Manoj Kaushik

(Member and former student chair IEEE-GRSS Kerala chapter)
G Scholar | LinkedIn | +91- 9519783489 | Website | GitHub
e-mails: manojkaushik93@gmail.com | manojkaushik.22@res.iist.ac.in

EDUCATION

Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram (Department of Space, India)
- Ph.D. @ Department of Earth and Space Sciences, 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

TEACHING EXPERIENCE

Teaching Assistant to Master students at IIST, Thiruvananthapuram, Aug'2024 - Present
- Teaching the course 'Probability and Statistics for Geo-informatics'

Teaching Assistant to Bachelor students at MMMUT, Gorakhpur, Oct'2021 – Dec'2021
- Teaching the course 'Fundamentals of Machine Learning and Artificial Intelligence'

WORK EXPERIENCE

Data Science Internship in KaleidEO (a SatSure company), Bengaluru, Jan'2024-Apr'2024
- End-to-end ML segmentation modeling of high-yield vegetable crops using multispectral drone

Project Executive Officer in MeitY GOI and MMMUT, Gorakhpur, Oct'2021-Jan'2022
- 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'2021-Oct'2021
- 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'2018-May'2019
- This includes the development of different software modules and applications based on organization requirements.

Software Developer Internship in Edureka, Bengaluru, Apr'2017-Dec'2017
- Worked on learning management system (LMS). Most of the work is on the CakePHP MVC framework and other web technologies.

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

TRAINING AND CERTIFICATIONS

- Machine Learning with Python, FCC, 2023
- Data Analysis with Python, FCC certificate, and hands-on, 2023
- 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
- 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

REVIEWER

- InGARSS 2024 Goa Conference, at NIT Goa (link)

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

PUBLICATIONS

Journal papers:

- **Manoj Kaushik**, Lt. Col. 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 in Nature's Natural Resources Research Journal.
- **Manoj Kaushik,** Rama Rao Nidamanuri, Aparna B, "**Hyperspectral Discrimination of Vegetable Crops Grown Under Organic and Conventional Cultivation Practices: A Machine Learning Approach**", Scientific Reports 15.1 (2025): 7897. ***Q1 Ranking Paper***
- **Manoj Kaushik**, Rakesh Chandra Joshia, 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, DOI: doi.org/10.1016/ j.compbiomed.2021.104559, 2021, Elsevier Publishers, 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, Elsevier Publisher, DOI: doi.org/10.1016/j.bspc.2021.102798, Volume 68, July 2021, 102798. SCI indexed Impact Factor – 5.076. ***Q2 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, doi.org/10.1016/j.ecoinf.2020.101197, 2020, Elsevier Publishers, SCI indexed Impact Factor – 4.498. ***Q2 Ranking Paper***
- Khan, Juwairiya Siraj, **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. Elsevier Publishers, SCI indexed Impact Factor – 7.027 ***Q1 Ranking Paper***

International Conferences:

- **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.
- **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
- 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
- **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.
- **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

PROJECTS

Quantitative methods for the quality evaluation of synthetically generated hyperspectral data

- Methodology development of hyperspectral data augmentation and statistical quality checking

Drone multispectral image and hyperspectral data analysis for crop modelling

- Conducted a full study, including site visit, drone MSI data collection and crop modelling for Kolar, Karnataka site.

Partial Least Square Regression Analysis of Soil Organic Carbon (SOC) using Hyperspectral Imagery

- Developed SOC various maps of airborne Hyperspectral imagery using PLS, SVC, and Random Forest Regression with various wavelet decompositions.

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.

PCGNet: Deep learning and Power Spectrogram-based automatic diagnosis of multiple cardiac diseases using Phonocardiogram signals

- Developed a deep learning model to detect a cardiovascular disease from the Phonocardiogram (PCG) signals. The power spectrogram technique was used to convert PCG signals into power spectrograms.

Iron corrosion image Segmentation using Deep Learning

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

Designed a personal web portal with the latest web development technologies

- This comprehensive portfolio (link) contains my latest information, and I continuously add things in my spare time.

Mailing Management System: A PHP Web App

- This application sends Email notifications to Employees to avoid the penalty for late settlements of their office Advances.

Chara-App: Hybrid Mobile Application

- This android 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