Ali Ghorbani Bargani

M.Sc. Computer Engineering (Computer Architecture) | Machine Learning | FPGA Security | Computer Systems
alighorbani1380@ut.ac.ir | +98 921 331 4813 | alighorbanibargani.ir | GitHub | BeshmarAI | HPNL

PROFILE

Computer Engineering M.Sc. student at the University of Tehran with research and engineering work spanning machine learning, large language models, FPGA security, computer architecture, network measurement, and applied AI. Member of the High Performance Network Laboratory (HPNL), co-author of an IEEE DCHPC 2026 publication, and developer of BeshmarAI, a real-world on-device AI application.

EDUCATION

University of Tehran - M.Sc. in Computer Engineering (Computer Architecture) | In Progress
School of Electrical & Computer Engineering; member of High Performance Network Laboratory (HPNL).

Shahid Bahonar University of Kerman - B.Sc. in Computer Engineering | 2020-2024

RESEARCH EXPERIENCE

High Performance Network Laboratory (HPNL) - Graduate Research, University of Tehran

- Investigating label-efficient learning and LLM-derived representations for low-label prediction and representation analysis.
- Research experience in FPGA hardware security and remote power side-channel analysis in multi-tenant FPGA environments, including active-wire-fence countermeasures.

Lab Director: Prof. Ahmad Khonsari

TEACHING EXPERIENCE

Teaching Assistant - Fundamentals of Distributed Systems | University of Tehran

PUBLICATION

S. Ojaghi, **A. Ghorbani Bargani**, S. B. Vanestan, M. Hashemi, S. Mohammadi, and A. Khonsari, *"Evaluating the Impact of Active Wire Fence Placement on Remote Power Side-Channel Attacks in Multi-Tenant FPGAs,"* 2026 Fourth International Conference on Distributed Computing and High Performance Computing (DCHPC), 2026.

SELECTED PROJECTS

BeshmarAI - On-Device AI Pill Counting

- Built a browser-based pill-counting AI application with on-device inference, adaptive GPU/WebGPU or CPU/WebAssembly execution, PWA deployment, and bilingual English/Persian support.

Neural Network Processing Unit - FPGA / Verilog

- Designed a lightweight Verilog processing element for multi-layer perceptron operations and neural-network hardware acceleration.

DNS Protocol Performance under Packet Loss - UDP, DoT, DoQ

- Conducted controlled network measurements with netem and dnspyre to compare latency, throughput, and reliability under 0-20% packet loss.

Urban Scene Segmentation with Fast-SCNN

- Implemented Fast-SCNN on CamVid; test mIoU 0.3975, Dice 0.4952, pixel accuracy 0.7779.

Adversarial Attacks and Vision Transformers

- Studied ResNet and Vision Transformer robustness using FGSM attacks, adversarial training, and Grad-CAM.

Pipelined MIPS Processor

- Implemented a classic five-stage MIPS processor in Verilog (IF-ID-EX-MEM-WB).

TECHNICAL SKILLS

Programming: Python, C#, PHP, JavaScript, HTML, CSS
Machine Learning: PyTorch, scikit-learn, OpenCV, NumPy, Pandas, Jupyter
Hardware & EDA: Verilog, VHDL, FPGA development, Xilinx Vivado, ModelSim, HSPICE, L-Edit
Systems & Networking: Linux, networking fundamentals, Network+, Git, network measurement
Databases: SQL Server, MySQL
Web / Deployment: WebGPU, WebAssembly, PWA
Languages: Persian, English

SELECTED COURSEWORK

Advanced Computer Architecture (4.0/4), Microprocessor (4.0/4), Computer Vision (3.8/4), System Performance Evaluation (3.8/4), Internet Measurement (3.8/4), AI in Embedded Systems (3.7/4), VLSI (3.6/4), Deep Neural Networks (3.5/4).