

EDUCATION

University of Tehran, Institute of Geophysics <i>Master of Science, Geophysics (Exploration Seismology)</i>	Tehran, Iran 2025 – 2027
Kharazmi University, Faculty of Earth Sciences <i>Bachelor of Science, Geology</i>	Tehran, Iran 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 th out of 60 students in the Undergraduate Studies	
University of Lille, International Academy Lille Hdf <i>Water Resource Management (Hydro 2024) Summer School</i>	Lille, France 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 <i>Programming Teaching Assistant</i>	Tehran, Iran April 2025 – June 2025
• Programming Course, under supervision of Dr. Morteza Asemani	
Kharazmi University <i>Geostatistics Teaching Assistant</i>	Tehran, Iran February 2025 – June 2025
• Geostatistics Course, under supervision of Dr. Ehsan Pegah	
Young Scholars Club <i>Instructor</i>	Tehran, Iran July 2024
• Taught "Applied Data Science in Geology" for the Iran National IESO ¹ 2024 Team	
Kharazmi University <i>Instructor</i>	Tehran, Iran April 2024 – June 2024
• Organized and instructed the Advanced Python and Machine Learning Workshop	
NODET² <i>Teacher</i>	Tehran, Iran May 2021 – September 2021
• Taught ITEO ³ Marketing at Allameh Helli (Branches 5 & 8) and Farzanegan High Schools	

WORK EXPERIENCE

FEZtool <i>Co-Founder & Research and Development Specialist</i>	Tehran, Iran 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 <i>Asteroid Search Team Member</i>	Remote July 2025 – September 2025
• 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 <i>Research Assistant</i>	Tehran, Iran October 2024 – January 2025
• Performed MASW to extract dispersion images under supervision of Dr. Mehdi Talkhablou.	
ARYANIC <i>Project Manager</i>	Tehran, Iran November 2022 – June 2023
• Managed a project titled "Business Factory", leading a team of 7	
GreenOly <i>Product Manager</i>	Tehran, Iran August 2022 – January 2023
• 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 4 th National Festival of Young Iranian Geologists <i>Education Committee Member</i>	Tehran, Iran June 2025 – July 2025
The 3 rd National Festival of Young Iranian Geologists <i>Graphics Committee Member</i>	Tehran, Iran May 2024 – June 2024
Imam Khomeini International University <i>Editorial Board Member</i>	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.**, Karimzadehhasl, E. (Trans.). (2024). *Introduction to Python in Earth science data analysis: From descriptive statistics to machine learning*. Tasir Publication.

PROJECTS

PlanetaryGeophysics github.com/aradfarahani/PlanetaryGeophysics	2025 – Present
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• performed Iran seismicity analysis for the <i>Seismology Skill-Building Workshop 2025</i> final project.	
Geoelectricsp (Open Source) github.com/aradfarahani/Geoelectricsp	2023
<ul style="list-style-type: none">• Interactive 3D visualization tool for subsurface resistivity using geoelectrics survey data	

LICENSES & CERTIFICATIONS

Seismology Skill Building Workshop 2025 , EarthScope Consortium	<i>2025</i>
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	<i>2024</i>
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)	<i>2023</i>
The 2nd 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	<i>2022</i>
CS50 Certificate , CS50 (Harvard University)	<i>2021</i>

HONORS & AWARDS

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

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

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