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, Sept. 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

B.Sc. in Electrical Engineering, Sept. 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 Ahmadifard
- ○ GPA: 3.28/4
  GPA of Last 1 Years: 3.43/4 (32 credits)

Diploma in Mathematics and Physics Discipline, Sept. 2015 - May. 2019
Seyyed Ahmad Khomeini High School, Mashhad, Iran
- ○ Diploma GPA: 3.66/4

Attended Conferences

- ◇ *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 Ahmadifard, 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
- ○ **Digital Logic Design** Fall 2024

Invited Lecturer-Amirkabir University of Technology
- **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:** C, C++, Python, Matlab, VHDL, Verilog HDL, HLS
- **Machine Learning Tools:** PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, NumPy, Pandas
- **Applications and Scientific Tools:** Xilinx Vivado, Vitis HLS, Vitis AI, FINN, Xilinx ISE, Gem5, Matlab, IAR, Keil, CubeMX, CodeVision AVR, ModelSim, Altium Designer, KiCad, ADS, Spice, Proteus, Atmel Studio, Arduino IDE, Microsoft Visual Studio, Git, JetBrains Pycharm & Clion
- **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.