Serly Moghadas Gholian

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Professional Summary

Enthusiastic Telecommunication Engineer with strong background on Machine Learning and Transparent AI in mobile Networks. With more than 6 years of experience in AI/ML and Explainable AI and Data Analysis and Visualization, with strong coding skills in Python and Matlab.

Technical Skills

- **Programming Languages**: Python (Tensorflow, PyTorch, Keras, NumPy, Pandas, Matplotlib, scikit-learn, tslearn, Seaborn), MATLAB, LaTeX (PGFPlots, TikZ)
- **Machine Learning & AI:** Deep Learning, Explainable AI (XAI), Scalable ML Infrastructure, Transparent AI, Statistical Modeling, Feature Engineering
- **Data Science & Visualization:** Data Cleaning, Analysis, Visualization (including scientific plotting), Medical Image and Signal Processing, Clustering Techniques
- **Spatio-Temporal Forecasting:** Timeseries modeling and prediction in mobile networks, network traffic forecasting
- **Telecommunications & Networking:** 4G/5G/6G Mobile Networks, Radio Access Networks (RAN), Mobile Network Optimization, Traffic Analysis, Performance Monitoring
- **Tools & Automation:** Linux, Git, NVIDIA CUDA , Automating Workflows, Scripting for Data Pipelines
- **Development Environment:** PyCharm, VS Code, Jupyter Notebook
- **Project Management Tools:** Obsidian, Trello, Microsoft Office
- **Soft Skills:** Critical Thinking and Creativity, Academic Research and Writing, Problem Identification and Resolution, Independent and collaborative working, LATEX typesetting and plotting

Professional Experience

IMDEA Networks, Predoctoral Researcher
Madrid, Spain | May 2021 – May 2025

- Developed an XAI-based evaluation framework that distills outputs from LRP, Grad-CAM, SHAP, and LIME into a single interpretable relevance score for mobile traffic forecasting models.
- Designed a benchmarking system to quantify DNN robustness against adversarial attacks using integrated XAI methods, enabling model hardening and improved resilience.
- Built a scalable ML pipeline that clusters base stations via DTW-based K-means and applies XAI-driven input pruning, reducing training data by 81% with minimal accuracy loss.
- Contributed to a joint research project with Huawei on PHY-layer optimization, applying deep autoencoders for joint channel estimation and LDPC decoding.
- Explored AI-driven techniques for end-to-end physical layer learning, enhancing signal recovery performance under noisy conditions.
- Authored peer-reviewed publications in top-tier conferences and journals, including IEEE INFOCOM and IEEE TMC; recipient of the Best Student Paper Award at IEEE ICMLCN 2025.
- Developed automated Python pipelines to support data processing, model training, and evaluation across multiple experiments.

Urmia University of Technology, Master's Thesis Advisor
Urmia, Iran | Sep 2020 - Sep 2021

- Supervised and led the development of a master's thesis on lung nodule detection and classification using texture and geometric features in CT images.
- Designed the pipeline: image preprocessing, segmentation using the Chan–Vese active contour model, feature extraction (histogram, texture, geometric), and classification with SVM and KNN.

Urmia Shenriz company, Data Management Intern
Urmia, Iran | Mar 2020 - Sep 2020

- Supported administrative and operational tasks through structured data management using Microsoft Excel.
- Gained hands-on experience with spreadsheet organization, formula-based calculations, and data cleaning for business reporting.
- Contributed to improving the accuracy and consistency of inventory and sales records.

Education

Master's degree in Telecommunications Engineering
Sep 2016 – Sep 2018
Urmia University, Urmia, Iran
Thesis title: *Classification and diagnosis of Thyroid Nodules using fusion of texture and demographic features*

Bachelor's degree in Electrical Engineering
Sep 2011 – Sep 2015
Urmia University of Technology

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 Gholian, 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.
- G. Attanasio, S. Moghadas Gholian, C. Fiandrino, M. Fiore, and J. Widmer, 2022, June. Towards Native Explainable and Robust AI in 6G Networks. In *12th IMDEA Networks Annual International Workshop* (pp. 1-1).

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.

Language Skills

English, Spanish, Persian, Armenian