

## EDUCATION

|   |               |
|---|---------------|
| <b>University of Tehran, Institute of Geophysics</b>  | Tehran, Iran  |
| <i>Master of Science, Geophysics (Exploration Seismology)</i>   | 2025 – 2027   |
| <b>Kharazmi University, Faculty of Earth Sciences</b>   | Tehran, Iran  |
| <i>Bachelor of Science, Geology</i>   | 2021 – 2025   |
| <ul style="list-style-type: none"> <li>Chairperson, Geological Society of Kharazmi University (June 2024 – June 2025)</li> <li>Vice President of Media, Geological Society of Kharazmi University (November 2023 – June 2024)</li> <li>Ranked 8<sup>th</sup> out of 60 students in the Undergraduate Studies</li> </ul> |               |
| <b>University of Lille, International Academy Lille Hdf</b>   | Lille, France |
| <i>Water Resource Management (Hydro 2024) Summer School</i>   | Summer 2024   |
| <ul style="list-style-type: none"> <li>Completed 5 ECTS credits in water resource management topics.</li> <li>Presented an oral defense on numerical groundwater modeling, focusing on changing water abstraction in the Weyib Watershed, Ethiopia.</li> </ul>  |               |

## TEACHING EXPERIENCE

|   |                           |
|---|---------------------------|
| <b>Kharazmi University</b>  | Tehran, Iran              |
| <i>Programming Teaching Assistant</i>   | April 2025 – June 2025    |
| <ul style="list-style-type: none"> <li>Programming Course, under supervision of Dr. Morteza Asemani</li> </ul>  |                           |
| <b>Kharazmi University</b>  | Tehran, Iran              |
| <i>Geostatistics Teaching Assistant</i>   | February 2025 – June 2025 |
| <ul style="list-style-type: none"> <li>Geostatistics Course, under supervision of Dr. Ehsan Pegah</li> </ul>  |                           |
| <b>Young Scholars Club</b>  | Tehran, Iran              |
| <i>Instructor</i>   | July 2024                 |
| <ul style="list-style-type: none"> <li>Taught "Applied Data Science in Geology" for the Iran National IESO<sup>1</sup> 2024 Team</li> </ul>           |                           |
| <b>Kharazmi University</b>  | Tehran, Iran              |
| <i>Instructor</i>   | April 2024 – June 2024    |
| <ul style="list-style-type: none"> <li>Organized and instructed the Advanced Python and Machine Learning Workshop</li> </ul>                          |                           |
| <b>NODET<sup>2</sup></b>  | Tehran, Iran              |
| <i>Teacher</i>  | May 2021 – September 2021 |
| <ul style="list-style-type: none"> <li>Taught ITEO<sup>3</sup> Marketing at Allameh Helli (Branches 5 &amp; 8) and Farzanegan High Schools</li> </ul> |                           |

## WORK EXPERIENCE

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

<sup>1</sup>International Earth Science Olympiad

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

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

## COMMUNITY SERVICE

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

*Education Committee Member*

Tehran, Iran

June 2025 – July 2025

**The 3<sup>rd</sup> 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 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
5. 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**.

## PROJECTS

**PlanetaryGeophysics** | [github.com/aradfarahani/PlanetaryGeophysics](https://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](https://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](https://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](https://github.com/aradfarahani/Goelectricspy)

2023

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

## 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-RS method, (NIGS) <sup>1</sup> |      |
| 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 Coursera)                     |      |
| Hydraulic Modeling of flood plains in Urban Rivers, Kharazmi University  | 2022 |
| CS50 Certificate, CS50 (Harvard University)  | 2021 |

## HONORS & AWARDS

|   |      |
|---|------|
| 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 8<sup>th</sup> 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 <sup>st</sup> 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<sup>A</sup>T<sub>E</sub>X

**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 |

<sup>1</sup>National Iranian Geophysical Society

<sup>2</sup>Technical University of Denmark

<sup>3</sup>Civil Aviation Authority of Islamic Republic of Iran