Serly Moghadas Gholian

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Profile

I'm a Telecommunications Engineer actively seeking a role where I can apply my expertise in designing and deploying scalable, transparent AI solutions. I specialize in:
- Designing and deploying scalable, transparent machine learning models for time-series and spatio-temporal data prediction.
- Integrating trustworthy AI frameworks that boost forecasting accuracy while reducing computational overhead and costs.
- Delivering high-performance, production-ready AI toolchains for service providers.
I'm eager to join a forward-thinking team and help your organization harness efficient, explainable AI to achieve smarter, data-driven and sustainable outcomes.

Skills

Telecommunications & Networking	Radio Access Networks (RAN), Mobile Network Optimization, Network Traffic Analysis, 4G/5G Mobile Networks, Network Performance Monitoring
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	Data Analysis, 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, Microsoft
Soft Skills	Critical Thinking and Creativity, Academic Research and Writing, Problem Identification and Resolution, Independent and collaborative working, LaTeX typesetting and plotting,

Experience

2021 – 2025	**Researcher, IMDEA Networks Institute, Madrid, Spain**
2020 – 2021	**Mentor and M.Sc. Thesis Advisor, Urmia University of Technology, Urmia, Iran**

Honors and Awards

Best Student Paper Award, IEEE International Conference on Machine Learning for Communication and Networking (IEEE ICMLCN 2025), Barcelona, Spain, 26–29 May 2025. *"A Scalable DNN Training Framework for Traffic Forecasting in Mobile Networks"* was recognized for its contribution to scalable DNN design in mobile networks.

Winner of 3-Minute Thesis (3MT) Competition, IEEE ICMLCN 2025, Barcelona, Spain, 26–29 May 2025. Awarded for effectively communicating Ph.D. research on explainable AI and mobile traffic forecasting to an audience in mobile networks field.

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

Selected Publications

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

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," in *IEEE Transactions on Mobile Computing (IEEE TMC)*, vol. 24, 2025, pp. 5245–5263. ⚓ DOI: 10.1109/TMC.2025.3531544.

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 Conference on Computer Communications (IEEE INFOCOM)*, New York, USA, May 2023, pp. 1–10. ⚓ DOI: 10.1109/INFOCOM53939.2023.10228989.

Languages

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