# Faculty Development Program

**Title :** Smart Agriculture: Integrating AI and IoT for Sustainable Farming

**Date :** 2025-05-05 - 2025-05-09
**Time :** 10:00 - 17:30
**Venue :** SJT 307

## Event Outcome

- Participants will develop a clear understanding of how artificial intelligence (AI) and the Internet of Things (IoT) can be practically applied in the agricultural domain, bridging gaps between technology and farming sciences.
- Participants will be able to identify research gaps and formulate research questions in smart agriculture, develop interdisciplinary project proposals for government or industry funding, and collaborate with peers across institutions for joint research initiatives.
- Faculty members will be better positioned to guide student projects in emerging areas like precision farming, agri-drone technology, or AI-based advisory systems and encourage innovation and entrepreneurship among students in agri-tech.
- Participants will explore successful use-cases of smart agriculture from India and around the world, helping them understand the scalability of tech-based farming, challenges faced in real-world implementation, and socio-economic and environmental impact of digital agri solutions.
- Hands-on Experience with various Tools and Platforms used in Smart Agriculture.

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|  | **Resource Person 1 - Details**<br>**Name :** Sowbiya Muneer<br>**Designation :** Associate Professor Grade 2, VIT School of Agricultural Innovations and Advanced Learning<br>**University/ Company :** VIT, Vellore<br>**Address :** India, 632014. |
|  | **Resource Person 2 - Details**<br>**Name :** Akhil Reddy K<br>**Designation :** CEO and Founder, NA<br>**University/ Company :** Kuppismart Solutions Pvt Ltd, Hyderabad<br>**Address :** India, 500070. |
|  | **Resource Person 3 - Details**<br>**Name :** Subramaniyaswamy V<br>**Designation :** Professor Grade 1, School of Computer Science and Engineering<br>**University/ Company :** VIT, Vellore<br>**Address :** India, 632014. |
|  | **Resource Person 4 - Details**<br>**Name :** Dr Arun P V<br>**Designation :** Assistant Professor, Computer Science and Engineering<br>**University/ Company :** IIIT Sri City, Sri City<br>**Address :** India, 517646. |
|  | **Resource Person 5 - Details**<br>**Name :** Dr E S Gopi<br>**Designation :** Professor, Department of Electronics and Communication Engineering<br>**University/ Company :** NIT Trichy, Trichy<br>**Address :** India, 620015. |
|  | **Resource Person 6 - Details**<br>**Name :** Sangit Saha<br>**Designation :** Scientist D, NA<br>**University/ Company :** CDAC Kolkata, Kolkata<br>**Address :** India, 700091. |
|  | **Resource Person 7 - Details**<br>**Name :** Dr Naved Sabir<br>**Designation :** Principal Scientist, Centre for Protected Cultivation Technology<br>**University/ Company :** ICAR IARI, New Delhi<br>**Address :** India, 11012. |
|  | **Resource Person 8 - Details**<br>**Name :** Rajesh Kumar M<br>**Designation :** Associate Professor Sr., School of Electronics Engineering<br>**University/ Company :** VIT, Vellore<br>**Address :** India, 632014. |

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|  | **Resource Person 9 - Details**<br>**Name :** Dr Ramesh Kestur<br>**Designation :** Professor, Department of Data Science and Artificial Intelligence<br>**University/ Company :** IIIT Bangalore, Bengaluru<br>**Address :** India, 560100. |
|  | **Resource Person 10 - Details**<br>**Name :** Dr Vishal J Rathod<br>**Designation :** Senior Project Engineer, IoT Research and Development<br>**University/ Company :** CDAC Bangalore, Bengaluru<br>**Address :** India, 560100. |
|  | **Resource Person 11 - Details**<br>**Name :** Saravanan S<br>**Designation :** Professor Grade 1, VIT School of Agricultural Innovations and Advanced Learning<br>**University/ Company :** VIT, Vellore<br>**Address :** India, 632014. |

**Resource Person's Profile :**

**1. Profile of Sowbiya Muneer**

Dr. Sowbiya Muneer received her PhD from the Department of Biotechnology at Jamia Millia Islamia in 2011 for enhancing Vigna radiata production under Cd stress utilizing molecular tools. After completing her PhD, she worked as a Postdoc at Pohang University of Science and Technology in Korea for a year on the phosphorylation of pseudo responsive regulator proteins, where she uncovered various mutant variants and phosphorylated proteins implicated in plant circadian networks.

**2. Profile of Akhil Reddy K**

Kuppireddy Akhil Reddy is an Electrical and Electronics Engineering graduate from VIT, an entrepreneur, and hardware engineer. Founder of KuppiSmart Solutions Pvt Ltd , he specializes in machine learning, IoT, and electric vehicle technology. Akhil has won multiple innovation awards, completed top entrepreneurship programs, and developed impactful projects like livestock health monitoring and smart energy solutions, demonstrating strong leadership and technical expertise.

**3. Profile of Subramaniyaswamy V**

He has received government fundings, consultancy and international projects from the British Council, Royal Academy of Engineering, DST SERB (ANRF), ICSSR IMPRESS, DST CSRI, MoE, TVS MOTORS, MHI, Royal Society, SERB SURE, and SERB MATRICS. His technical competencies lie in Recommender Systems, LLM, AIML, Computer Vision, and Big Data Analytics. He has worked on designing CNN for Plant Disease Prediction, classification in cropping system, Fertilizer Recommendation Systems, Crop Selection.

**4. Profile of Dr Arun P V**

He completed his PhD from IIT Bombay and is currently working as an Assistant Professor at IIIT Sri City. He is an integral part of the Spatial Analytics and Machine Intelligence Lab and the Geospatial and Environmental Modeling Group. He has worked extensively in Precision Agriculture and received numerous research awards.

**5. Profile of Dr E S Gopi**

Dr. E. S. Gopi is a professor in the Department of Electronics and Communication Engineering at the NIT Trichy, with 25 years of experience in teaching and research. He has authored eight books and edited three publications with Springer, primarily focusing on signal processing and pattern recognition. In the field of agriculture, he has worked on soil texture classification, off-type identification in plants, and Digital Twin for Agriculture.

**6. Profile of Sangit Saha**

He is a Scientist at Centre For Development and Advanced Computing (C-DAC) Kolkata, Under Ministry of Electronics and Information Technology (MeitY), Government of India. He is an experienced professional with a demonstrated history of working in the field of Embedded systems, Robotics and Internet of Things. Skilled in Hardware Design and Development of Embedded Device , Power circuits design and simulation.

**7. Profile of Dr Naved Sabir**

He is currently working as a Principal Scientist in the Centre for Protected Cultivation Technology (CPCT) at the ICAR-Indian Agricultural Research Institute (IARI). Skilled in Protected Cultivation of Vegetables, Floriculture, Nursery Production, Grafting, Integrated Pest Management, Good Agricultural Practices, Horticulture and Agriculture research and development, Smart Urban Farming Technologies.

**8. Profile of Rajesh Kumar M**

He has published more than 120 papers in international journals, IEEE conferences, book chapters, and edited books. He has received two Indian patents. His research group is focused on speech signal processing, biomedical signal processing, medical image processing, data analytics, AIML in healthcare applications. He is an Adjunct Professor at Universite des Mascareignes, Mauritius, in partnership with the University of Limoges, France.

**9. Profile of Dr Ramesh Kestur**

His research interest is in the area of Machine Learning (ML) approach to Computer Vision (CV), primarily in Agritech and Healthcare. In Agritech, he has applied machine learning in analysis of aerial imagery acquired by remote sensing from Unmanned Aerial Systems (UAS), also known as Low Altitude Remote Sensing (LARS).He has carried out LARS applications for agriculture in areas such as vegetation analysis, yield estimation in open field crops.

**10. Profile of Dr Vishal J Rathod**

He has over 7 years of expertise in academia and industry, as well as considerable teaching and research experience. He has successfully completed many MeitY-funded IoT security research projects, including A Comprehensive IoT Security Ecosystem and Sandbox, developing a secure firmware-based solution for embedded boards, creating an IoT Security Framework for government organizations, and creating an Ultrasonic based Smart Water Meter, GPON, Battery Management System for a startup.

**11. Profile of Saravanan S**

He is currently working as a Professor in the Department of Agronomy in VAIAL school at VIT Vellore. He received his PhD in Irrigation Engineering Remote Sensing from Utah State University, USA. His research interest includes Remote sensing applications in Agriculture. He has worked on the Impact of soil compaction due to wheel traffic on corn and soybean growth, development and yield.

Agriculture is undergoing a rapid transformation with the integration of Artificial Intelligence (AI) and the Internet of Things (IoT), enabling precision farming, resource optimization, and sustainability. In this evolving landscape, it is crucial to equip faculty members with the latest advancements in smart agriculture to enhance their teaching, research, and outreach activities. This FDP aims to bridge the knowledge gap between AI-IoT technologies and Agriculture, enhance the interest towards interdisciplinary research and innovation and develop industry-academia collaborations, enable agriculture educators to incorporate AI and IoT concepts into their courses, ensuring that students are well-prepared for the industry and research sectors. Conducting this Faculty Development Program will not only enhance the technical expertise of educators but also enable them to mentor students, guide farmers, and collaborate with industries, ultimately fostering innovation in smart and sustainable agriculture.

Objectives of the FDP: 1)To provide a foundational and practical understanding of AI and IoT technologies in the context of agriculture. 2) To discuss the role of smart agriculture in achieving sustainable development goals (SDGs), particularly in food security and environmental protection. 3) To expose faculty and researchers to real-world case studies, live demonstrations, and hands-on sessions. 4)To facilitate collaboration between computer science, electronics, and agricultural science disciplines. 5)To enable participants to ideate and initiate interdisciplinary research proposals and projects.

Key topics to be covered in the FDP: Preprocessing agricultural data for AI applications, Computer vision for plant disease detection and crop monitoring, Remote Sensing & Drones for real-time farm monitoring, IoT-based Smart Irrigation & Precision Farming, AI applications in agriculture, Case Studies on AI tools for agriculture.

OneSoil is a free precision agriculture platform designed to assist farmers, agronomists, and agricultural consultants in monitoring and managing crop fields more efficiently. Utilizing satellite imagery and machine learning algorithms, OneSoil offers tools for remote crop observation, field condition assessment, and resource optimization.

**Coordinator's:** **Prof. KAMANASISH BHATTACHARJEE 20203 - Assistant Professor Sr. Grade 1 - SCOPE**
**Prof. UTPAL DAS 17591 - Assistant Professor Grade 2 - VAIAL**