Nimatullah

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Education

Indian Institute of Technology Bombay — Mumbai, India
PhD — *Aug 2024 – Present*

Indian Institute of Technology Bombay — Mumbai, India
M.Sc. in Applied Geophysics — *Aug 2022 – Aug 2024*

Jamia Millia Islamia — Delhi, India
B.Sc. in Physics — *Aug 2019 – Aug 2022*

Objective & Research Interest

My current research primarily explores the applications of advanced geophysical methods, such as electrical resistivity and induced polarization, to enhance our understanding and monitoring of near-surface geological, environmental, and engineering processes. I am particularly interested in leveraging these techniques to address complex subsurface challenges and contribute to sustainable solutions in geosciences. Pursuing a Ph.D. will allow me to further develop these methodologies and drive innovation in the field, aligning with my passion for integrating cutting-edge technology with geophysical research

Relevant Coursework

Electrical Methods, Gravity and Magnetic Methods, Electromagnetic Methods, Global Geophysics,Computer Programming for Geosciences, Geophysical Inverse Theory, Statistical Methods in Geosciences

Experience

Modelling and Inversion of Cross-Well ERT Data (Guide: Prof. Anand Singh)
Dissertation — *Dec 2023 – May 2023*

- Utilized synthetic modeling to simulate CO2 injection and spread in subsurface mediums.
- Conducted inversion processes for cross-well ERT data, interpreting results for CO2 monitoring and geological investigations.
- Conducted in-depth analysis of model resolution matrices to evaluate the quality of subsurface imaging results.
- Read the full report

Magnetic and VLF Survey for Ground Water Exploration (Guide: Prof. Anand Singh)
Internship — *May 2023 – June 2023*

- Developed a deep understanding of geophysical survey methods, focusing on magnetic and VLF techniques and enhanced skills in data collection.
- Applied sophisticated data processing techniques to clean and organize raw data.
- Conducted inversion modeling of the processed data to extract insights about subsurface geological structures.
- Read the full report

Field Experience

Magnetic and VLF Data Collection in Ambet, Maharashtra (Guide: Prof. Anand Singh)
Fieldwork — *May 2023*

- Collected magnetic and VLF data using a magnetometer and a VLF receiver.
- Collected susceptibilities of diverse rock samples to enhance understanding of mineral composition and geological history.

Electrical Resistivity Tomography Survey (Guide: Prof. Anand Singh)
Fieldwork — *Feb 2023*

- Performed electrical resistivity survey in Pole-Pole configuration.
- Processed data to generate a contour plot for visualizing subsurface structures.
- Conducted sounding and profiling techniques to determine apparent resistivity.

Lithological and Structural Field Work in Ambaji, Gujarat (Guide: Prof. Naraga Prabhakar)
Fieldwork *Nov 2022 – Dec 2022*

- Used instruments like Clinometer, Brunton compass, and GPS for topographical interpretation.
- Examined fresh rock surfaces to identify minerals and classify rock types.
- Interpreted meso-scale structures such as folds, faults, dikes, and weathering patterns.

Technical Skills

- **Programming & Scripting Languages:** Python, MATLAB, LaTeX, HTML, CSS
- **Tools and Technologies:** NumPy, Pandas, Matplotlib, scikit-learn
- **Machine Learning & Other Skills:** Regression, Classification, Neural Networks
- **Soft Skills:** Leadership, Teamwork, Problem Solving, Decision Making, Empathy, Active Listening

Courses

- 100 Days of Code: The Complete Python Pro Bootcamp by Dr. Angela Yu (2023)
- Unsupervised Learning, Recommenders, Reinforcement Learning by Stanford Online (2023)
- Advanced Learning Algorithms by Stanford Online (2023)
- Supervised Machine Learning: Regression and Classification by Stanford Online (2023)
- Unconventional Reservoir Geomechanics by Stanford Online (2023)
- Oil and Gas Industry Operation and Market by Duke University (2022)
- Programming For Everybody by University of Michigan (2022)
- Introduction to Python and its Application in Geosciences by EAGE Student Chapter IITB (2022)

Extra-Curricular

- Won silver medal in Department chess tournament
- Participated in Crossy GC conducted by IITB Sports
- Participated in Inter-Department PG Chess GC conducted by IITB Sports
- Participated in Intra-Department Badminton Tournament conducted by IITB Sports
- Won the Intra-Department Football Tournament conducted by Earth Science