Saikat **Mahato**

Profile

Applied geophysicist and machine learning engineer specializing in magnetic, electrical, and microseismic data analysis. Experienced in deep learning–based 3D geophysical inversion, mineral targeting, and DAS-based microseismic interpretation.

Contact

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Skills

- Python, MATLAB
- PyTorch, TensorFlow
- CNNs, 3D CNNs
- Gravity modeling
- Magnetic modeling
- Local / global optimisation
- Geophysical inversion
- Microseismic analysis
- Spotfire, Snowflake

Languages

English
Bengali
Hindi

Domains

Magnetic & gravity inversion
DC resistivity, ERT
Microseismic & DAS
Joint & cooperative inversion
Synthetic 3D modeling

Achievement

GATE 2025: **AIR 39**

Experience

Microseismic Analyst **2025–Present**
◇ DAS-based quality control, event validation, spatial clustering, fracture characterization, and reservoir interpretation.

◇ Python workflows for microseismic catalogs, density mapping, cross-sections, and well/stimulation-stage integration.

◇ Large-scale subsurface data querying using Snowflake and interactive dashboards in Spotfire.

Selected Technical Projects

Deep Learning–Based 3D Magnetic Inversion **2024–Present**
◇ Designed Xception-inspired CNN for non-iterative 3D susceptibility inversion from 2D magnetic anomalies. ◇ Improved depth resolution and anomaly localization with inference reduced to seconds.

Cooperative DC–Magnetic Inversion **2023–2024**
◇ MATLAB-based cooperative inversion using guided fuzzy clustering and petrophysical constraints. ◇ Sharper geological boundaries and improved cross-property consistency versus standalone inversions.

Joint Bayesian Seismic Inversion **2023**
◇ Trans-dimensional Bayesian inversion of receiver functions and P-wave polarization data. ◇ Reduced velocity uncertainty and detected additional subsurface layers.

Publications

High-Fidelity Deep Learning–Based 3D Magnetic Susceptibility Inversion
◇ Under review.

Cooperative Inversion of DC Resistivity and Magnetic Data
◇ To be communicated.

Education

Ph.D. Researcher, Applied Geophysics — IIT Bombay **Present**

M.Sc. Applied Geophysics — IIT Bombay **2023**