Fatemeh Hakimi Shirayeh

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Profile Summary

Environmental Science PhD student and GIS specialist with advanced expertise in spatial analysis, cartographic design, and geospatial data modeling. Skilled in ArcGIS Pro, Python, and remote sensing for the development of thematic maps, basemaps, and spatial decision-support tools. Experienced in transforming complex geographic information into clear, user-friendly documentation, tutorials, and cartographic products to support product engineering, user adoption, and environmental decision-making. Demonstrated success in leading GIS-based environmental projects, integrating geospatial datasets, and communicating technical workflows to diverse audiences.

Professional Experience

PhD Research Assistant
Iowa State University, Department of Agronomy, Ames, IA
2023 – Present

- Conducts spatial modeling and data visualization linking crop yield to soil and water variables.
- Presented research findings at the Iowa Water Conference (2025) on crop productivity and resource management.
- Applies Python and GIS for data processing and visualization supporting agricultural decision-making.
- Performs soil sampling, data collection, and environmental monitoring to evaluate field variability and crop performance.
- Collaborates with field scientists to integrate geospatial and agronomic datasets for precision agriculture research.

Senior Environmental Management Expert
General Department of Environmental Protection, Gilan Province
2009 – 2023

- Supervised 10+ field monitoring programs on air, water, and soil quality, ensuring data accuracy and compliance.
- Led departmental performance evaluations and reporting that shaped environmental policy decisions.
- Designed and implemented sustainability initiatives, reducing ecological impact across multiple districts.
- Utilized GIS and AutoCAD for spatial analysis, mapping, and land-use planning to support regional projects.
- Coordinated cross-agency collaborations, including projects with the Japan International Cooperation Agency (JICA), to improve data sharing and project efficiency.

Education

- **PhD Environmental Science -** Iowa State University, Ames, IA (2023–Present)
  Dissertation: Maps Speak: Using Cartography to Educate and Empower Public Understanding of Earth Science
- **MS Geography (Urban Planning)** - Islamic Azad University, Rasht (2010–2012)
- **BS Geography (Cartography)** - Islamic Azad University, Rasht (2003–2007)

Projects

Crop Health Mapping (Iowa State University)

- Developed GIS models linking soil, water, and yield data to support sustainable crop management.

Land Registration & Cadastre Mapping

- Created 1,000+ spatial parcel records for agricultural land-use verification.

Rural & Urban Development GIS Consulting

- Delivered suitability maps for planning projects across multiple regions.

JICA Environmental Planning

- Collaborated with the Japan International Cooperation Agency on regional sustainability initiatives.

Certifications

- Advanced GIS & Remote Sensing (PCI Geomatica)
- Environmental Literacy and Sustainability Indicators
- Green & Energy Management
- Soil Conservation and Sustainable Use
- Monitoring and Minimization of Industrial Waste
- Field Safety and Fire Prevention in Natural Areas

Skills

- Field data collection & crop phenotyping
- Soil, water & environmental monitoring
- GIS mapping & spatial modeling (ArcGIS, QGIS, Illustrator)
- Data analysis & visualization (Python, Tableau, Cartography)
- Research design & scientific reporting
- Sustainable agriculture & resource management
- Cross-functional teamwork & communication

Languages

- English
- Persian (Native)