# Reza Adinepour

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## Research Interests

- ◇ AI Hardware Accelerators
- ◇ Reconfigurable Computing
- ◇ High Level Synthesis
- ◇ Real-time and Embedded Systems
- ◇ Cyber-Physical Systems (CPS)
- ◇ Neural Networks and Deep Learning

## 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

## Research Collaborations

◇ **FPGA-Based Hardware Acceleration of Transformer Neural Network** Aug. 2023 - Now
**Research Assistant**, Supervisor: Prof. Morteza Saheb Zamani, Department of Computer Engineering, Amirkabir University of Technology.
- · *Studies and research focused on* ***Transformer hardware acceleration***
  I am conducting research on the implementation and acceleration of Transformer neural networks on FPGA with the goal of time series forecasting.

◇ **Real Time Embedded Face Recognition System** Sep. 2022 - Jun. 2023
**Research Assistant**, Supervisor: Prof. Alireza Ahmadyfard, Department of Electrical Engineering, Shahrood University of Technology.
- · *Studies and research focused on* ***LBP Features***
  I design an embedded systems that can detect and recognition human face, based on LBP features. This algorithm implement on **Odroid** embedded computer.

## Teaching Experience

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

**Invited Lecturer**-Amirkabir University of Technology
- ○ **Operating System Lab** Fall 2026
- ○ **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

**R&D department Member, at Integrated Circuit Laboratory** Jun. 2021 - Sep. 2022
Shahrood, Iran
*Job Description:* Head of The Hard Ware department on OAE Project

## 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

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