Mahdi Farmahini Farahani (Arad)

E.mail: aradfarahani@aol.com

Handle: @aradfarahani

Undergraduate Student

Website: aradfarahani.com ORCID: 0009-0008-3800-8688

EDUCATION

University of Tehran, Institute of Geophysics

Master of Science, Geophysics (Exploration Seismology)

Tehran, Iran

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 8th 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
• Programming Course, under supervision of Dr. Morteza Asemani

Young Scholars Club

Tehran, Iran

April 2025 - June 2025

Instructor July 2024

• Taught "Applied Data Science in Geology" for the Iran National IESO¹ 2024 Team

Kharazmi University

Tehran, Iran

Instructor

• Organized and instructed the Advanced Python and Machine Learning Workshop

$\widetilde{\mathbf{NODET}^2}$

Tehran, Iran

Tehran, Iran

Teacher

May 2021 - September 2021

• Taught ITEO³ Marketing at Allameh Helli (Branches 5 & 8) and Farzanegan High Schools

WORK EXPERIENCE

FEZtool

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

ARYANIC

Tehran, Iran

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

GreenOly

November 2022 – June 2023

Product Manager

August 2022 - January 2023

• Created an Entrepreneurship MOOC with over 15 Olympiad Medalists.

Tehran, Iran

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

The 3rd 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 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
- 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.

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

2023

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

LICENSES & CERTIFICATIONS

LICENSES & CERTIFICATIONS		
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-method, $(NIGS)^1$	\mathbf{RS}	
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 C	Coursera)	
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 th Nationwide		
Hydro 2024 Research-Oriented Summer School - Full Scholarship, University of Lille	2024	
Geological Society Logo Design Contest - Winner, Kharazmi University	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Research Visit Grant (2500 DKK) - Awardee, University of Copenhagen	2022	
DrCT 2021 Global Computational Competition - Gold Medalist	2021	
1 st national Thinking & Entrepreneurship Olympiad (ITEO) - Silver Medalist	2021	
WMI 2015 World Mathematical Championships Selection - Silver Medalist SKILLS & INTERESTS	2015	
Programming Languages: Python (ObsPy, pyGIMLi, Astropy, OpenCV, TensorFlow, PyGM Xarray, Scikit-learn, kepler.gl, Leafmap, Folium, Rasterio, GeoPandas), Julia, Bash (Shell scripting), SQL (MySQL), GMT, GDAL; Familiar with R	IT,	
Markup Languages: Markdown, LATEX		
Softwares: Astrometrica, ENVI, Global Mapper, ArcGIS, QGIS, Agisoft Metashape, Blender, Google Earth Pro, Datamine, SAS.Planet, CorelDRAW, Groundwater Vistas	3ds Max,	
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	ce,	
Machine Learning, Image Processing, Open-Source Software Development, Inverse Problem PROFESSIONAL MEMBERSHIPS		
Space Generation Advisory Council Member, 2025 –	Present	
Google Maps Platform Innovators Member, 2025 –	Member, 2025 – Present	
Google Maps Flation in iniovators Member, 2025 –		

¹National Iranian Geophysical Society ²Technical University of Denmark

³Civil Aviation Authority of Islamic Republic of Iran