Rajesh Vanguri

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PROFILE

I am a PhD student with expertise in analyzing hyperspectral and multispectral data for mapping forest tree species and assessing forest biodiversity in protected areas in Italy. My research involves applying remote sensing techniques to understand complex ecological systems and develop solutions for conservation challenges. I have experience in data processing, statistical analysis, and visualizing results using software such as ENVI, Python, and QGIS. I am passionate about contributing to the field of environmental science and am committed to conducting research that addresses critical conservation issues.

EDUCATION AND TRAINING

PhD in Energy and Environment Department

Sapienza University of Rome [01/01/2022 - 2025]

Address: Piazzale Aldo Moro, 5, 00185 Roma (Italy)

https://www.uniroma1.it/it/

Field(s) of study: Use of remote sensing images for the assessment of the conservation status of biodiversity in protected areas.

Special Masters in Aerospace Engineering

Sapienza University of Rome [17/09/2018 - 10/06/2021]

Address: Piazzale Aldo Moro, 5, 00185 Roma (Italy)

https://www.uniroma1.it/it/

Field(s) of study: Aerospace Engineering.

Final grade : 107/110

Thesis: Development of a phenological based algorithm to detect rice crop.

Worked on an algorithm that is based on the phenology of the rice crop to detect rice crops using Landsat 8 images.

Mechanical Engineering

Jawaharlal Nehru Technological University Kakinada [2014 - 2018]

Address: Jawaharlal Nehru Technological University, Kakinada, Andhra Pradesh, 533003 Kakinada (India)

https://www.jntuk.edu.in/

Field(s) of study: Engineering.

Thesis: Performance of CI engine using palm oil mixed with vajravalli as Biofuel.
In this project, I have worked on a new fuel derived from naturally available sources and herbs and I have tested the performance of this Biofuel on a single-cylinder, 4 strokes, water-cooled CI engine. In this work, vegetable oil (palm oil) is blended with herbs (Vajravalli) in different proportions by volume and this blended biofuel is used in place of conventional diesel to run the CI engine.

SOFWARE SKILLS

Python, MATLAB, QGIS, ArcGIS, SNAP, ENVI, C-Programming, Solidworks, AutoCad, Microsoft Office.

Professional Projects

Sapp4vu - I actively contributed to the 'SAPP4VU' project, which stands for 'Sviluppo di Algoritmi Prototipali PRISMA per la stima del danno ambientale e della VUlnerabilità alla land degradation' (Development of Prototype Algorithms for PRISMA to Estimate Environmental Damage and Vulnerability to Land Degradation). Within this project, I played a vital role in three key work packages. Firstly, I was deeply involved in developing algorithms to assess vegetation damage caused by natural causes, enabling precise and timely identification of environmental challenges. Secondly, I worked on the data fusion efforts, integrating Sentinel2 and PRISMA satellite data, thereby enhancing the quality and accuracy of environmental assessments. Lastly, I took charge of the development and analysis of spectral indices, utilizing them to estimate critical vegetation biophysical parameters.

Clear Up - I took part in the "ClearUp" project, a collaboration with Serco, where I played a critical role in the creation of an innovative algorithm. This algorithm was specifically tailored for monitoring health and assessing the impact on vegetation surrounding landfills.

PhD Research - My ongoing PhD research focuses on Use of remote sensing images (PRISMA hyperspectral data) for the assessment of the conservation status of biodiversity in protected areas.

Scientific Publications

1. Vanguri, R., Laneve, G., & Hościło, A. (2024). Mapping forest tree species and its biodiversity using EnMAP hyperspectral data along with Sentinel-2 temporal data: An approach of tree species classification and diversity indices. Ecological Indicators, 167, 112671.
2. Vanguri, R., Laneve, G., Cadau, E., Scifoni, S., & Luca, M. (2023). Assessing the Impact of Landfills on Surrounding Vegetation: A Remote Sensing Analysis with Sentinel-2 and Landsat 8. Environmental Sciences Proceedings, 29(1), 21.
3. Vanguri, R., Laneve, G., & Ferrari, A. (2023). Analysis of fusion techniques for enhancing spatial resolution of PRISMA hyperspectral data using Sentinel-2 data. Poster presented at the 14th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing.
4. Dimitrakos, A., Mito, C. O., Laneve, G., Lekakis, M., Ververis, M., Vanguri, R., ... & Oikonomopoulos, V. (2024, July). Satellite Data Fusion for Food Security Enhancement in Tropical Areas. In IGARSS 2024-2024 IEEE International Geoscience and Remote Sensing Symposium (pp. 1933-1936). IEEE.
5. Pignatti, S., Carfora, M. F., Coluzzi, R., D'Amato, L., De Feis, I., Mora, D. F., ... & Vanguri, R. (2024, July). Detection of Critical Areas Prone to Land Degradation Using Prisma: The Metaponto Coastal Area in South Italy Test Case. In IGARSS 2024-2024 IEEE International Geoscience and Remote Sensing Symposium (pp. 1063-1066). IEEE.
6. Pignatti, S., Carfora, M. F., Coluzzi, R., De Feis, I., Imbrenda, V., Laneve, G., ... & Simoniello, T.,Vanguri, R. (2024). PRISMA prototype algorithms for estimating environmental damage and vulnerability to land degradation: the SAPP4VU Project. In 13th EARSeL Workshop on Imaging Spectroscopy 2024.

LANGUAGE SKILLS

English - Professional level
Italian - Basics