Fields of Interest

Weather Forecasting, AI; Environmental Sciences/Engineering; Flood Risk Management; Climate Change; Remote Sensing; Machine Learning

Education

2015 **Bachelor of Science in Civil Engineering**, Azad University of Shabestar, Tabriz, Iran

2018 **Master of Science in Civil Engineering and Architecture**, Istanbul Technical University, Istanbul, Turkey

2021 **Master of Science in Environmental Engineering**, University of Bologna, Bologna, Italy
Thesis title: Geomorphological characterization of fluvial flood hazard across the island of Oahu, Hawaii; Supervisor: Professor Attilio Castellarin

2024 **Ph.D. in Environmental and Hydraulic Engineering**, Sapienza University of Rome, Rome, Italy
Research Title: Designing an Early-Warning System to Forecast Extreme Climate Conditions Using Data-Driven Approaches with Machine-Learning and Deep-Learning Methods; Supervisor: Professor Francesco Cioffi

2025 **Research Fellow**, Sapienza University of Rome, Rome, Italy

Ph.D. Research

An advanced early warning system was developed during my PhD research, integrating the E-TEPS model, which utilizes a Super-Resolution Generative Adversarial Network to enhance climate downscaling for temperature and precipitation with elevation data, and the FourCastNet global forecasting model. The accuracy and spatial resolution of high-resolution climate predictions were significantly improved, allowing for rapid and precise forecasts of extreme weather events in Italy. This system supports more effective climate-related decision-making and disaster preparedness by providing timely and detailed insights into critical climate variables.

Conference Presentations

- **IDRA24, Parma, Italy**
  Title of the Presentation: Developing an Early-Warning System for Predicting Extreme Climate Conditions Using Data-Driven Machine Learning and Deep Learning Techniques

- **EGU2024, Vienna, Austria**
  Title of the Presentation: Designing an Early-Warning System to Forecast Extreme Climate Conditions Using Data-Driven Approaches with Machine-Learning and Deep-Learning Methods

- **PhD Days 2023, Matera, Italy**
  Title of the Presentation: Introducing an Enhanced Early-Warning System Focused on Downscaling Models Using Deep Learning Methods

- **AGU2024, Washington DC, USA**
  Title of the Presentation: Enhancing Early-Warning Systems for Climate Extremes in Developing Countries Using Machine Learning Models and High-Resolution Datasets *(Abstract accepted for oral presentation, Visa denied)*

- **EGU Leonardo 2025 Conference on Earth's Hydrological Cycle 2025, Bologna, Italy**
  Title of the Presentation: Integrating HPC, AI, and Big Data for Enhanced Early-Warning Systems in Hydrological Extremes: Insights from Ghana's Tree Crop Sector

- **SISC2025, Salerno, Italy**
  Title of the Presentation: Enhancing Early-Warning Systems for Climate Extremes in Developing Countries Using Machine Learning Models and High-Resolution Datasets

Publications

- Shafei, A.; Cioffi, F. High-Resolution Early Warning Systems Using DL: Part I - Elevation-Integrated Temperature and Precipitation SRGAN Downscaling (E-TePS). *Preprints* **2024**, 2024081420. https://doi.org/10.20944/preprints202408.1420.v1

- Shafei, A.; Cioffi, F. High-Resolution Early Warning Systems Using DL: Part II - Combining FourCastNet and E-TePS for High-Resolution Climate Forecasting. *Preprints* **2024**, 2024081322. https://doi.org/10.20944/preprints202408.1322.v1

Computer Skills

- Software: LaTeX, QGIS, AQUASIM, WordPress, SWMM, EPANET, Adobe Perimeter Pro, Microsoft Office
- Cloud Computing: Google Cloud Platform (GCP), Google Colab
- Programming Language: Python
- Operating Systems: Linux, Windows

Language Skills

English (Fluent): IELTS 7.5: Listening 9, Reading 7.5, Writing 6, Speaking 6.5, Azerbaijani (Mother Tongue), Farsi (Fluent), Turkish (Fluent), Arabic (Basic), Italian (Basic)

Extracurricular Activities

Web design, Logo design, Video editing, Music mixing

References

- **Francesco Cioffi**
  Professor of Hydraulics and Environmental Hydraulics
  Università di Roma 'La Sapienza'

Address: Via Eudossiana 18, 00184 Roma
Tel: +39-06-44585523
Email: francesco.cioffi@uniroma1.it
Relationship: Ph.D. Supervisor

- **Attilio Castellarin**
  Professor of Hydraulic Infrastructures, Hydrological Modeling, and Flood and Drought Risk Management
  University of Bologna
  Address: Viale del Risorgimento 2, Bologna
  Tel: +39-051-209-3365
  Email: attilio.castellarin@unibo.it
  Relationship: Master's Thesis Supervisor

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