Reza Adinepour

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Research Interests

- ◇ AI Hardware Accelerators
- ◇ Reconfigurable Computing
- ◇ Parallel and Distributed Systems
- ◇ Real-time and Embedded Systems
- ◇ Neuromorphic Computing
- ◇ Cyber-Physical Systems (CPS)

Education

M.Sc. in Computer Engineering, Sep. 2023 - Present
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
- ○ Thesis: *"FPGA-Based Hardware Acceleration of Remaining Useful Life Prediction of Rotating Machinery Using Transformer Neural Network"*
- ○ Advisor: Prof. Morteza Saheb Zamani
- ○ GPA: 3.4/4

B.Sc. in Electrical Engineering, Sep. 2019 - Jun. 2023
Shahrood University of Technology, Shahrood, Iran
- ○ Thesis: *"Design Real Time Face Recognition Systems Based on LBP Features on ODROID-XU4 Embedded Computer Board"*
- ○ Advisor: Prof. Alireza Ahmadyfard
- ○ GPA: 3.4/4

Publications

- ◇ **Reza Adinepour**, Shayan Naghizadeh and Morteza Saheb Zamani. *"Remaining Useful Life Prediction Using Transformer Models on Edge Devices"* The 34th International Conference on Electrical Engineering(ICEE), 2026. IEEE, 2026. (Under-Review)
- ◇ **Reza Adinepour** and Morteza Saheb Zamani. *"RULFormer: An Energy-Efficient FPGA Accelerator for Transformer-Based Remaining Useful Life Prediction"* IEEE Transactions on Computers Journals, 2026. IEEE, 2026. (Under-Review)
- ◇ Shayan Naghizadeh, **Reza Adinepour** and Morteza Saheb Zamani. *"Low-Precision POSIT Arithmetic for Spiking Neural Networks with Kahan Summation"* The 11th International Conference on Signal Processing and Intelligent Systems (ICSPIS), 2025. IEEE, 2026.

Research Collaborations

- ◇ **FPGA-Based Hardware Acceleration of Vision Transformer (ViT)** Aug. 2024 - Jun. 2025
  Research Assistant, Supervisor: Prof. Elif Bilge Kavun, Department of Computer Engineering, Dresden University of Technology.
  - · *Studies and research focused on* ***Vision Transformer hardware acceleration***
    I was conducting research on the implementation and acceleration of ViT on FPGA with the goal of Deep fake image generation.

Teaching Experience

Teaching Assistant-Amirkabir University of Technology
- ○ **Digital Electronics** Fall 2025
- ○ **Embedded Systems Modeling & Design** Spring 2025
- ○ **Digital Logic Design** Fall 2024

Invited Lecturer-Amirkabir University of Technology
- ○ **Operating System Lab** Fall 2025
- ○ **Computer Architecture Lab** Spring 2025
- ○ **Logic Circuits Lab** Spring 2024 and Fall 2023

Teaching Assistant-Shahrood University of Technology
- ○ **Digital Electronics** Spring 2023
- ○ **Signal and Systems** Spring 2023, Fall 2022, Spring 2022, Fall 2021
- ○ **Analog Electronic** Fall 2022
- ○ **Circuit Theory** Fall 2020, Spring 2020

Honors and Awards

- **Direct Admission** of Master's Degree at **Amirkabir University of Technology (Tehran Polytechnic)**
- **Ranked** 2nd **(top 1%)** in Department of Electrical Engineering, Shahrood University of Technology, **Among More Than 120 Students**. 2023

Notable Projects

- **High-Level to RTL Conversion Framework for CNN Acceleration** (In Progress)
- **Secure and High-Performance Firmware Architecture Customization** (In Progress)
- **FPGA Implementation of Logic Locking in Deep Neural Networks**
- **Research-Oriented SystemC Examples**
- **Algorithm Acceleration on HBM-PIM Architecture using PIMSimulator**
- **FPGA-Based Implementation of CNN Using High Level Synthesis (HLS)**
- **Edge Detector HW/SW Co-design on FPGA**
- **HLS-Based Implementation of Vision Transformer (ViT)**
- **FPGA-Based Implementation of Neural Network**

Work Experience

Member of Digital System Design Automation Laboratory Aug. 2023 - Present
Tehran, Iran
Job Description: Research Assistant

R&D department Member, at D3H-Group Jun. 2023 - Sep. 2023
Al Maryah Island, Abu Dhabi, UAE
Job Description: Biomedical Signal Processing Developer

R&D department Member, at Radan Electronic StartUp May. 2022 - Aug. 2022
Mashhad, Iran
Job Description: Embedded Software Developer

Skills

- **Programming Languages:**
  - **Back-end:** C, C++, Rust, Java, Python, Matlab,
  - **HDLs:** VHDL, Verilog, HLS, SystemC, Nvidia CUDA, OpenMP
- **Machine Learning Tools:** PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, NumPy, Pandas
- **Applications and Scientific Tools:**
  - **FPGA/Embedded Systems Development:** Xilinx Vivado, Vitis HLS, Vitis AI, FINN, Xilinx ISE, ModelSim, IAR, Keil, CubeMX, Altium Designer, KiCad, Spice, Arduino IDE
  - **Cloud & DevOps Engineering:** Git, GitLab, Docker
  - **Scientific Computing & Research Tools:** MATLAB, Gem5
- **Operating Systems:** Linux, Microsoft Windows
- **Typesetting:** TEX, LATEX, VIM , Microsoft Word, Gnuplot

References

Prof. Morteza Saheb Zamani
Professor, Dept. of Computer Engineering
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Prof. Mehdi Sedighi
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