Mahdi Farmahini Farahani **(Arad)**
E.mail: aradfarahani@aol.com
Handle: @aradfarahani

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

EDUCATION

Kharazmi University, Faculty of Earth Sciences — Tehran, Iran
Bachelor of Science, Geology — *2021 – 2025*

- Chairperson, Geological Society of Kharazmi University (June 2024 – Present)
- 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.

University of Tabriz — Tabriz, Iran
The 2nd Summer School of Geology — *Summer 2023*

- Conducted field studies and geological mapping at Aras Geopark
- Developed essential fieldwork skills, including rock sampling, stratigraphic logging, and structural analysis

TEACHING EXPERIENCE

Kharazmi University — Tehran, Iran
Teaching Assistant — *April 2025 – Present*

- Programming Course, under supervision of Dr. Morteza Asemani

Young Scholars Club — Tehran, Iran
Instructor — *July 2024*

- Taught "Applied Data Science in Geology" for the Iran National IESO[1] 2024 Team

Kharazmi University — Tehran, Iran
Instructor — *April 2024 – June 2024*

- Organized and instructed the Advanced Python and Machine Learning Workshop

NODET[2] — Tehran, Iran
Teacher — *May 2021 – September 2021*

- Taught ITEO[3] 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 research initiatives in Earth sciences to drive innovation and scientific understanding
- Developed advanced algorithms to support research and analytical processes
- Conducted in-depth geospatial data analysis for environmental and spatial insights

Kharazmi University — Tehran, Iran
Research Assistant — *October 2024 – January 2025*

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

NovaVira — Tehran, Iran
Board Member — *June 2023 – November 2024*

- Collaborated on company vision and CRM development to drive growth

ARYANIC — Tehran, Iran
Project Manager — *November 2022 – June 2023*

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

GreenOly — Tehran, Iran
Product Manager — *August 2022 – January 2023*

- Created an Entrepreneurship MOOC with over 15 Olympiad Medalists.

[1] International Earth Science Olympiad
[2] National Organization for Development of Exceptional Talents
[3] Iranian Thinking & Entrepreneurship Olympiad

COMMUNITY SERVICE

The 3rd National Festival of Young Iranian Geologists — Tehran, Iran
Graphics Committee Member — *May 2024 – June 2024*

Imam Khomeini International University — Qazvin, Iran
Editorial Board Member — *September 2023 – June 2024*

BABAEEE — Tehran, Iran
Talent Acquisition Specialist — *July 2022 – March 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. 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
2. 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
3. **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
4. 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

FEZrs (Open Source) | `pypi.org/project/fezrs` — *2023 – Present*

- Advanced Python library for remote sensing, developed by FEZtool with over 50,000 downloads

FEZClient (Open Source) | `github.com/FEZtool-team/FEZClient` — *2024 – 2025*

- Graphical user interface (GUI) to support and extend the FEZtool ecosystem

Awesome Geophysics | `aradfarahani.com/awesome-geophysics` — *2025*

- Community-curated essential geophysics datasets and open-source tools for researchers

Geoelectricspy (Open Source) | `github.com/aradfarahani/Geoelectricspy` — *2023*

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

LICENSES & CERTIFICATIONS

The Science of the Solar System, Caltech (Offred by Coursera) *2025*
AstroTech, The University of Edinburgh (Offred by Coursera)
Space Exploration, Technical University of Munich (Offred by Coursera)
Rocket Science for Everyone, Yale University (Offred 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] (Offred by Coursera) *2023*
Remote Pilot Certification (Multirotor), CAAIRI[3]
Unmanned Aerial Vehicle Surveying, Maan Academy
GIS, Mapping, and Spatial Analysis Specialization, University of Toronto (Offred by 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 8th 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*
1st national Thinking & Entrepreneurship Olympiad (ITEO) - *Silver Medalist* *2020*
WMI 2015 World Mathematical Championships Selection - *Silver Medalist* *2015*

SKILLS & INTERESTS

Programming Languages: Python (ObsPy, pyGIMLi, XGBoost, OpenCV, TensorFlow, NumPy, PyGMT, Xarray, Pandas, Scikit-learn, Matplotlib, Plotly, kepler.gl, Leafmap, Folium, Seaborn, Rasterio, GeoPandas), Julia, Bash (Shell scripting), SQL (MySQL); Familiar with R

Markup Languages: Markdown, LaTeX

Softwares: Astrometrica, ENVI, Global Mapper, ArcGIS, QGIS, Canva, 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, Hydrogeophysics, Machine Learning, Image Processing, Open-Source Software Development, Inverse Problems

PROFESSIONAL MEMBERSHIPS

Google Maps Platform Innovators Member, 2025 – Present
Young Scholars Club Member, 2020 – Present
Geological Society of Iran Student member, 2021 – 2022

[1] National Iranian Geophysical Society
[2] Technical University of Denmark
[3] Civil Aviation Authority of Islamic Republic of Iran