Souvik Mitra

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Profile

Postgraduate environmental science with a strong foundation in climate-smart agriculture, solar energy systems, and remote sensing. Proficient in Python, GEE, and ML-based environmental modeling with published research and hands-on project/internship experience in both academic and industrial settings.

Research Interests

- Climate-smart agriculture and evapotranspiration partitioning
- AI/ML applications in renewable energy and environmental modeling
- Fault diagnostics in solar PV systems using remote sensing and explainable AI
- Climate change impacts on hydrology, biodiversity, and food systems

Education

Banaras Hindu University — Varanasi, India
Master of Science in Environmental Sciences (Environmental Technology) — *Dec. 2022 – July 2024*
- CGPA: 8.52 / 10 (German equivalent: 1.49)
- Master's Thesis: *Fault Detection in Solar PV Panels using Machine Learning Techniques*

PK Roy Memorial College, B.B.M.K University — Dhanbad, India
Bachelor of Science in Environmental Sciences — *July 2019 – Aug. 2022*
- CGPA: 8.56 / 10 (German equivalent: 1.45 / 1st Division)
- Bachelor's Project: *Soil Nutrient Analysis for Sustainable Agriculture*

Research Experience / Projects

Evapotranspiration Partitioning using MODIS — Remote
Independent Researcher — *June 2025 – Present*
- Partitioned total evapotranspiration (ET) into components using MODIS datasets (MOD16A2, MOD13Q1) via Google Earth Engine.
- Generated monthly/annual maps and CSV outputs to analyze climate water flux trends at basin scale.
- Built reproducible, future-ready Python-GEE workflows for climate projection integration.

Carbon Emission Dashboard – Power BI — Remote
Independent Developer — *June 2025 – Present*
- Designed an interactive carbon emission KPI dashboard using Power BI, Power Query, and DAX.
- Visualized emissions by sector and geography to support ESG data storytelling and reporting.
- Integrated multi-table data models with stakeholder-driven insights.

Indian Institute of Technology (IIT BHU) — Varanasi, India
Research Intern – Solar PV Fault Detection — *April 2024 – July 2024*
- Developed machine learning models (Random Forest, Decision Tree, Logistic Regression) to detect electrical and shading faults in PV systems.
- Achieved 98.4% accuracy using CNN and Random Forest; delivered end-to-end Python-based pipelines.
- Collaborated across departments and contributed to analytical reporting and model interpretability.

Bharat Coking Coal Limited (BCCL, Coal India) — Dhanbad, India
Environmental Engineering Intern — *June 2023*
- Conducted air, water, noise, and soil monitoring in mining areas for environmental compliance.
- Prepared environmental impact reports with data on COD, NOx, pH, and other key metrics.
- Participated in technical reporting, stakeholder coordination, and regulatory review.
- Analyzed soil nutrients (NPK, organic carbon) for biogeochemical impact assessments.

Krishi Vigyan Kendra (KVK) — Dhanbad, India
Soil Testing Assistant (Volunteer) — *Sep 2023 – Oct 2023*
- Tested and recorded pH, EC, and organic carbon content of soil samples.
- Analyzed nitrogen, phosphorus, potassium, and sulfur levels for soil health recommendations.

Publications

S. Mitra and K. A. Chinmaya, *"Fault Detection in PV Grid Integrated System via Machine Learning Technology," 2025 IEEE 1st International Conference on Smart and Sustainable Developments in Electrical Engineering (SSDEE)*, Dhanbad, India, 2025, pp. 1–6.
DOI: 10.1109/SSDEE64538.2025.10967651

Mitra, S., Sharma, S. (2024). *"Green Building: A Way Forward to a Sustainable Future."* In R. Srivastava (Ed.), *Contemporary Green Environmental Issues: Local to Global*, pp. 42–57. Iterative International Publishers.
ISBN: 978-93-5747-780-2

Certifications

UGC-NET (Qualified for Assistant Professor and admission to PhD) – Environmental Sciences (089), NTA, India 2025

Data Quality, Data Management and Data Governance, Udemy 2025

R Programming Bootcamp for Absolute Beginners, Udemy 2025

GIS Software and Application, Udemy 2025

Specialized Module on Cities and Climate Change (UNITAR / UN CC:Learn / UN-Habitat) 2025

Introduction to Sustainable Finance, Deutsche Gesellschaft für Internationale Zusammenarbeit(GIZ) GmbH 2025

Technical Skills

Programming: Python, R, JavaScript (GEE)

Data Science: scikit-learn, pandas, Power BI, DAX

Remote Sensing / GIS: MODIS, GEE, QGIS, ArcGIS

Other Tools: LaTeX, Git, MS Office

Conference Presentations

Souvik Mitra, K. A. Chinmaya. *"Fault Detection in PV Grid Integrated System via Machine Learning Technology."* Oral presentation at the **IEEE 1st International Conference on Smart and Sustainable Developments in Electrical Engineering (SSDEE-2025)**, held at Banaras Hindu University, Varanasi, in collaboration with IIT (ISM) Dhanbad, India, Feb 28 – Mar 2, 2025. DOI: 10.1109/SSDEE64538.2025.10967651

Languages

English: C1 – Full professional proficiency

Hindi: Native proficiency

Bengali: Native proficiency