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Matthew Hatami

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I am a dual degree student doing my PhD in Water Resources Management and my MSc in Computer Science at the University of South Carolina, focused on applying machine learning to geospatial data, with a particular interest in geospatial foundation models, especially in hydrology and flood modeling.

Education

- **PhD in Civil & Environmental Engineering,** University of South Carolina, USA — **2024 –** Present
- **M.Sc. Computer Science,** University of South Carolina, USA — **2024 –** Present
- **M.Sc. Thesis Work,** University of Groningen, Netherlands — **2023**
- **M.Sc. Civil Engineering for Risk Mitigation,** Polytechnic University of Milan, Italy — **2021–2023**
- **B.Sc. Civil Engineering,** University of Imam Khomeini, Iran — **2015–2021**

Research Interest

- Geospatial Data Science and Geospatial Foundation Models
- Geographic Information Systems, Remote Sensing, GeoAI
- Flood Risk Assessment and Disaster Management Cycle

Publications

- Peer-review paper: **Learning Efficiency of Geospatial Foundation Models: Transfer Learning for SAR Flood Mapping with Prithvi vs. UNet and SegFormer** - Manuscript in Preparation
- M.Sc. Thesis: **Applications of Deep Learning and Remote Sensing in Disaster Management Cycle** (Link)
- Project Report: **Geospatial Data Processing to Support Seismic Emergency Management** (Link)
- Project Report: **Geo-Engineering Techniques for Unstable Slopes - Shallow Landslide Simulator Experiment** (Link)

Posters & Presentations

- **AGU2024 Poster Presentation** - Presented "Advancing Camera-Based Monitoring for Operational Hydrologic Applications" (Link)
- **EGU2024 Poster Presentation** - Presented "Harnessing Heterogeneous Sources of Data and Artificial Intelligence for Hydrologic Monitoring" (Link)
- **SCARC2024 -** Presented *"Mapping Risk: Coastal Vulnerability from South Carolina to the East Coast" (Link) (Agenda)*
- **SCDOT Research & Innovation 2024**: Pitched the idea of developing vulnerability assessment for transportation infrastructure using the upcoming ATLAS15 and Machine Learning Algorithms
- **GISDay MicroConference @UofSC 2024** - Presented "Integrated Socio-Environmental Vulnerability Assessment of Coastal Hazards Using Data-Driven and Multi-Criteria Analysis Approaches" (Agenda)

Honors & Awards

- **2024:** Won 9th annual meeting scholarship award for South East & Caribbean Disaster Resilience Partnership
- **2024:** Won the data challenge competition ($3500) for South East Coastal Ocean Observing Regional Association
- **2024:** Won 2nd place ($2000 award) in the IBM Call for Code competition at South Carolina State Universities
- **2023**: Won the Erasmus scholarship to study in Portugal
- **2022**: Won the Erasmus scholarship to study in Poland
- **2021**: Awarded the Italian government scholarship for foreign students
- **2018**: Ranked 6th among Civil Engineering students at IKIU
- **2016**: Ranked in the top 0.01% among 200,000 participants in the nationwide universities entrance exam

Skills

- Technical Skills:

- **Programming**: Python, JavaScript, MATLAB, SQL
- **Python Libraries:** Numpy, Pandas, Matplotlib, Scikit-learn, Keras, OpenCV
- **Softwares:** ArcGIS Pro, QGIS, HEC-RAS, SNAP
- **Online Platforms:** Google Earth Engine, NASA Earth Data, Copernicus DataSpace Browser
- **ESRI Suit:** ArcGIS Online, ESRI Experience Builder, ESRI Instant App, ESRI Story Builder, ESRI Dashboards

- Soft Skills:

- **Presentation:** Engaging presenter, using visual aids & multimedia, clarity & coherence
- **Documentation:** clear & comprehensive reports, proficient in technical writing, thorough documentation
- **Teamwork:** adaptable to cross-cultural environments, experience in interdisciplinary teams

Work Experience & Volunteering

Geospatial Administrative Associate @Gamecock Geospatial Community UofSC　　　　**Oct 2023 - present**

- **Event coordination:** Coordinated and organized GIS meetings, workshops, and events, preparing agendas and documenting outcomes to streamline project communications and follow-up actions.
- **Project Support:** Supported project documentation and data management, maintaining organized records and assisting with budgeting and reporting for GIS initiatives.
- **Collaboration & Outreach:** Engaged with campus departments and external partners to foster collaboration, enhance resource access, and support strategic goals in geospatial program development.

Geospatial Data Scientist Intern @Geoapp s.r.l　　　　**Oct 2023** - **Jan 2024**

- Developed a QGIS Plugin to find unstable parts of the land in mining activities.
- Optimized the processing chain to minimize the effort and request time to process routine tasks.
- Created a pipeline to automate detection of unstable parts of open-pit mines reducing the analysis of each site from 8 hours to 20 minutes

Courses & Certificates

- **Machine Learning for Earth Observation** - EO College

    - Module 1: Bayesian Estimation and Machine Learning in Inverse Problems
    - Module 2: Self-Supervised Learning & Tapping the Power of Unlabeled Data
    - Module 3: Deep Learning for Synthetic Appreture Radar

- **Machine Learning Specialization** - *Stanford University*

    - *Module 1: Supervised Machine Learning, Regression & Classification*
    - *Module 2: Advanced Learning Algorithms*
    - *Module 3: Unsupervised Learning, Recommenders & Reinforcement Learning*

- **SQL for Data Science** - *University of California, Davis*

    - *Module 1: Getting Started & Selecting & Retrieving Data with SQL*
    - *Module 2: Filtering, Sorting, and Calculating Data with SQL*
    - *Module 3: Subqueries & Joins in SQL*

- **Modern Geo Apps** - Esri

    - Module 1: Esri Instant Apps
    - Module 2: Esri Dashboards
    - Module 3: Esri Experience Builder
    - Module 4: Esri Story Builder