Serly Moghadas Gholian

✉ serly.gholian@gmail.com 🔗 LinkedIn 🌐 Website
🎓 Scholar ⭘ GitHub

Profile

I am a Telecommunications Engineer specializing in developing scalable, efficient and transparent AI solutions for deep learning-based prediction models

I can help companies and service providers to integrate scalable and trustworthy AI frameworks that enhance forecasting accuracy, reduce computational overhead and cost while maintaining high performance in mobile network AI deployments.

Skills

Programming Languages	Python (Tensorflow, PyTorch, Keras, NumPy, Pandas, Matplotlib), MATLAB, LaTeX(PGFPlots, TikZ)
Automation & Scripting	Automating Workflows, Scripting for Data Pipelines, Process Optimization
Data Analysis	Exploratory Data Analysis (EDA), Data Cleaning, Feature Engineering, Statistical Modeling
Tools	Linux, Git, NVIDIA CUDA
Development Tools	Pycharm, Visual Studio Code, Jupyter Notebook, Data Visualization
Project Management Tools	Obsidian, Trello
Soft Skills	Critical Thinking and Creativity, Academic Research and Writing, Problem Identification and Resolution, Independent and collaborative working, LaTeX typesetting and plotting,

Experience

2021 – Present	**Researcher, IMDEA Networks Institute, Madrid, Spain**
2020 – 2021	**Mentor and M.Sc. Thesis Advisor, Urmia University of Technology, Urmia, Iran**

Selected Projects & Tools Developed

Scalable DNN Training Framework

- I designed and implemented a scalable framework that clusters mobile base stations at a city scale using K-means with Dynamic Time Warping (DTW) and applies explainable AI-based input selection. This approach reduces the number of required training data probes by **81%** while maintaining competitive accuracy with oracle models and significantly lowering operational costs, making it viable for large-scale mobile network deployments without excessive infrastructure investment.

DeExp Framework

- I developed a Explainable Artificial Intelligence (XAI) tool for mobile traffic forecasting that condenses verbose outputs from legacy XAI techniques into a compact, actionable metric.

- By pinpointing the most influential mobile base stations for forecasting, I enabled operators to optimize resource allocation, proactively mitigate vulnerabilities, and reduce unnecessary network overprovisioning costs.

XAI Benchmarking Platform

- I built a unified benchmarking system that integrates multiple XAI techniques (LRP, Grad-CAM, SHAP, LIME) to assess and compare model vulnerability under adversarial attacks, allowing operators to preemptively strengthen their models and reduce operational costs.

- This platform helps optimize mobile network operations by providing clear, actionable insights, minimizing costly inefficiencies and service disruptions.

Interests

5G and 6G Mobile Networks

Spatio-Temporal and Timeseries traffic forecasting in Mobile Networks

Data Analysis, Data Visualization

Deep Learning, Machine Learning techniques

Explainable Artificial Intelligence (XAI), Transparent AI

Medical Image and Signal Processing

Education

2021 – Present	**Ph.D. Universidad Carlos III de Madrid (UC3M), Telematics Engineering** Supervisor: Dr. Joerg Widmer Thesis title: Explainable and Scalable Deep Neural Network Frameworks for Mobile Traffic Forecasting
2016 – 2018	**M.Sc. Telecommunications Engineering** Thesis title: *Classification and diagnosis of Thyroid Nodules using fusion of texture and demographic features*
2011 – 2015	**B.Sc. Electrical Engineering**

Research Publications

S. Moghadas Gholian, C. Fiandrino, and J. Widmer, "A scalable dnn training framework for traffic forecasting in mobile networks," IEEE International Conference on Machine Learning for Communication and Networking, IEEE ICMLCN 2025, Accepted for Publication.

S. Moghadas, C. Fiandrino, A. Collet, G. Attanasio, M. Fiore, and J. Widmer, "Spotting deep neural network vulnerabilities in mobile traffic forecasting with an explainable ai lens," in *IEEE INFOCOM 2023-IEEE Conference on Computer Communications*, pp. 1–10. 🔗 DOI: 10.1109/INFOCOM53939.2023.10228989.

S. Moghadas Gholian, C. Fiandrino, N. Vallina-Rodríguez, M. Fiore, and J. Widmer, "Deexp: Revealing model vulnerabilities for spatio-temporal mobile traffic forecasting with explainable ai," 6, IEEE Transactions on Mobile Computing, vol. 24, 2025, pp. 5245–5263. 🔗 DOI: 10.1109/TMC.2025.3531544.

S. Moghadas Gholian, C. Fiandrino, M. Fiore, and J. Widmer, "Exploiting explainable ai in exposing vulnerabilities of mobile 5g networks," in *13th IMDEA Networks Workshop: Quantum networks and quantum communications*, 2023, pp. 1–1.

G. Attanasio, S. Moghadas Gholian, C. Fiandrino, M. Fiore, J. Widmer, *et al.*, "Towards native explainable and robust ai in 6g networks," in *12th IMDEA Networks Annual International Workshop*, 2022, pp. 1–1.

Languages

Armenian (Mother Tongue)	English (C2)	Persian (C2)	Spanish (B2)