

Mohd Zuhair, PhD

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Summary

Experienced Computational Geophysicist with over 6 years in applying Machine Learning, AI, High-Performance Computing, and GIS tools to geoscientific challenges, particularly in earthquake and tsunami modeling. Authored multiple peer-reviewed papers in leading journals and conferences, contributing to advancements in the field.

Experience

Research Fellow

NANYANG TECHNOLOGICAL UNIVERSITY (NTU), SINGAPORE

July 2023 - Current

- Developed CNNs to classify and analyze 20+ deformed areas in Indonesia using satellite data (GPS and InSAR), identifying earthquake risks and supporting rapid disaster response through data-driven insights.
- Leveraged QGIS and Geospatial Python libraries (Geopandas, Shapely, GDAL, Cartopy) for Proximity and Environmental Impact Analysis, quantifying the impact of earthquake hazards on infrastructure and population in Sumatra.

Data Analyst

MONASH UNIVERSITY, AUSTRALIA

July 2022 - May 2023

- Conducted detailed analysis of structured and unstructured research data (papers, grants) to extract actionable insights, enhancing university research initiatives and funding strategies.
- Developed and implemented regression models to predict citation counts and h-index of researchers, utilizing clustering techniques to identify emerging research trends and hot topics.
- Applied machine learning algorithms to analyze patterns in research data, contributing to strategic decision-making and resource allocation.

PhD Researcher

MONASH UNIVERSITY, AUSTRALIA

Jan. 2018 - July 2022

- Developed Fully Connected Networks (FCN) and applied Layerwise Relevance Propagation (LRP) to identify critical parameters for large earthquakes globally, discovering slab stress as a key factor.
- Created a 3D geodynamic model using High-Performance Computing (HPC) to integrate large geophysical datasets and study subduction forces' impact on earthquake generation, with results published in a Tier 1 journal.

Research Assistant

CHINESE ACADEMY OF SCIENCES, CHINA

May 2017 - Dec. 2017

- Generated a tsunami propagation and inundation model incorporating submarine landslides and splay faults into the earthquake source using mathematical modeling.
- Established statistical Tsunami Fragility Analysis and Damage Cost models to estimate tsunami risk for infrastructures/buildings.

Skills

Programming Languages: Python, SQL, R, MATLAB, FORTRAN

Data Analytics and Machine Learning: Pandas, NumPy, Scikit-learn, TensorFlow, Statsmodels, Keras

Data Visualization: Matplotlib, Seaborn, Plotly, Tableau

Development Tools: Git, GitHub, Jupyter, \LaTeX , Conda, Docker

High-Performance Computing: Underworld

Certifications

Udemy

Hands-On Tableau Training for Data Science

2023

Udemy

The complete SQL Bootcamp

2023

Udemy

Python for Data Science and Machine Learning Bootcamp

2022

Awards

NTU Singapore

Presidential Postdoctoral Fellowship

2023

For top PhD graduates with exceptional doctoral research, \$100,000/year

Monash University

Monash Graduate Scholarship

2018

For the top 30 students globally for outstanding academic and research excellence, \$35,000/year

Chinese Academy of Sciences

President's Research Fellowship

2017

For the top 140 students globally with exceptional research skills, \$20,000/year

Leadership

Qalam Youth Collective

Co-Founder

Aug. 2023 - Present

A global network of 1000+ young professionals focused on empowering marginalized communities through webinars, educational sessions, and resource provision. Responsible for team leadership, strategic planning, problem-solving, and performance management.

Helping Hands

Founder

Sept. 2019 - Present

Managing monetary help collected by a team of 120+ professionals to support bright minds in their educational endeavours in India. This initiative has changed the lives of 3000+ individuals so far.

International Conferences and Research Publications

- Zuhair *et al.*, "The role of slab steps on tectonic loading along subduction zones: inferences on the seismotectonics of the Sunda convergent margin", *Tectonics*, 41, e2022TC007242, 2022
- Graciosa *et al.*, "Megathrust seismicity through the lens of Explainable Artificial Intelligence", *European Geophysical Union, Vienna, Austria*, May 2022, Vienna, Austria.
- Zuhair *et al.*, "Tsunami Impacts on Nuclear Power Plants along Western Coast of India Due to a Great Makran Earthquake: A Numerical Simulation Approach", *International Journal of Geosciences*, 8, 1417-1426, 2017

Education

Ph.D.

Geophysics

MONASH UNIVERSITY, AUSTRALIA

2018–2022

Master of Technology

Exploration Geosciences

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR, INDIA

2014–2016

Master of Science

Geology

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR, INDIA

2012–2014

Bachelor of Science (Honors)

Geology, Maths, Physics

ALIGARH MUSLIM UNIVERSITY, INDIA

2009–2012