

HIGHLIGHTS

- Spatio-Temporal AI Researcher:** Specializing in AI architectures for trajectory modeling and autonomous navigation in maritime and urban environments.
- Geospatial Data Scientist:** Experienced in developing spatial analytics pipelines and web-based GIS platforms.
- Academic Mentor & Educator:** Experienced in teaching and development for university-level courses in programming, databases, and GIS, with a focus on hands-on, project-based learning.

RESEARCH INTERESTS

- GeoAI
- AI for Maritime & Urban Mobility
- Autonomous Navigation & Collision Avoidance

EDUCATION

M.Sc. of Surveying Engineering (Geospatial information Science)

Babol Noshirvani University

2023 - 2025

- GPA: 3.88/4
- Thesis:
 - Spatio-temporal ship trajectory modeling using neural networks and marine environmental data
 - Supervisor: Hamid Motieyan, Reza Dezvareh

B.Sc. of Surveying Engineering

Babol Noshirvani University

2019-2023

- GPA: 3.24/4
- Thesis:
 - Examining and modeling the trajectories of moving objects
 - Supervisor: Hamid Motieyan

EXPERIENCE

Researcher - Autonomous Vessel Collision Avoidance

National Elite Foundation (Iran)

April 2026 - Present

Developing a hybrid Graph Search and RL software for COLREGs-compliant autonomous vessel route planning.

Researcher – Spatial GIS Web Platform for Handicraft Supply Chain

National Elite Foundation (Iran)

Sep 2025 - Jun 2026

Designed a web-GIS platform mapping handicraft producers in Mazandaran to optimize supply chain visibility.

Teaching Assistant (Database, Python)

Babol Noshirvani University

Feb 2023 - Jan 2026

Delivered lab sessions and mentored students in programming and geospatial analysis.

Python Teacher (Programming for Children)

Yasan Academy

May 2025 - Nov 2025

Taught foundational Python through project-based examples for young learners.

PUBLICATIONS

- **Esmaeili, Y.**, & Motieyan, H. (2024). Investigating individual and mixed of urban land use on bicycle transportation using spatial computing. Scientific- Research Quarterly of Geographical Data (SEPEHR), 34(133), 7-24. doi: [10.22131/sepehr.2024.2032133.3081](https://doi.org/10.22131/sepehr.2024.2032133.3081) (In Persian)
- Motieyan, H., & **Esmaeili, Y.** (2025). From paths to places: Analyzing pedestrian trajectories and built environment factors for walkability and attractive area detection. Spatial Information Research, 34(1), 3. doi: [10.1007/s41324-025-00660-x](https://doi.org/10.1007/s41324-025-00660-x)
- **Esmaeili, Y.**, Motieyan, H., & Dezvareh, R. (2026). Context-aware vessel trajectory prediction using FlashAttention and maritime spatial features. Ocean Engineering, 344, 123711. doi: [10.1016/j.oceaneng.2025.123711](https://doi.org/10.1016/j.oceaneng.2025.123711)
- **Esmaeili, Y.**, Motieyan, H., & Dezvareh, R. Goal-conditioned Multi-path Tugboat Trajectory Prediction with xLSTM and Spatial Gating of Environmental Features. (Under Review)
- **Esmaeili, Y.**, & Motieyan, H. Graph-Based Reinforcement Learning for Pedestrian Exploration Behavioral Archetypes in Urban Street Networks. (Under Review)

PROJECTS

Mazandaran Handicrafts Web-GIS

National Elites Foundation & University of Mazandaran

- Built an interactive web-GIS platform to map handicraft producers with city/terrain/road overlays using FastAPI, Leaflet, and GeoPandas for supply chain optimization. [GitHub](#)

Sep 2026

HONORS AND AWARDS

- Granted admission from the Talented Student Office of Babol Noshirvani University for graduate study.
- Awarded Best Paper at the 28th Geomatic Conference (Iran).

SKILLS

- Programming & Databases: Python, SQL, PostGIS, DuckDB
- ML & Web Frameworks: PyTorch, FastAPI, Streamlit
- Geospatial Libraries: GeoPandas, Shapely, Rasterio, Geemap
- GIS Software: QGIS, ArcGIS, ArcGIS Pro
- Development Tools: Docker, Git