

EDUCATION

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|---|---------------|
| University of Tehran, Institute of Geophysics | Tehran, Iran |
| <i>Master of Science, Geophysics (Exploration Seismology)</i> | 2025 – 2027 |
| Kharazmi University, Faculty of Earth Sciences | Tehran, Iran |
| <i>Bachelor of Science, Geology</i> | 2021 – 2025 |
| <ul style="list-style-type: none"> Chairperson, Geological Society of Kharazmi University (June 2024 – June 2025) Vice President of Media, Geological Society of Kharazmi University (November 2023 – June 2024) Ranked 8th out of 60 students in the Undergraduate Studies | |
| University of Lille, International Academy Lille Hdf | Lille, France |
| <i>Water Resource Management (Hydro 2024) Summer School</i> | Summer 2024 |
| <ul style="list-style-type: none"> 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

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| Kharazmi University | Tehran, Iran |
| <i>Programming Teaching Assistant</i> | April 2025 – June 2025 |
| <ul style="list-style-type: none"> Programming Course, under supervision of Dr. Morteza Asemani | |
| Kharazmi University | Tehran, Iran |
| <i>Geostatistics Teaching Assistant</i> | February 2025 – June 2025 |
| <ul style="list-style-type: none"> Geostatistics Course, under supervision of Dr. Ehsan Pegah | |
| Young Scholars Club | Tehran, Iran |
| <i>Instructor</i> | July 2024 |
| <ul style="list-style-type: none"> Taught "Applied Data Science in Geology" for the Iran National IESO¹ 2024 Team | |
| Kharazmi University | Tehran, Iran |
| <i>Instructor</i> | April 2024 – June 2024 |
| <ul style="list-style-type: none"> Organized and instructed the Advanced Python and Machine Learning Workshop | |
| NODET² | Tehran, Iran |
| <i>Teacher</i> | May 2021 – September 2021 |
| <ul style="list-style-type: none"> Taught ITEO³ Marketing at Allameh Helli (Branches 5 & 8) and Farzanegan High Schools | |

WORK EXPERIENCE

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| FEZtool | Tehran, Iran |
| <i>Co-Founder & Research and Development Specialist</i> | August 2023 – Present |
| <ul style="list-style-type: none"> Led Earth science research initiatives, developing advanced algorithms and conducting geospatial data analysis for scientific insights. | |
| International Astronomical Search Collaboration, NASA Partner | Remote |
| <i>Asteroid Search Team Member</i> | July 2025 – September 2025 |
| <ul style="list-style-type: none"> Contributed to the Astronomy Enthusiasts of Iran 5 & 3 team in analyzing Pan-STARRS data, earning credit for 3 preliminary asteroid discoveries (Object IDs: P22c6kw, P12cZ6o and P12dtv1). | |
| Kharazmi University | Tehran, Iran |
| <i>Research Assistant</i> | October 2024 – January 2025 |
| <ul style="list-style-type: none"> Performed MASW to extract dispersion images under supervision of Dr. Mehdi Talkhablou. | |
| ARYANIC | Tehran, Iran |
| <i>Project Manager</i> | November 2022 – June 2023 |
| <ul style="list-style-type: none"> Managed a project titled "Business Factory", leading a team of 7 | |
| GreenOly | Tehran, Iran |
| <i>Product Manager</i> | August 2022 – January 2023 |
| <ul style="list-style-type: none"> Created an Entrepreneurship MOOC with over 15 Olympiad Medalists. | |

¹International Earth Science Olympiad

²National Organization for Development of Exceptional Talents

³Iranian Thinking & Entrepreneurship Olympiad

COMMUNITY SERVICE

The 4th National Festival of Young Iranian Geologists

Education Committee Member

Tehran, Iran

June 2025 – July 2025

The 3rd National Festival of Young Iranian Geologists

Graphics Committee Member

Tehran, Iran

May 2024 – June 2024

Imam Khomeini International University

Editorial Board Member

Qazvin, Iran

September 2023 – June 2024

SELECTED PUBLICATIONS

Journal Articles

1. Talkhablou, M., **Farmahini Farahani, M.**, & Mansouri, S. S. (2025). A Python-Based Framework for Land Cover Classification in Engineering Geology: A Comparative Assessment of SVM, K-Means, and Spectral Indices. *Kharazmi Journal of Earth Sciences*
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)
2. Rezaei, K., & **Farmahini Farahani, M.** (2024, March). Visualization of magnetometric data with Python (case study: Segregation sedimentary units of Torud Playa). In *The 1st 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 *2nd 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 *8th Symposium of Sedimentological Society of Iran*, Hormozgan, Iran
5. Rezaei, K., & **Farmahini Farahani, M.** (2023, September). The importance of using Python programming language in Earth science. In *26th 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.

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

2023

- Interactive 3D visualization tool for subsurface resistivity using goelectrics survey data

LICENSES & CERTIFICATIONS

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| Seismology Skill Building Workshop 2025, EarthScope Consortium | 2025 |
| 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) | |
| 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, (NIGS) ¹ | |
| Global Environmental Management, DTU ² (Offered by Coursera) | 2023 |
| The 2 nd Summer School of Geology, University of Tabriz | |
| Remote Pilot Certification (Multirotor), CAAIRI ³ | |
| Unmanned Aerial Vehicle Surveying, Maan Academy | |
| GIS, Mapping, and Spatial Analysis Specialization, University of Toronto (Offered by Coursera) | |
| Hydraulic Modeling of flood plains in Urban Rivers, Kharazmi University | 2022 |
| CS50 Certificate, CS50 (Harvard University) | 2021 |

HONORS & AWARDS

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| LeetCode Global Ranking - <i>Ranked Top 100</i> , LeetCode | 2025 |
| Deep-ML Global Leaderboard - <i>Ranked Top 50</i> , Deep-ML.com | |
| Master's Entrance Exam (Geophysics) - <i>Ranked 8th Nationwide</i> | |
| Hydro 2024 Research-Oriented Summer School - <i>Full Scholarship</i> , University of Lille | 2024 |
| Geological Society Logo Design Contest - <i>Winner</i> , Kharazmi University | |
| Research Visit Grant (2500 DKK) - <i>Awardee</i> , University of Copenhagen | 2022 |
| DrCT 2021 Global Computational Competition - <i>Gold Medalist</i> | 2021 |
| 1 st national Thinking & Entrepreneurship Olympiad (ITEO) - <i>Silver Medalist</i> | 2020 |
| WMI 2015 World Mathematical Championships Selection - <i>Silver Medalist</i> | 2015 |

SKILLS & INTERESTS

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, L^AT_EX

Softwares: Astrometrica, ENVI, Global Mapper, ArcGIS, QGIS, Agisoft Metashape, Blender, 3ds Max, Google Earth Pro, Datamine, SAS.Planet, CorelDRAW, Groundwater Vistas

Field Techniques: Drone Surveying, Geoelectrical Methods (Induced Polarization–Resistivity Sounding, IP-RS)

Languages: Farsi (Persian): *Native*; English: *Fluent (C1)*

Research Interests: Signal Processing, Applied Geophysics, Remote Sensing, Planetary Science, Machine Learning, Image Processing, Open-Source Software Development, Inverse Problems

PROFESSIONAL MEMBERSHIPS

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| Space Generation Advisory Council | Member, 2025 – Present |
| Google Maps Platform Innovators | Member, 2025 – Present |
| Geological Society of Iran | Student member, 2021 – 2022 |

¹National Iranian Geophysical Society

²Technical University of Denmark

³Civil Aviation Authority of Islamic Republic of Iran