

Erfan Moghadam

(+98) 911-2199194

erfanmoghadam@khu.ac.ir

erfanmoghaddam1999@gmail.com

EDUCATION

Kharazmi University, Tehran, Iran

2022 - Present

Master of Science in Computer Engineering

GPA: **4.00/4.00**

Thesis: Providing an Enhanced Clustering Algorithm for Vehicular Ad-hoc Networks

Zanjan University, Zanjan, Iran

2017 - 2022

Bachelor of Science in Computer Engineering

GPA: **3.27/4.0**

Final Project: Time Series Forecasting with LSTMs for daily COVID-19 Cases using PyTorch in Python

RESEARCH INTERESTS

- AI in Healthcare
- IoT
- Vehicular Ad-hoc Networks (VANETs)

RESEARCH EXPERIENCE AND ACADEMIC PROJECTS

Graduate Research and Projects, Kharazmi University, Tehran, Iran

- **Vehicular Ad-hoc Networks:** Proposed an improved clustering algorithm combining weighted formulas and machine learning to enhance cluster head selection and network lifetime. Conducted simulations using urban mobility models and Python. (2022-2024)
- **Load Balancing and Machine Learning Integration:** Conducted an extensive review of over 60 academic articles, analyzing state-of-the-art techniques and formulating innovative strategies for integrating machine learning into load balancing solutions, with a focus on scalability and performance optimization. (Fall 2023)
- **Cancer Classification using Support Vector Machine (SVM):** Developed an SVM model to classify human cell records into benign or malignant categories. (Fall 2023)
- **Heart Attack Prediction using Classification:** Predicted heart attack risks using advanced classification models. (Fall 2023)
- **Mesh Network on Chip (NoC) Project:** Designed a NoC system using VHDL in an FPGA environment (Quartus-II, ModelSim). (Spring 2023)

Single-Cycle and Pipelined MIPS Projects: Designed and simulated MIPS processors using VHDL. (Fall 2022)

- **Full Scan Design and Test:** Converted a CPU adding machine to gate-level format using a netlist generator, then performed scan insertion on it and tested it using a virtual tester. (Fall 2023)
- **Car Segmentation with Agglomerative Hierarchical Clustering** (Fall 2023)
- **Customer Categorization of a Telecommunications Provider using Logistic Regression** (Fall 2022)

Undergraduate Research and Projects, Zanjan University, Zanjan, Iran

- **Final Project:** Time Series Forecasting of COVID-19 cases using LSTMs in PyTorch. (*Spring 2021*)
- **Face Recognition Using ML:** Built a face recognition system using traditional computer vision techniques. (*Fall 2020*)
- **Patient Response to Drugs:** Analyzed drug effectiveness using decision tree classification. (*Spring - 2020*)
- **Fuzzy Inference System for Restaurant Tipping:** Developed a fuzzy control system for tipping decisions in restaurants. (*Fall 2019*)
- **Software Engineering:** Gained familiarity with design patterns. Extracted UML, ER, DFD, flowchart, and Gantt chart diagrams for various case studies, including a shop, hospital, music app, and social media app.
- **Database Project:** Designed and implemented a database system for various case studies, culminating in an online pet shop using SQL. (*Spring 2019*)

PUBLICATIONS

1. E. Moghadam, S. A. Asghari, M. B. Marvasti, P. Azizi, "Harmonizing Network Loads: A Survey of Load Balancing Strategies and Machine Learning Integration," *Accepted*.
2. S. E. Asghari, E. Moghadam, S. A. Asghari, M. B. Marvasti, Y. Savaria, "IMICLiVAN: An Improved Method to Increase Cluster Lifetime in Vehicular Ad Hoc Networks (VANETs)," *Under Review*.

TEACHING EAXPERIENCE

- **Visiting Lecturer, AmirKabir University of Technology (Tehran Polytechnic), Tehran, Iran:**
Logic Circuit Laboratory (Undergraduate Course) (*Spring 2024 – Fall 2024*)
 - Delivered lectures and hands-on training on digital logic circuit design and implementation.
 - Taught Xilinx ISE, Verilog programming, and supervised FPGA-based projects like smart parking systems.
- **Teacher Assistant, University of Tehran, Tehran, Iran:**
Advance Computer Networks (PhD Course) (*Fall 2023*)
 - Collaborated with Dr. Seyyed Amir Asghari to deliver lectures, grade assignments, and assist students with course material.
- **Teacher Assistant, Kharazmi University of Tehran, Tehran, Iran:**
Advance Computer Systems Architecture (Graduate Course) (*Spring 2023*)
 - Delivered lectures on pipeline architecture, single-cycle processors, and advanced computer systems design under the supervision of Dr. Mohammadreza Binesh Marvasti.
 - Supervised Verilog-based projects, emphasizing practical application in system design.
- **Fault Tolerant Systems (Graduate Course) (*Spring 2023*)**
 - Collaborated with Dr. Seyyed Amir Asghari to deliver lectures on fault-tolerant systems and their applications in healthcare and IoT.
 - Provided comprehensive support to ensure students' mastery of fault tolerance concepts and methodologies.
- **Teacher Assistant, Zanjan University, Zanjan, Iran:**
Programming Language Design (Undergraduate Course) (*Fall 2020*)

- Assisted Dr. Leila Safari in delivering lectures and guiding students through programming paradigms and compiler design fundamentals.
- Evaluated assignments and provided technical support for student projects.

ACADEMIC ACTIVITIES

- **AI in Action Workshop** (*Fall 2024*)
 - Conducted a workshop at Kharazmi University on practical AI applications in smart vehicles, computer vision, and neuroscience.
 - Engaged participants through hands-on sessions focused on real-world problem-solving with AI.
- **Machine Learning with Python Workshop** (*Fall 2020*)
 - Led a workshop at Zanjan University to introduce machine learning fundamentals using Python.
 - Simplified core concepts and provided practical exercises for participants to build basic machine learning models.

AWARDS AND HONORS

- Ranked 1st among 11 peer students, School of Computer Architecture, Faculty of Electrical and Computer Engineering, Kharazmi University of Tehran. (*Fall 2022 – Present*)
- Achieved top 1% in the Nationwide University Entrance Exam for M.Sc., securing Rank 172 out of approximately 20,000 applicants. (*January 2022*)
- Ranked in top 5 among 60 peer undergraduate students in the last two years in Computer Engineering Department, University of Zanjan, Zanjan, Iran. (*Fall 2021*)

SKILLS

Programming Languages: C, C++, Python, Verilog, VHDL

Tools & Frameworks: PyTorch, Scikit-learn, Pandas, NumPy, SQL, Matplotlib, Xilinx ISE, Quartus, ModelSim

Other Skills: Machine Learning, Neural Networks, Digital System Design, Fault-Tolerant System Design, Time Series Analysis

REFERENCES

Dr. Mohammadreza Binesh Marvasti

Associate Professor, Department of Electrical and Computer Engineering, Kharazmi University, Tehran, Iran
Email: marvasti@khu.ac.ir

Dr. Seyed Amir Asghari

Associate Professor, Department of Electrical and Computer Engineering, Kharazmi University, Tehran, Iran
Email: asghari@khu.ac.ir

Dr. Leila Safari

Assistant Professor, Department of Electrical and Computer Engineering, University of Zanjan, Zanjan, Iran
Email: lsafari@znu.ac.ir