Mahdi Farmahini Farahani (Arad)

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**EDUCATION** 

University of Tehran, Institute of Geophysics

Tehran, Iran

Master of Science, Geophysics (Exploration Seismology)

2025 - 2027

Kharazmi University, Faculty of Earth Sciences

Tehran, Iran

Bachelor of Science, Geology

2021 - 2025

• Chairperson, Geological Society of Kharazmi University (June 2024 – June 2025)

- Vice President of Media, Geological Society of Kharazmi University (November 2023 June 2024)
- Ranked 8<sup>th</sup> out of 60 students in the Undergraduate Studies

University of Lille, International Academy Lille Hdf

Lille, France

Water Resource Management (Hydro 2024) Summer School

Summer 2024

• Completed 5 ECTS credits in water resource management topics.

• Presented an oral defense on numerical groundwater modeling, focusing on changing water abstraction in the Weyib Watershed, Ethiopia.

TEACHING EXPERIENCE

Kharazmi University

Tehran, Iran

Teaching Assistant

April 2025 - June 2025

• Programming Course, under supervision of Dr. Morteza Asemani Young Scholars Club

Instructor

Tehran, Iran

• Taught "Applied Data Science in Geology" for the Iran National IESO<sup>1</sup> 2024 Team

Kharazmi University

Tehran, Iran

July 2024

April 2024 - June 2024 Instructor• Organized and instructed the Advanced Python and Machine Learning Workshop

 $NODET^2$ 

Tehran, Iran

May 2021 - September 2021 **Teacher** 

• Taught ITEO<sup>3</sup> Marketing at Allameh Helli (Branches 5 & 8) and Farzanegan High Schools

WORK EXPERIENCE

**FEZtool** Tehran, Iran

Co-Founder & Research and Development Specialist

August 2023 - Present

• Led Earth science research initiatives, developing advanced algorithms and conducting geospatial data analysis for scientific insights.

International Astronomical Search Collaboration, NASA Partner

Remote

Asteroid Search Team Member

July 2025 - August 2025

• Contributed to the Astronomy Enthusiasts of Iran 5 team in analyzing Pan-STARRS data, earning credit for a preliminary asteroid discovery (Object ID: P22c6kw).

Kharazmi University

Tehran, Iran

Research Assistant

October 2024 - January 2025

• Performed MASW to extract dispersion images under supervision of Dr. Mehdi Talkhablou.

NovaVira Board Member

Tehran, Iran June 2023 – November 2024

• Collaborated on company vision and CRM development to drive growth

Project Manager

Tehran, Iran

• Managed a project titled "Business Factory", leading a team of 7

GreenOly Product Manager

ARYANIC

November 2022 - June 2023

August 2022 - January 2023

• Created an Entrepreneurship MOOC with over 15 Olympiad Medalists.

Tehran, Iran

<sup>&</sup>lt;sup>1</sup>International Earth Science Olympiad

<sup>&</sup>lt;sup>2</sup>National Organization for Development of Exceptional Talents

<sup>&</sup>lt;sup>3</sup>Iranian Thinking & Entrepreneurship Olympiad

### COMMUNITY SERVICE

The 4<sup>th</sup> National Festival of Young Iranian Geologists

Education Committee Member

The 3<sup>rd</sup> National Festival of Young Iranian Geologists

Graphics Committee Member
Imam Khomeini International University

Editorial Board Member

Tehran, Iran
June 2025 - July 2025
Tehran, Iran
May 2024 - June 2024
Qazvin, Iran
September 2023 - June 2024

#### **PUBLICATIONS**

#### Journal Articles

- 1. Farmahini Farahani, M. (2024). Effects and social damage of fine dust. Ovan Scientific Journal
- 2. Farmahini Farahani, M. (2024). Designing the green belt in the southwest of Zahedan. *Ovan Scientific Journal*
- 3. Saravani, M. J., Kashef, S., **Farmahini Farahani**, M., Kashefi, M., & Zohreh, M. (2023). Investigating the accuracy of hybrid models with wavelet transform in the forecast of watershed runoff. *Journal of Water Management Modeling (JWMM)*

## **Conference Papers**

- 1. Farmahini Farahani, M. (2025, August). Machine Learning-Enhanced Seismic Event Detection and Noise Reduction for Planetary Seismology: Insights from Mars and Lunar Data. In *Seismology Student Workshop (SSW 2025)*, GatherTown (Virtual)
- Rezaei, K., & Farmahini Farahani, M. (2024, March). Visualization of magnetometric data with Python (case study: Segregation sedimentary units of Torud Playa). In The 1<sup>st</sup> Conference on Applied Geophysics in Mines, Tehran, Iran
- 3. Rezaei, K., & Farmahini Farahani, M. (2024, February). Comparing the performance of the k-means clustering method and spectral indices in characterizing land use and land cover using remote sensing with Python (case study: Landsat 8 multi-spectral images). In 2<sup>nd</sup> International Conference for Iranian Geography and Earth Sciences Students, Tehran, Iran
- 4. Farmahini Farahani, M., Rezaei, K., Karamollahi, S., & Moghadam, F. J. (2024, January). Application of PCA algorithm in remote sensing using Python programming language (case study: Landsat 9 multispectral images). In 8<sup>th</sup> Symposium of Sedimentological Society of Iran, Hormozgan, Iran
- Rezaei, K., & Farmahini Farahani, M. (2023, September). The importance of using Python programming language in Earth science. In 26<sup>th</sup> Conference of Geological Society of Iran, Urmia, Iran

#### **Books**

- 1. Farmahini Farahani, M., Najibifar, Y., & Akbarzadeh Afshari, A. (2025). Earthquake Prediction Using Geophysical Data Analysis and Artificial Intelligence. Heritage Branch, Library and Archives Canada
- 2. Rezaei, K., **Farmahini Farahani, M.**, Karimzadehasl, E. (Trans.). (2024). *Introduction to Python in Earth science data analysis: From descriptive statistics to machine learning.* **Tasir Publication.** (Original work published by Maurizio Petrelli)

#### **PROJECTS**

## PlanetaryGeophysics | github.com/aradfarahani/PlanetaryGeophysics

2025 - Present

- Built an open-source Python platform for analyzing and visualizing planetary geophysical data.
- Created a 3D interactive Mars globe and mapped gravity, seismic, and magnetic data.

FEZrs (Open Source) | pypi.org/project/fezrs

2023 - Present

• Advanced Python library for remote sensing, developed by FEZtool with over 80,000 downloads Seismicity Analysis in Iran (2010–2025) | iris.edu/hq/workshops/2025/06 2025

• performed Iran seismicity analysis for the Seismology Skill-Building Workshop 2025 final project.

Geoelectricspy (Open Source) | github.com/aradfarahani/Geoelectricspy

2023

• Interactive 3D visualization tool for subsurface resistivity using geoelectrics survey data

# LICENSES & CERTIFICATIONS

Seismology Skill Building Workshop 2025, EarthScope Consortium  The Science of the Solar System, California Institute of Technology (Offered by Coursera)  AstroTech, The University of Edinburgh (Offered by Coursera)  Space Exploration, Technical University of Munich (Offered by Coursera)	2025
AstroTech, The University of Edinburgh (Offered by Coursera)	
Space Exploration, Technical University of Munich (Offered by Coursera)	
Rocket Science for Everyone, Yale University (Offered by Coursera)	
International Data Masterclass, United Nations Big Data	2024
Application of Remote Sensing in Geology, Zawinas	
Investigating practical issues in the exploration of Sulphide Deposits using the IP-RS method, $(\mathrm{NIGS})^1$	
Global Environmental Management, DTU <sup>2</sup> (Offered by Coursera)	2023
The 2 <sup>nd</sup> Summer School of Geology, University of Tabriz	
Remote Pilot Certification (Multirotor), CAAIRI <sup>3</sup>	
Unmanned Aerial Vehicle Surveying, Maan Academy	
GIS, Mapping, and Spatial Analysis Specialization, University of Toronto (Offered by Course	era)
Hydraulic Modeling of flood plains in Urban Rivers, Kharazmi University	2022
CS50 Certificate, CS50 (Harvard Uiversity)	2021
HONORS & AWARDS	
LeetCode Global Ranking - Ranked Top 100, LeetCode	2025
Deep-ML Global Leaderboard - Ranked Top 50, Deep-ML.com	
Master's Entrance Exam (Geophysics) - Ranked 8 <sup>th</sup> Nationwide	
· - · · · · · · · · · · · · · · · · · ·	2024
Geological Society Logo Design Contest - Winner, Kharazmi University	,
	2022
,	2021
	2020
	2020 2015
SKILLS & INTERESTS	2013
Programming Languages: Python (ObsPy, pyGIMLi, Astropy, OpenCV, TensorFlow, PyGMT, Xarray, Scikit-learn, kepler.gl, Leafmap, Folium, Rasterio, GeoPandas), Julia, Bash (Shell scripting), SQL (MySQL), GMT, GDAL; Familiar with R	
Markup Languages: Markdown, LATEX	
Softwares: Astrometrica, ENVI, Global Mapper, ArcGIS, QGIS, Agisoft Metashape, Blender, 3ds M. Google Earth Pro, Datamine, SAS.Planet, CorelDRAW, Groundwater Vistas	ſах,
Field Techniques: Drone Surveying, Geoelectrical Methods (Induced Polarization–Resistivity Sounding, IP-RS)	
Languages: Farsi (Persian): <u>Native;</u> English: Fluent (C1), IELTS Overall Score: 7	
Research Interests: Signal Processing, Applied Geophysics, Remote Sensing, Planetary Science,	
Machine Learning, Image Processing, Open-Source Software Development, Inverse Problems PROFESSIONAL MEMBERSHIPS	
Space Generation Advisory Council Member, 2025 – Prese	ent
Google Maps Platform Innovators Member, 2025 – Prese	$_{ m ent}$
Geological Society of Iran Student member, 2021 – 20	)22

<sup>&</sup>lt;sup>1</sup>National Iranian Geophysical Society <sup>2</sup>Technical University of Denmark

 $<sup>^3\</sup>mathrm{Civil}$  Aviation Authority of Islamic Republic of Iran