Aram Rostamnejad Khatir

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I am a **Machine Learning Engineer** and **Researcher** with a strong foundation in **Machine Learning, EdgeAI**, **computer engineering**, **programming**, and **medical image analysis**. Experienced in developing and optimizing deep learning models for real-world applications, including **brain MRI and fMRI analysis**. My long-standing dream is to **bridge artificial intelligence and neuroscience**—to understand how the brain processes information through computational modeling. I'm particularly passionate about using **AI to decode sensory experiences like vision and hearing**. I aim to bring my **interdisciplinary skills** to cutting-edge research at the **intersection of cognitive science, neural data, and machine learning.**

EDUCATION

PhD. in Quantum internet, TU Delft, Delft, the Netherlands. 2025
Thesis: *"Novel Microarchitecture for the Quantum Node in Quantum Network"*.

M. Sc. in Computer Architecture, Sharif University of Technology, Tehran, Iran. 2020
Thesis: "*Improving CPU-GPU System Performance through Dynamic Management of LLC and NoC"*.
GPA: 18.36/20 (3rd Rank)

B. Sc. in Computer Engineering, Shahid Beheshti University, Tehran, Iran. 2016
Thesis: "*HW-SW Co-design of JPEG Algorithm for Image Compression"*.
GPA: 15.77/20 (Last Two Years: 17.8/20, 4th Rank)

TECHNICAL SKILLS

Programming: Python (PyTorch, TensorFlow, Hugging Face, Scikit-learn, OpenAI), MATLAB, R, SQL, C/C++
Machine Learning & AI: Deep Learning, NLP (Transformers, BERT, GPT, LLMs), Computer Vision, NNs
Optimization: Gradient-based methods (Adam, SGD), Evolutionary Algorithm, Neural Architecture Search
Medical Imaging: Brain MRI/fMRI segmentation and classification, Heart MRI (Radiomics)
Data Science & Analytics: Feature Engineering, Data Visualization, Big Data Analysis (Hadoop, Spark)
Embedded & Edge AI: Deployment on Nvidia Jetson (Nano/Orin)
Hardware Design & Simulators: FPGAs, MCUs, VHDL, Gem5, Gem5-GPU, Xilinx Vivado
Languages: English (Proficient), **Dutch**(A2-B1), **Persian** (Native)

Research & WORK EXPERIENCES

Senior Researcher at Amsterdam University (UvA), *Amsterdam, Netherlands (June 2023- June 2024)*

- Developed and optimized **Deep Learning and Transformer-based AI models** for **edge devices**.
- Implement and fine-tuned **Transformers (ViT, BERT)** and **CNNs** for embedded AI deployment.
- Used pruning to reduce model size in a constrained environment achieving an adaptive model with minimal accuracy reduction.
- Worked with **Nvidia Jetson** (Nano/Orin) for real-time application.

Research Assistant at QuTech, TU Delft, *Delft, Netherland (2021-Present)*

- Designed and implemented a scalable microarchitecture for quantum nodes in quantum networks, prioritizing efficient resource management and low-latency execution, contributing to the **Python-based simulator** (SquidASM) design.
- Collaborated with **interdisciplinary teams** to tackle challenges HW/SW stack design.
- Developed strong skills in **system modeling**, **optimization**, and **cross-disciplinary** research.

Research Assistant at HPCAN Research Lab., *Sharif University of Technology, Tehran, Iran (2018-2020)*

- Improved system performance by up to 30 percent in heterogeneous **CPU-GPU architectures** as part of my M.Sc. thesis, focusing on **dynamic resource allocation** for shared components such as the Last Level Cache (LLC) and Network-on-Chip (NoC).
- Developed and implemented a **dynamic management algorithm** using the Gem5-GPU simulator by programming with **Python and C++.** Extendable to the **AI-based** solution for **optimization.**

R&D intern, *RTP Robotics, Healthcare-Assistive Robotics Project (April 2020 – September 2020)*

- Developed a **healthcare-assistive** robotic system. Built **sensor integration** systems to track patients and optimize robotic interaction in medical settings (real-time decision-making).

PUBLICATIONS

- M. Rostamnejad and D. Sapra, *"Self-adaptive Neural Networks for Edge Devices",* in preparation for submission.
- Z. Shirmohammadi, M. J. Mahmoudi, and M. Rostamnejad, *"Int-TAR: An Intelligent Thermal-Aware Packet Routing Algorithm for 3D NoCs,"* Journal of Electrical and Computer Engineering Innovations (JECEI), Published (Link).

KEY PROJECT & INVENTION

MP3 Audio compression

- HW-SW co-design and implemented **MP3 algorithm** for high-performance execution and better quality

Medical Image Projects

- Contribute as a **Machine Learning advisor** in a master's project on diagnosing scar tissues in **heart MRI**. Developed an **AI-based classification model** for cardiovascular disease detection.
- Built **ML models** for segmentation and classification of **brain MRI/fMRI datasets.**

Digital Alarming Thermometer (DAT) for Newborns

- Designed an innovative digital thermometer to monitor and diagnose early-stage fever in newborn babies.
- **Awards**: Winner of two national awards: **Youth Innovation Award** & **NODET (Sampad) Prize**.

Big Data Text Analysis Project

- Worked on a text analysis project using **Hadoop** and **Spark**, gaining expertise in **big data processing** and **distributed computing**.

VOLUNTEER EXPERIENCE

Board Member – Iranian Student Association (Alborz), *Delft University of Technology, Delft, Netherlands (Feb. 2023 – Dec. 2023)*

- Contributed to developing and maintaining the association's website (alborzdelft.nl), contributed to event planning, wrote funding proposals, managed board meetings, and documented key decisions, fostering community engagement.

COURSES AT TU DELFT

- Research design, Cross Cultural Communication in Academia, Public Speaking, Scientific Writing, Problem Solving and Time Management, Small Group Teaching and Lecturing, Data Visualization using R