2024

**Interval-valued picture fuzzy topological spaces and application of interval-valued picture fuzzy sets in multi criteria decision-making**

M. Kishorokumar, M. Karpagadevi, S. Krishnaprakash, R. Mariappan, R. Ramesh

Check for updates

Author & Article Information  
AIP Conf. Proc. 3122, 040027 (2024)  
<https://doi.org/10.1063/5.0216035>

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The interval-valued picture fuzzy topological spaces (IVPFTSs) are a novel type of topological space that we introduce and study in this paper. We also prove some properties of interval-valued picture fuzzy sets (IVPFSs) and introduce new concepts, including the IVPF base, IVPF neighbourhood systems, IVPF interior operator, and IVPF closure operator. Additionally, we define IVPF continuity and derive certain descriptions of IVPF functions. Because it influences numerous facets of human lives and conditions, the construction area is significant. In recent years, environmental concerns have been taken into account in the design and planning of construction supply chain processes. The process of assessing and choosing environmentally friendly suppliers is one of the major issues in supply chain management. A multi-criteria decision-making (MCDM) problem can be used to describe this procedure. This study's goal is to suggest a creative and effective way for evaluating green building suppliers using restricted information. We conclude the best supplier for green supplier evaluation by applying the IVPF PROMETHEE II method and compare the ranking with existing MCDM methods.

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Volume 3122, Issue 1  
18 June 2024

RESEARCH ARTICLE | JUNE 18 2024

**Picture fuzzy soft topological spaces and its application on decision making**

R. Mariappan, R. Ramesh, K. Kanaksindhu, S. Krishnaprakash

Check for updates

Author & Article Information  
AIP Conf. Proc. 3122, 040031 (2024)  
<https://doi.org/10.1063/5.0218077>

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The concept of a picture fuzzy soft set and its use in the medical profession are introduced in this study utilizing the decision-making analysis approach. The notion of PFS topological spaces and PFS basis have been studied. We investigate an efficient methodology to choose the best treatment for osteoarthritis disease with uncertain information. The analysis is based on a demonstration of numerical data about the selection of the best treatment with a detailed discussion of parameters which successfully exhibits the applicability of the results.

Topics  
[Decision theory](#), [General topology](#), [Educational aids](#), [Diseases and conditions](#), [Careers and professions](#)

**Dr. Krishnaprakash S**, Assistant Professor, Department of Science and Humanities has published two papers in AIP Conference Proceedings entitled, “Interval-valued picture fuzzy topological spaces and application of interval-valued picture fuzzy sets in multi criteria decision-making” & “Picture fuzzy soft topological spaces and its application on decision making” in vol.3122, issue 1.

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## ECE | PHD VIVA VOCE



**Ms. Janeera D A**, scholar of **Dr.S.Sasipriya**, Professor and Head **ECE** successfully defended her thesis on “**Brain Computer Interface Recognition System Using A Hybrid Deep Learning Model**” on 03.07.2024.

## EEE | PHD CONVOCATION

**Dr.N.Loganathan**, Assistant Professor, Department of **EEE** has received his PHD Degree Certificate from the honorable Governor at Anna University Chennai on 02.07.2024.





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# FACULTY CERTIFICATIONS



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## EEE | FDP ON OPPORTUNITIES AND CHALLENGES IN INTEGRATING RENEWABLE ENERGY IN EV CHARGING INFRASTRUCTURE



Mrs.T.Malini, Assistant Professor, EEE Department has participated in Six Days Online Faculty Development Program on “Opportunities and Challenges in Integrating Renewable Energy In EV Charging Infrastructure” organized by the Department of Electrical and Electronics Engineering, Kongunadu College of Engineering and Technology, Trichy from 24-06-2024 to 29-06-2024.

## CIVIL | FACULTY CERTIFICATION

Dr. S. Sadheesh, Assistant Professor, Department of Civil Engineering has completed a 5-day International FDP on “Sustainable Construction Materials, Technologies and Practices (SCMTP-24)” organized by Malla Reddy Engineering College, Hyderabad from 24<sup>th</sup> to 28<sup>th</sup> June 2024.



# EEE | FDP ON DEEP LEARNING AND IOT DRIVEN SMART APPLICATIONS



Ms.C.Pavithra & Ms.G.Mahalakshmi, Assistant Professors, EEE Department have participated in One Week Faculty Development Program on “Deep Learning and IOT Driven Smart Applications” organized by Department of Computer Science and Engineering, MLRIT, Hyderabad from 24-06-2024 to 29-06-2024.

# CSE | FACULTY DEVELOPMENT PROGRAM

Dr.D.Rasi, Dr.Reshma V.K, and Ms. N.Pooranam faculty members of Computer Science and Engineering Department has participated in the one week Faculty Development Programme on “Deep Learning and IOT Driven Smart Applications” organized by the Department of Computer Science and Engineering, MLRIT from 24<sup>th</sup> to 29<sup>th</sup> June 2024.



## CSE | NPTEL E-AWARENESS WORKSHOP

Dr.D.Rasi, Dr.Reshma V.K, and Ms. Azhaguramya V R, faculty members of Computer Science and Engineering have participated in the **NPTEL E-Awareness Workshop** on July 4<sup>th</sup> ,2024.



## ECE | INDUSTRIAL TRAINING USING EDA TOOLS



Dr. T. Joby Titus and Dr. Dinesh Kumar J R, faculty members of ECE, has have successfully completed Industrial training on “**System Design using EDA Tools**” conducted by sVIOS Technologies, Chennai from 1<sup>st</sup> July 2024 to 7<sup>th</sup> July 2024.

## M.TECH CSE | INFOSYS CERTIFICATION



**Mr.J.Senthil**, Assistant Professor, Department of **M.Tech. Computer Science and Engineering** has successfully completed an online course titled “**Explore Machine Learning using Python and Natural Language Processing for Developers**” offered by Infosys spring Board on 5.7.2024 and 6.7.2024.

## IT | INFOSYS CERTIFICATION

**Ms. Ramya U M**, Assistant Professor, **IT** has completed a course on “**Python for Data Science**” on 03-07-2024 certified by Infosys.



## IT | FACULTY DEVELOPMENT PROGRAMME

**Ms.Janani R** Assistant Professor, **IT** has participated in the one-week FDP on “**Deep Learning and IoT Driven Smart Applications**” organized by the Department of Computer Science and Engineering, MLRIT from 24-06-2024 to 29-06-2024.



## IT | NPTEL AWARENESS WORKSHOP



**Mr.M Diwakaran**, Assistant Professor, **IT** has participated in the “**NPTEL Awareness workshop**” on 04-07-2024.

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**ALUMNI**

**CORNER**



## MCT | ALUMNI INTERACTION



**Mr. Varun Vinayek**, prominent Alumnus from Department of **Mechatronics Engineering** (2016-2020 batch), currently working as Packaged App Development Analyst at SAP BASIS Consultant, Accenture Solutions Private Limited, Coimbatore addressed the **Final** year **MCT** students about the “Job Opportunities in IT on 27.06.24.

### Session Takeaways:

- Programming skills in IT
- Selection of Language based courses
- Job opportunities in abroad
- Student improvement towards IT industry
- Communication skill



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## CREATIVE CORNER



## ECE | INFRARED LIGHT: REVOLUTIONIZING VENIPUNCTURE AND IMPROVING PATIENT CARE



### The Breakthrough in Vein Location Technology

Drawing blood is a routine yet crucial medical procedure, but for many patients, it can also be a source of significant discomfort and anxiety. This discomfort is often exacerbated by the difficulty healthcare providers face in locating veins, leading to repeated attempts and unnecessary pain. However, a new technology using infrared light to locate veins promises to transform this experience, making it more efficient and less painful.

### How Infrared Light Works in Venipuncture

Infrared light technology for vein location operates on a simple yet ingenious principle. Human blood absorbs infrared light, making veins appear more prominently when exposed to it. Devices using this technology project infrared light onto the skin, and the light absorption differences create a clear image of the veins just beneath the surface. This image can then be displayed on a screen or directly onto the skin, guiding healthcare providers to the optimal site for venipuncture.

### The Breakthrough in Vein Location Technology

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## ECE | INFRARED LIGHT: REVOLUTIONIZING VENIPUNCTURE AND IMPROVING PATIENT CARE

Devices using this technology project infrared light onto the skin, and the light absorption differences create a clear image of the veins just beneath the surface. This image can then be displayed on a screen or directly onto the skin, guiding healthcare providers to the optimal site for venipuncture.

### Advantages Over Traditional Methods

The traditional method of locating veins relies heavily on visual inspection and palpation, which can be challenging in patients with less visible veins, such as those with darker skin tones, obesity, or dehydration. The infrared light method provides a non-invasive, precise alternative that reduces the guesswork and improves the success rate of venipuncture on the first attempt. This technology not only reduces pain and discomfort for patients but also increases efficiency for healthcare providers. Fewer attempts mean less time spent on each procedure, allowing more patients to be treated and reducing the risk of complications like bruising and infection.

### Impact on Medical Practice and Patient Experience

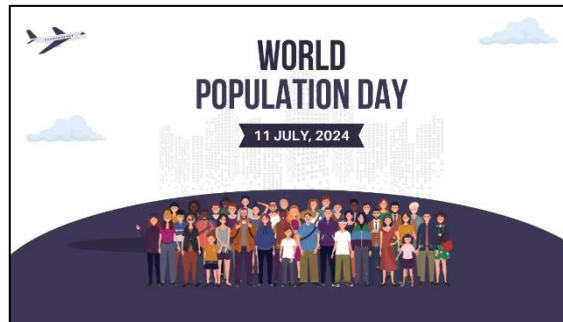
While infrared vein finders might seem like a minor innovation, their impact on medical practice and patient experience is profound. For patients with chronic conditions requiring frequent blood draws, such as diabetes or cancer, this technology can significantly improve their quality of life. Additionally, the technology supports better healthcare delivery in challenging environments. In emergency situations, accurate and swift venipuncture can be critical. Infrared light devices provide a reliable tool for first responders and military medics working under less-than-ideal conditions.

### Conclusion: Small Inventions, Big Differences

In the broader scope of medical advancements, the infrared light vein finder is a prime example of how small, targeted innovations can make substantial improvements in patient care. By reducing the pain and anxiety associated with blood draws, this technology enhances the overall healthcare experience. As more medical facilities adopt this technology, we can expect to see a significant positive shift in patient satisfaction and procedural efficiency. Ultimately, innovations like these underscore the importance of continued investment in medical technology. They remind us that even the smallest advancements can lead to significant improvements in healthcare delivery and patient outcomes.

Dinesh Kumar K V  
IV ECE

## ECE | WORLD POPULATION DAY



### World Population Day: July 11

World Population Day is an annual event observed on July 11 to raise awareness of global population issues. This day was established by the United Nations in 1989, inspired by the public interest and awareness generated by the 'Five Billion Day' on July 11, 1987, the approximate date when the world's population reached five billion people.

### Significance

The observance of World Population Day is significant because it highlights the importance of population issues in the context of development plans and programs. Rapid population growth can have profound implications on various aspects of human life, including the economy, environment, and social structures. It also underscores the importance of family planning, gender equality, poverty, maternal health, and human rights.

### Global Population Trends

As of 2024, the world population is estimated to be over 8 billion people. This exponential growth presents both challenges and opportunities. On one hand, it can lead to overconsumption of resources, environmental degradation, and increased competition for jobs, housing, and services. On the other hand, a larger population can also drive economic growth, cultural diversity, and innovation.

## ECE | WORLD POPULATION DAY

### Population Issues and Challenges

- 1. Resource Depletion:** Rapid population growth strains natural resources such as water, food, and energy, leading to shortages and environmental stress.
- 2. Climate Change:** Increased population results in higher carbon emissions and greater environmental degradation, exacerbating climate change.
- 3. Urbanization:** As more people move to urban areas, cities face challenges like overcrowding, pollution, and inadequate infrastructure.

### Efforts to Address Population Issues

- 1. Family Planning Programs:** Promoting the use of contraception and family planning services helps control birth rates and improve maternal health.
- 2. Education and Empowerment:** Educating women and girls and empowering them to make informed choices about their reproductive health can significantly reduce birth rates.
- 3. Sustainable Development:** Implementing sustainable development practices ensures that the needs of the present population are met without compromising the ability of future generations to meet their own needs.

### Conclusion

World Population Day serves as a reminder of the critical need to address population issues to ensure a sustainable future for all. By raising awareness and taking collective action, we can create a world where every individual has the opportunity to thrive.

**Naveen Prakash M**  
**IV ECE**

## IT | CREATIVE CORNER



**Ms. U .M Ramya**  
**Assistant Professor - IT**