Reza Adinepour

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Research Interests

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

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

Diploma in Mathematics and Physics Discipline, Sep. 2015 - May. 2019
S.A. Khomeini High School, Mashhad, Iran
- ○ Diploma GPA: 3.9/4

Attended Conferences

- ◇ *The Annual Conference on Prospects of Electrical Engineering* (ReACT2025)
- ◇ *The Annual Conference on Prospects of Electrical Engineering* (ReACT2023)
- ◇ *The Annual Conference on Prospects of Electrical Engineering* (ReACT2022)
- ◇ *5th Iranian Conference on Communications Engineering* (ICCE2021)
- ◇ *The Annual Conference on Prospects of Electrical Engineering* (ReACT2021)
- ◇ *Amirkabir University of Technology Robotics Summer School* (AUTSS2021)

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
- **Computer Architecture Lab** Spring 2025
- **Logic Circuits Lab** Spring 2024
- **Logic Circuits Lab** 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

Tutor-Shahrood, Iran
- **Private Altium Designer Tutor** Apr. 2023 - Aug. 2023

Tutor-Mashhad, Iran
- **Private Python Programming Tutor** 2021 - Jan. 2022
- **Private MATLAB Programming Tutor** 2021 - Jan. 2022
- **Private C and C++ Programming Tutor** 2020 - Jan. 2022

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
- **Chief** of **Student Scientific Association** of Electrical Engineering 2022

Notable Projects

- **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**
- **QRS Complex Detection in ECG Signals**
- **Design Real Time Face Recognition Systems Based on LBP Features on ODROID Embedded Computer Board**
  Bachelor Thesis, Shahrood University of Technology, Shahrood, Iran
- **Real Time Object Detection Using YOLO Network**
  Course Project for Neural Networks, Shahrood University of Technology, Shahrood, Iran
- **Real Time Face Mask Detection Using MobileNetV2**
  Course Project for Neural Networks, Shahrood University of Technology, Shahrood, Iran
- **Persian Handwritten Digit Recognition Using MLP**
  Course Project for Neural Networks, Shahrood University of Technology, Shahrood, Iran
- **SDI Based Fire Detection Application**
  Course Project for Advanced Programming in C++, Shahrood University of Technology, Shahrood, Iran
- **Car Tracking Using C++ & OpenCV**
  Course Project for Advanced Programming in C++, Shahrood University of Technology, Shahrood, Iran

- **Object Tracking Using Python & OpenCV**
- **Real Time Face Recognition Using Python & *Face Recognition Lib***
- **Vehicles Counting on Images Using YOLO**
- **License Plate Recognition Using Python & OpenCV**
- **Real Time Color Recognition Using Python & OpenCV**
- **Design and Implementation of Mano Basic Computer Using VHDL**

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++, Java, Python, Django, Golang, Matlab
  - **Front-end:** HTML, CSS, JavaScript
  - **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, Kubernetes, Azure, AWS
  - **Scientific Computing & Research Tools:** MATLAB, Gem5
- **Operating Systems:** Linux, Microsoft Windows
- **Typesetting:** TEX, LATEX, VIM , Microsoft Word, Gnuplot

Languages

- **Persian:** Native Language
- **English:** Intermediate Listener, Novice Speaker, Advanced Reading and Writing

Hobbies

- **Adventure:** Hiking, Hitchhiking, Camping
- **Art:** Guitarist
- **Other Hobbies:** Classic Music, Freelance Blog Writer, Reading
  I love the feeling of sharing my experiences with others through my blog.