

Mohammad Abolnejadian

Master of Mathematics in CS (HCI Lab) @ University of Waterloo | 📍 Waterloo, Ontario, Canada

🌐 /theablemo [in /in/mohammad-abolnejadian](#) ✉ mohammad.abolnejadian@uwaterloo.ca 🎓 Scholar

Education

University of Waterloo

Master of Mathematics (Thesis, Co-op) in Computer Science

GPA: 97.25/100

Jan. 2025 – Present (*Expected Apr. 2027*)

Waterloo, Canada

Sharif University of Technology

Bachelor of Science in Computer Engineering

Overall GPA: 19.08/20 (Major GPA : 19.39/20)

Top-ranked university in Iran, according to QS ranking 2024

Sep. 2019 – July 2024

Tehran, Iran

Research Interests

- Human-Computer Interaction
- Applied AI
- Information Visualization
- Human-Centered AI

Research Experience

GRA – Supporting Data-rich Conversations with AI

Supervisor: Dr. Matthew Brehmer @ Ubix Group | HCI • GenAI • InfoVis

M.Math. Thesis Project

Jan. 2025 – Ongoing

University of Waterloo, CS HCI Lab

- Designing a **mixed-initiative system** to enhance synchronous collaborative decision-making by automatically retrieving, synthesizing, and presenting **historical data as succinct insights** within the conversation periphery
- I leverage a **multi-agent RAG pipeline** integrated with ASR and ML models stack for this project.

URA – AI for Sports Injury Prevention through Pose Analysis

Supervisor: Dr. Bardia Safaei @ RADIAN Lab | HCI • GenAI • CV

B.Sc. Thesis Project

Dec. 2023 – Jun. 2024

Sharif University of Technology

- Developed **SquatSage** (formerly TrAIner), a coaching application with the goal of preventing sports injuries by providing real-time squat analysis using **computer vision** (BlazePose) and personalized feedback via a **multimodal LLM**. Evaluated through a 14-participant HCI study, with a **4.5/5** rating from users on effectiveness, culminating in a successful thesis defense (**19.8/20**).

URA – Mining Software Repositories for Code Quality Analysis

Supervisor: Dr. Abbas Heydarnoori @ ISE Lab | MSR • Data Science

Aug. 2023 – Dec. 2023

Sharif University of Technology

- Curated **DistilKaggle**, a comprehensive dataset of **542,051 Jupyter notebooks** featuring **34 extracted code quality metrics** including External API Popularity and Cyclomatic Complexity; achieved an **F1 score of 57%** in predicting developer performance tiers using Random Forest classification as a sample application, while reducing dataset size **from 180GB to 3GB** for enhanced accessibility and research utility. [\[Dataset\]](#)

RA – LLM for Personalized Education

Supervisor: Dr. Sharareh Alipour | HCI • GenAI for Education

Jun. 2023 – Oct. 2023

Tehran Institute for Advanced Studies (TeIAS)

- Led the development and evaluation of an adaptive learning platform to deliver personalized programming instruction. Conducted a comparative study with 85 high school students, demonstrating statistically significant improvements in student performance; Group B (platform users) achieved **32%** higher quiz scores by session 3 (74.4 vs 58) and **91%** of students reported **preferring the AI-assisted method** over traditional instruction.

URA – IoT Task Scheduling for Energy Efficiency

Supervisor: Dr. Mohsen Ansari @ CPS Lab | CPS • Fog Computing

May 2023 – Sep. 2023

Sharif University of Technology

- Implemented MoTiCPS, a novel **metaheuristic** scheduling algorithm for IoT-integrated Cyber-Physical Systems based on the Osprey Optimization Algorithm in iFogSim, demonstrating a **39% reduction in energy consumption** and a **32% increase in task success rates** over existing methods. [\[Code\]](#)

Publications

- **Mohammad Abolnejadian**, Shakiba Amirshahi, Matthew Brehmer, Anamaria Crisan "AInsight: Augmenting Expert Decision-Making with On-the-Fly Insights Grounded in Historical Data", (**CUI'25**), Extended Abstracts, [Paper]
- Sharareh Alipour, **Mohammad Abolnejadian**, Kamyar Taeb, "Leveraging ChatGPT for Adaptive Learning through Personalized Prompt-based Instruction: A CS1 Education Case Study", (**CHI'24**) Case Studies, **Acceptance Rate: 24%**, [Paper]
- Mojtaba Mostafavi, Arash Asgari, **Mohammad Abolnejadian**, Abbas Heydarnoori, "DistilKaggle: A Distilled Dataset of Kaggle Jupyter Notebooks," (**MSR'24**) Data and Tool Showcase Track, **Acceptance Rate: 49%**, [Dataset], [Paper]
- Abolfazl Younesi, Elyas Oustad, **Mohammad Abolnejadian**, Mohsen Ansari, Alireza Ejlali, "MoTiCPS: Energy Optimization on Multi-Objective Task Scheduling in IoT-Integrated Cyber-Physical Systems," (IEEE Transactions on Sustainable Computing), [Paper]

Work Experience

Software Engineer

July 2022 – May 2023

Cafe Bazaar

Tehran, Iran

- **The biggest Android marketplace in Iran**, with over 50M active monthly users (as of 2023).
- As a **backend developer** for the payment services cross-functional team, I contributed in **maintaining** the **in-app payment service** and the **development** of a new gift card storefront.

Full Stack Developer

Sep. 2021 – Dec. 2022

Pezhvak AI Startup

Tehran, Iran

A division of Dr. Abolfazl Motahari's lab

- Developed an **NLP platform** to showcase its usages such as Speech to Text, Speaker Identification, etc.
- Used a full-stack development kit in the process, using tools such as Flask SDK, Flutter SDK, etc.

Honors & Awards

University of Waterloo Graduate Scholarships

2025 – 2027

Awarded for academic excellence upon admission to the M.Math. program

Waterloo, Canada

International Master's Award of Excellence (IMAE) – \$2'500 CAD/term

Paul Dirksen Memorial Graduate Scholarship in Computer Science – \$10'000 CAD

International Robocup Competition

Jun. 2018

2nd Place, Soccer 2D Simulation League

Montreal, Canada

Cyrus Team

Iran Open Robotics Competition

Apr. 2018

1st Place, Soccer 2D Simulation League

Tehran, Iran

Cyrus Team

1st Place, Soccer 2D Simulation League - Starter

AE Team

Asia-Pacific Robocup Competition

Dec. 2018

2nd Place, Soccer 2D Simulation League - Starter

Kish, Iran

Cyrus Team

University Entrance Exam (Concours)

Sep. 2019

ranked **12th nationally**, Mathematics field

Iran

Among more than 164,000 students (the top $\approx 0.007\%$)

ranked **7th nationally**, English Literature field

Among more than 165,000 students (the top $\approx 0.004\%$)

Teaching Experience

Human-Computer Interaction (TA)

University of Waterloo
Fall 2025

- Mentoring Student Group Projects | Marking

Introduction to Computer Science 2 (TA)

University of Waterloo
Winter 2025

- Grading Exams & Assignments

Data Structure & Algorithms (TA)

Sharif University of Technology
Fall 2023

- Designing & Grading Assignments

Embedded Systems (TA)

Sharif University of Technology
Spring 2023

- Designing the Final Project (Solving a real-world problem using Raspberry Pi)

Software Engineering (TA)

Sharif University of Technology
Spring 2023

- Designing & Grading Assignments, Mid-terms & Final

Linear Algebra (TA) (x3)

Sharif University of Technology
Spring, Fall 2022; Spring 2023

- Designing & Grading Assignments | Composing Educational Material

Computer Language & Organization (TA) (x2)

Sharif University of Technology
Fall 2021, Spring 2022

- Designing & Grading Assignments

Software Design and Architecture (TA)

University of Waterloo
Spring 2025

- Mentoring Student Group Projects | Marking

Compiler Design (Lead TA) (x4)

Sharif University of Technology
Spring, Fall 2022; Spring, Fall 2023

- Designing Project | Student Guidance | Grading Exams

Information Retrieval (TA)

Sharif University of Technology
Fall 2023

- Designing & Grading Assignments

Computer Simulation (TA)

Sharif University of Technology
Spring 2023

- Designing & Grading the Final Project

Operating Systems (TA)

Sharif University of Technology
Fall 2022

- Designing & Grading Assignments | Grading Exams

Engineering Probability & Statistics (TA) (x2)

Sharif University of Technology
Fall 2021; Fall 2023

- Leading Assignment Grading Team

Advanced Programming (TA) (x2)

Sharif University of Technology
Fall 2020, Fall 2021

- Designing the Final Project

Remarkable Projects

Real-Time Gesture-Controlled Raspberry Pi Car with YOLOv8 | [code](#)

Spring 2023

Supervisor: Dr. Alireza Ejlali

The project involves building a prototype car using Raspberry Pi and controlling its movement using hand gestures. The hand gestures are detected using the YOLOv8 model while the hardware implementation involved packaging and using different modules with Raspberry Pi.

File Manager Mobile Application | [code](#)

Spring 2022

Supervisor: Dr. Mehdi Mostafazade

This project is an **Android mobile application** that can be used as a file-sharing and management platform. As a part of a software team, I was responsible for UX/UI (using Figma) and Frontend (Using Flutter) development.

Search Engine for Spiritual Scriptures | [code](#)

Spring 2022

Supervisor: Dr. Ehsaneddin Asgari

Leveraged **TF-IDF**, **Fasttext**, **Transformers** embeddings and **Elastic search** to construct a search engine for Spiritual Scriptures.

CMinus Compiler | [code](#)

Fall 2021

Supervisor: Dr. Gholamreza Ghassem-Sani

In this project, we created a one-pass compiler for the C-minus programming language (a simplified version of the C programming language). This project was done in three phases: We developed the **scanner** in the first phase, the **parser** in the second phase, and finally the **intermediate code generator** in the third phase

Technical Skills

AI & Machine Learning: PyTorch, TensorFlow, Scikit-Learn, NLTK, SciPy, Hugging Face, LangChain, MediaPipe, OpenCV

Programming: Python, Java, JavaScript, C/C++, SQL, Dart, Swift, Bash

Research & HCI: User Study Design, Statistical Analysis, A/B Testing, Info Visualization

Frameworks & Tools: Flask, Django, FastAPI, Flutter, React, Git, Docker, Kubernetes, PostgreSQL, L^AT_EX, Figma, Adobe XD, Raspberry Pi

Language Proficiency

Persian: Native

English: Fluent

TOEFL iBT®: 108/120 (Reading: 26/30, Listening: 30/30, Speaking: 25/30, Writing: 27/30)
(Oct. 2023)

GRE® General: Verbal: 146/170, Quantitative: 168/170, Writing: 3.5/7
(Nov. 2023)

Notable Courses

Human-AI Interaction <i>UofW, Dr. Anamaria Crisan</i>	99/100	Multiagent Systems <i>UofW, Dr. Kate Larson</i>	95/100
Behavioural Decision-Making <i>UofW, Dr. Selçuk Onay</i>	100/100	Modern Information Retrieval <i>SUT, Dr. Ehsaneddin Asgari</i>	20/20
Object-Oriented Design <i>SUT, Dr. Raman Ramsin</i>	20/20	Design of Algorithms <i>SUT, Dr. Masoud Seddighin</i>	20/20
Artificial Intelligence <i>SUT, Dr. Mohammadhossein Rohban</i>	20/20	Linear Algebra <i>SUT, Dr. Hamidreza Rabiee & Maryam Ramezani</i>	20/20

* *SUT: Sharif University of Technology, UofW: University of Waterloo*

Volunteering & Service

Graduate Student Representative <i>School of Computer Science Council, University of Waterloo</i>	Oct. 2025 – Present
• Voting member representing graduate students in the department's governance alongside faculty and school officers.	
Technical Staff <i>International Collegiate Programming Contest (ICPC) West Asian contest</i>	June 2023
• Prepared competition systems for over 150 participants.	
Sponsorship Coordinator <i>Webelopers Competition</i>	May 2022
• Helped the event to acquire two sponsors Beneficial experience to delve into negotiations and signing contracts	

Extra Curricular Activities

Gym Rat, never miss a leg day; **NBA fanatic**, never miss a game; **Tech nerd**, always up on the latest; **UI designer**, making things pop; **Running addict**, gotta keep moving; **Social butterfly**, squad magnet

References

Will be provided upon request.