

# 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. With hands-on experience in developing interpretable AI systems and have tackled challenges like spatio-temporal prediction, traffic pattern analysis, and model transparency. I'm especially passionate about transforming complex datasets into actionable insights.

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## 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

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## 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.

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## **Education**

### **Ph.D. in Telematics Engineering**

July 2021- Sep 2025

Universidad Carlos III de Madrid (UC3M), Madrid, Spain

Thesis title: *Explainable and Scalable Deep Neural Network Frameworks for Mobile Traffic Forecasting*

### **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

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## **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).

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## **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.

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## **Language Skills**

English, Spanish, Persian, Armenian