Manoj Kaushik

(Member and former student chair IEEE-GRSS Kerala chapter)
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EDUCATION

Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram (Department of Space, India)

- Ph.D. @ AI and Precision Agriculture, Jan'2022 – present
- Area: Precision agriculture using satellite and drone remote sensing
- Supervisor: Dr. Rama Rao Nidamanuri

Centre for Advanced Studies (CAS), AKTU, Lucknow (Govt. Research Institute)

- M.Tech. in CSE-ML Specialization (Gold Medalist), 2019-21
- Master's Dissertation: Analysis and Diagnosis of Specific Language Impairment Problem Using Deep Learning
- Supervisor: Prof. M.K. Dutta

Kamla Nehru Institute of Technology (KNIT), Sultanpur (Govt. Engineering College)

- B.Tech. in Information Technology**,** 2012-16
- B.Tech Project: Ease At KNIT: An intranet e-commerce web portal
- Project Guide: Prof. Awadhesh Kumar

PROFESSIONAL EXPERIENCE

Data Science Internship in KaleidEO (a SatSure company), Bengaluru, Jan'24-Apr'24

- End-to-end ML segmentation modeling of high-yield vegetable crops using multispectral drone

Project Executive Officer in MeitY GOI and MMMUT, Gorakhpur, Oct'21-Jan'22

- The project title is "*Development of IoT and drone-based agriculture monitoring system with the objective of skill development of a socially deprived community.*"

Software Developer in Kranti Tech Services Pvt. Ltd., Noida, Mar'21-Oct'21

- Applied Machine learning to classify grievance emails using NLP. Used Term Frequency and Inverse Document Frequency (TF-IDF) for feature extraction from the prepared dataset.
- Working on Grievance Redressal System (Webnyay), Django Python.

Worked as a web and mobile app Developer at ICAR-IGFRI, Jhansi, Mar'18-May'19

- This includes the development of different software modules and applications based on organizational requirements.

Software Developer Internship in Edureka, Bengaluru, Jun'17-Feb'18

- Worked on learning management system (LMS). Most of the work is on the CakePHP MVC framework and other web technologies.

TEACHING and ACADEMICS

Teaching Assistant to Master students at IIST, Thiruvananthapuram, Aug-Dec (2024 & 2025)

- Teaching the course 'Probability and Statistics for Geo-informatics'

Teaching Assistant to Bachelor students at MMMUT, Gorakhpur, Oct–Dec 2021

- Teaching the course 'Fundamentals of Machine Learning and Artificial Intelligence'

Reviewer of InGARSS 2024 Goa Conference, at NIT Goa (link)

TRAINING, CERTIFICATIONS AND WORKSHOPS

- NISAR workshop from ISRO-IIST, 2025
- Multispectral Drone pilot, 2024
- Legacy Responsive Web design V8 FCC, 2023
- Data Analysis with Python, FCC 2023
- AICTE (ATAL FDP) training certificate on Bio-medical instrumentation, 2020
- First Position at Innovation Idea Contest organized at AKTU, 2020

- Award of Best Team from ICAR-IGFRI on Developing Mobile App, 2018
- GATE Qualified, 2017 & 2019
- Certificate in Data Analytics, Introductory Course in Python, OOP in C++, 2017
- **Research Paper presentation at International Conference in:**
  - IGARSS: Brisbane Australia, 2025
  - InGARSS: NIT Goa, 2024
  - MIGARS: VCE Hyderabad, 2023
  - IWOBI: Costa Rica, 2020
  - ICRTAC: VIT Chennai, 2020
  - FRSM: NIT Silchar, 2020

PUBLICATIONS

Journal papers:

- **Manoj Kaushik,** Rama Rao Nidamanuri, Aparna B, "**Hyperspectral Discrimination of Vegetable Crops Grown Under Organic and Conventional Cultivation Practices: A Machine Learning Approach**", https://doi.org/10.1038/s41598-024-78714-7, Scientific Reports 15.1 (2025): 7897. ***Q1 Ranking Paper***
- Juwairiya Siraj Khan, **Manoj Kaushik**, Anushka Chaurasia, Malay Kishore Dutta, and Radim Burget. "**Cardi-Net: A deep neural network for classifying cardiac disease using phonocardiogram signal**." Computer Methods and Programs in Biomedicine 219 (2022): 106727, https://doi.org/10.1016/j.cmpb.2022.106727, SCI indexed Impact Factor – 7.027 ***Q1 Ranking Paper***
- **Manoj Kaushik**, Rakesh Chandra Joshi, Atar Singh Kushwah, Maneesh Kumar Gupta Monish Banerjee Radim Burget Malay Kishore Dutta, "***Cytokine Gene Variants and Socio-Demographic Characteristics as Predictors of Cervical Cancer: A Machine Learning Approach***" Computers in Biology & Medicine, https://doi.org/10.1016/j.compbiomed.2021.104559, 2021, SCI indexed Impact Factor – 6.698. ***Q1 Ranking Paper***
- **Manoj Kaushik**, Neeraj Baghel, Radim Burget, Carlos M. Travieso, M.K.Dutta, "***SLINet: Dysphasia Detection in Children using Deep Neural Network***" Biomedical Signal Processing and Control, Volume 68, July 2021, 102798. https://doi.org/10.1016/j.bspc.2021.102798, Impact Factor – 5.076. ***Q1 Ranking Paper***
- Rakesh Chandra Joshi, **Manoj Kaushik**, Malay Kishore Dutta, Ashish Srivastava & Nandlal Choudhary, "***VirLeafNet: Automatic Analysis and Viral Disease Diagnosis Using Deep-Learning in Vigna Mungo Plant***" Ecological Informatics, https://doi.org/10.1016/j.ecoinf.2020.101197, 2020, SCI indexed Impact Factor – 7.3. ***Q1 Ranking Paper***

International Conferences:

- **Manoj Kaushik**, Jarmal Singh, Rama Rao Nidamanuri, "**Estimation of soil organic carbon content using ground, airborne, and satellite hyperspectral imagery**", presented in IEEE IGARSS 2025, Brisbane Australia.
- **Manoj Kaushik**, Anagha S Sarma, Harsha Chandra, et al., "***Automated mapping of vegetable crop farms in high-resolution drone multispectral imagery using ensemble machine learning modelling***", presented in 2024 IEEE India Geoscience and Remote Sensing Symposium (InGARSS 2024) at NIT Goa.
- Srinija, **Manoj Kaushik**, and Rama Rao Nidamanuri, "***Hybrid ensemble learning and probabilistic simulation modelling for drone-based multispectral imagery classification for crop mapping***", presented in 2024 IEEE India Geoscience and Remote Sensing Symposium (InGARSS 2024) at NIT Goa.
- **Kaushik, Manoj**, Rama Rao Nidamanuri, B. Aparna, and A. M. Ramiya. "***Spectral discrimination of vegetable crops using in situ hyperspectral data and reference to organic vegetables***." In 2023 International Conference on Machine Intelligence for GeoAnalytics and Remote Sensing (MIGARS), vol. 1, pp. 1-4. IEEE, 2023, https://doi.org/10.1109/MIGARS57353.2023.10064553.
- **Manoj Kaushik**, Anagha S Sarma, Rama Rao Nidamanuri. "***CloudSegnet: A Deep Learning Based Segmentation Method for Cloud Detection in Multispectral Satellite Imagery***" in IGARSS 2023-2023 IEEE International Geoscience and Remote Sensing Symposium, https://doi.org/10.1109/IGARSS52108.2023.10282395.
- H Chaitra, Manohar Kumar CVSS, **Manoj Kaushik**, RG Sharathchandra, Rama Rao Nidamanuri. "***Hyperspectral Detection of Fusarium Wilt in Tomato Plants Using Machine Learning-Based Approaches***" in IGARSS 2023-

2023 IEEE International Geoscience and Remote Sensing Symposium, https://doi.org/10.1109/IGARSS52108.2023.10282890.

- **Kaushik, Manoj**, Divyanshu Singh, Malay Kishore Dutta, and Carlos Manuel Travieso González. "***A deep learning approach for epilepsy seizure detection using EEG signals***." Tecnología en Marcha 35, no. 4 (2022): 110-118. https://dialnet.unirioja.es/servlet/articulo?codigo=8828180
- **Kaushik M.**, Rani S., Yadav V. (2021) ***Vocalist Identification in Audio Songs Using Convolutional Neural Network***. In: Biswas A., Wennekes E., Hong TP., Wieczorkowska A. (eds) Advances in Speech and Music Technology. Advances in Intelligent Systems and Computing, vol 1320. Springer, Singapore. https://doi.org/10.1007/978-981-33-6881-1_9
- Rani S., **Kaushik M**., Yadav V. (2022) ***Identifying Mood in Music Using Deep Learning***. In: Raje R.R., Hussain F., Kannan R.J. (eds) Artificial Intelligence and Technologies. Lecture Notes in Electrical Engineering, vol 806. Springer, Singapore. https://doi.org/10.1007/978-981-16-6448-9_55

Ongoing Work

- **Manoj Kaushik**, Jarmal Singh, Rama Rao Nidamanuri, "***Machine Learning-based Estimation and model transferability of soil organic carbon using ground, airborne and satellite hyperspectral remote sensing***" is submitted.
- **Manoj Kaushik**, Srinija, Rama Rao Nidamanuri, "***SpectraGeni: A Deep Learning Convolutional Conditional Variational Autoencoder for Synthetic Hyperspectral Data Generation from Highly Imbalanced Spectral Measurements***" is submitted.
- Harsha Chandra, Anagha S Sarma, **Manoj Kaushik**, Rama Rao Nidamanuri, et a., "**A Spectral-Knowledge Engineering and Domain Adaptation Method for Scalable Regional-Level Crop Mapping using Multispectral Satellite Imagery**", is submitted.

FUNDING and GRANTS

- ANRF(SERB) ITS grant for IGARSS, Brisbane Australia, 2025
- CSIR foreign travel grant for IGARSS, Brisbane Australia, 2025
- IIST international travel grant, 2025
- IEEE IGARSS Travel Grant, Brisbane Australia, 2024
- IEEE InGARSS Travel Grant, NIT Goa, 2024
- IEEE IGARSS Travel Grant, California, USA, 2024

OTHER PROJECTS

Webnyay: an online dispute resolution system

- Client project of Thotnr Pvt. Ltd., Webnyay is an online grievance redressal system built on top of Django, ReactJS, PostgreSQL, and integrated with advanced AI documentation.

LMS (Learning Management System) modules for Edureka pvt. Ltd.

- PHP, Angularjs based LMS system.

Iron corrosion image Segmentation using Deep Learning

- Segment out various colored corrosion parts in Iron using UNET Deep Learning Architecture.

Mailing Management System: A PHP Web App

- Application to send email notifications to employees to avoid the penalty for late settlements of their office Advances.

Chara-App: Hybrid Mobile Application

- Mobile application provides all information and technologies regarding better Fodder production for farmers.

Drishticone: College Newsletter Website

- Web portal for college students in which college-related news and placement guidance-related articles can be found easily in one place.

Analysis of Parallel Algorithms

- Analyzed the time and space complexity of parallel algorithms over sequential algorithms. Designed a Parallel hybrid sort algorithm to run on multiple cores using MATLAB (PCT tool).

CASE STUDIES

Decision Support System (DSS)

A comprehensive study of various DSS's in agriculture areas for better utilization of agricultural resources to benefit the Farmers.

Mammography Image Segmentation

This study involves a variety of Machine Learning, and Deep Learning Architectures used to segment out the Breast Cancer part from a digital Mammogram to reduce radiologist dependency.

RESPONSIBILITY AND EXTRACURRICULAR

- Teaching Assistant for the master's students for the course '**Probability and Statistics**'
- Volunteered in International Yoga Mohotsav in IIST Thiruvananthapuram.
- Managed, taught, and volunteered in DST-funded three-week winter school training.
- Managed, taught, and volunteered in IEEE GRSS's one-day hands-on workshop in IIST.
- Managed and volunteered Geo Innovation challenge in April'2022 organized by the Department of Science and Technology (DST, Govt. of India)
- Managed and volunteered in IC3A2020 (International Conference on Contemporary Computing and Applications) Organized by AKTU and CAS in Feburary'2020

TECHNICAL SKILL

Programming Languages and Technologies: Python, TensorFlow, OpenCV, Keras, C, C++, SQL
Web Technologies: PHP, HTML, CSS, JavaScript, jQuery
Area of Interest: Artificial Intelligence, Data Science, Data Analytics and Development
Platforms: Linux, Windows, Google Colab
Tools: PyCharm, Anaconda, Nvidia CUDA, LaTeX, MS Office, Dev C++, and Adobe Photoshop