Kiarash Rezaei

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Research interests

Trustworthy AI, Domain Adaptation and Generalization, Robust AI/ML for Communication Systems, LLMs for Network Automation, Representation Learning, Edge AI.

Education

2025 – Present **Chalmers University of Technology, Department of Electrical Engineering** – Gothenburg, Sweden
PhD in Electrical Engineering (Communication, Antennas and Optical Networks – CAOS unit)
Supervisor: Prof. Paolo Monti
Co-supervisor: Dr. Carlos Natalino

2021 – 2024 **Polytechnic University of Milan (PoliMi), Department of Electronics, Information and Bioengineering** – Milan, Italy
MSc in Telecommunication Engineering (Track: Signal and Data Analysis)
Thesis: *Continuous IMU-MEMS Self-Calibration Process by Means of Tiny Neural Networks*
Supervisor: Prof. Luca Barletta
GPA: 106/110

2014 – 2020 **Kharazmi University of Tehran (KhU), Department of Mathematics and Computer Science** – Tehran, Iran
BSc in Computer Science
Thesis: *Automatic Architecture Design of CNNs using Genetic Algorithm and Reinforcement Learning (MetaQNN)*
Supervisor: Prof. Keivan Borna

Research experience

Feb 2025 – Present
Chalmers University of Technology, Communication, Antennas and Optical Networks (CAOS) unit – Gothenburg, Sweden
Research Assistant
- Working on Trustworthy AI algorithms for communication systems.

Nov 2023 – Jul 2024
STMicroelectronics – Milan, Italy
AI Researcher
- Designed and developed a scalable, end-to-end pipeline for continuous calibration of next-generation MEMS inertial measurement sensors, integrating intelligent sensor processing units to enhance performance and reliability.
- Implemented a deep learning-based module utilizing Edge AI and Quantization-Aware Training (QAT), achieving a significant 70% reduction in calibration loss, enabling efficient sensor operation in resource-constrained environments.
- Published 3 scientific papers detailing the innovative methods and results derived from this work, contributing to advancements in Edge AI technologies.

Oct 2023 – Nov 2023
Envision – Hague, Netherlands
Computer Vision Intern
- Conducted evaluation of multi-modal models trained on ego-centric datasets, benchmarking performance across diverse metrics.

Apr 2022 – Jul 2023
PoliMi Data Science Association (PMDS) – Milan, Italy
Machine Learning Researcher
- Collaborated with Sares Miramondi Co. on a project of Anomaly Detection for production lines.
- Analyzed the results of the sentiment analysis to identify trends and insights related to public sentiment toward COVID-19.

Publications

2025
Generative Explainability for Next-Generation Networks: LLM-Augmented XAI with Mutual Feature Interactions
Rezaei, K., Ayoub, O., Troia, S., Lelli, F., Monti, P., Natalino, C.
Accepted, *GenXNet Workshop at IEEE WiMob 2025.*

2024 **IMU Self-Calibration by Means of Quantization-Aware and Memory-Parsimonious Neural-Networks**
Cardoni, M., Pau, D. P., Rezaei, K., & Mura, C.
Published, *Journal of Electronics*.

2024 **IMU User Transparent Tiny Neural Self-Calibration**
Cardoni, M., Pau, D. P., Rezaei, K.
Presented, *IEEE RTSI 2024*.

2024 **Continuous MEMS Self-Calibration Process by Means of Tiny Neural Networks**
Cardoni, M., Pau, D. P., Rezaei, K.
Presented at *STMicroelectronics TechWeek 2024*.
Submitted as innovation proposal.

2019 **An Introduction to Convolutional Neural Networks & Applications**
Rezaei, K., Zamani, S.
Presented, *CICIS 2019*.

Teaching experience

Aug 2025 – Present **Teaching Assistant, EEN060/EEN065: Applied Object-Oriented Programming (Chalmers University of Technology)**
Led lab sessions in Python, assisted students with projects and assignments, and provided feedback to support their understanding of object-oriented programming concepts.

Industry experience

Oct 2024 – Jan 2025 **AGap2 - Rina** – Milan, Italy
Generative AI Engineer
- Collaborated with Rina Company to develop various solutions leveraging large language models to automatically assess the completeness and coherence of inspection reports.
- Successfully integrated these solutions into the existing digital reporting platform resulted in delivering an MVP.

Feb 2023 – Feb 2024 **DataLobster** – Paris, France
Data Scientist
- Optimized signal processing and ML algorithms for streaming and large-scale data.
- Developed anomaly detection models with explainable AI.

Professional memberships

2025 – Present IEEE Student Member

Technical skills

Programming & Data Science
Python (advanced), MATLAB (advanced), Java (intermediate)
Pandas, NumPy, SciPy, Matplotlib, Jupyter, Anaconda

Machine Learning & AI
PyTorch, TensorFlow, Keras, scikit-learn
Large Language Models (LLMs): fine-tuning, local deployment, cloud integration
Agentic AI frameworks (LangChain, multi-agent systems), Prompt Engineering
Explainable AI (XAI), Trustworthy AI, Quantization-Aware Training (QAT), TinyML

Signal Processing & Communication Systems
Statistical signal analysis, MIMO system modeling, Polar codes, Anomaly detection in communication networks
IoT protocols: MQTT, COAP, TinyOS, Node-RED, Wireshark

Cloud & Systems Integration
Experience with cloud-based AI workflows (Azure, AWS) including model training, deployment, and monitoring
Integration of LLMs both locally and via cloud APIs, REST API design, containerization (Docker), STM32Cube.AI, Git, LaTeX

Languages
English (fluent), Italian (Elementary), Persian (Native)