AMGOTH PAVAN KUMAR

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Education

IISc Bengaluru (2023 - 2025)	M.Tech in Climate and Earth Science	Current CGPA: 8.30/10
RGUKT Basar (2019 - 2023)	B.Tech in Civil	CGPA: 8.13/10

Relevant Coursework

- Probability and Statistics
- Machine Learning
- Decision Models
- Data Mining
- Data Analysis
- Deep Learning

Work Experience

Placement Coordinator *(Oct 2024- June 2025)*

Centre for Atmospheric and Oceanic Sciences, IISc

- Coordinating and Collaborating with various industries and organizations to organize recruitment drives for students to enhance placement opportunities at Centre for Atmospheric and Oceanic Sciences.
- Developing and maintaining relationships with industry partners to understand their hiring needs and align recruitment strategies accordingly.
- Analyzing placement data to identify trends and areas for improvement in student recruitment processes, contributing to strategic planning efforts.

Technical Skills

Languages / Tools:	Python, C, JavaScript, MySQL, Google Earth Engine, Quantum GIS, Data Structures.
Developer Tools:	Jupyter, Visual studio, Spyder
Frameworks:	TensorFlow, Pytorch, Keras, Numpy, OpenCV, Matplotlib, Pandas, Scikit-learn, Geopandas
Technical Skills:	Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Data Analysis, MapReduce, Image Processing, Signal Processing .
Soft Skills:	Communication, Reasoning, Problem-Solving, Leadership, Critical-Path thinking, Collaborative, Time Management

Projects

Building Classification for Seismic Risk Assessment: Developed machine learning models to classify building types from Google Street View images, enhancing seismic risk assessments. Managed a dataset of 2,516 images across five classes and implemented data prepossessing techniques to address misclassification and class imbalance. *YOLOv8n-cls*: Fine-tuned a pretrained model achieving top-1 accuracy of 0.776 on validation. *ResNet50*: Trained on the refined dataset, achieving an accuracy of 0.655 with data augmentation techniques. *Swin Transformer*: Implemented for feature extraction, achieving a validation accuracy of 0.660.

Enhancing Vegetation Classification through Hyperspectral Imagery: To enhance vegetation classification, hyperspectral image features were extracted using *scikit-learn*, and the classification was performed using models such as *Support Vector Machine* (with RBF kernel), *Random Forest*, and *Deep Neural Networks*, with and without *Principal Component Analysis* (PCA). Class imbalance was addressed using sampling techniques like *SMOTE* to improve accuracy. The overall classification accuracy improved after dimensionality reduction through PCA.

Albedo Change Using Google Earth Engine: The study focuses on identifying changes in LULC patterns, precipitation variations, and LST, as well as the effect on albedo due to the bio-engineering of the Indira Gandhi Canal in the Bikaner Tehsil. The analysis carried out using *LANDSAT* and *MODIS* data obtained from USGS. A correlation analysis between LST, albedo, and NDVI was conducted to investigate the relationship between these variables, using Pearson's correlation coefficient.

Changing Intensity of Hydroclimatic Extreme events revealed by GRACE and GRACE-FO: The project employs satellite data from the GRACE and its follow-on mission GRACE-FO to monitor changes in terrestrial water storage, which is crucial for understanding hydroclimatic extremes. A novel *spatial-temporal clustering algorithm (ST-DBSCAN)* is implemented to identify contiguous regions experiencing wet or dry conditions. The findings aim to enhance the understanding of how hydroclimatic extremes are changing over time, which is vital for water resource management, agriculture planning, and disaster preparedness in the face of climate change.

Online Courses/ Certification

- Training course on Glacier Studies and Remote Sensing from DCCC, IISC (2024)
- The Big Data Analysis for Water-Related Applications from United Nations University (2024)
- Python for Data Science and Machine Learning Bootcamp from Udemy (2023)
- Geospatial Analysis using Google Earth Engine from Indian Institute of Remote Sensing, ISRO (2023)
- Y20 Panel Discussion titled 'Climate Change and Disaster Risk Reduction: Making Sustainability a way of Life'