

Mohammad Abolnejadian

Applied AI Scientist, Verily Health; Master of Mathematics in Computer Science, University of Waterloo | ON, Canada

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Professional Experience

Applied AI Scientist Intern

May 2026 – Present

Verily Health (ex. Google Life Sciences)

Waterloo, ON

- Developing an agentic clinical framework grounded in clinical knowledge and self-improving agents, **reducing the development time for new agents** from months to weeks while increasing their auditability.
- Designed and prototyped a guideline-composing multi-agent pipeline that helps clinicians interactively develop clinical protocols grounded in trusted sources, **facilitating internal collaboration** between DS and clinical teams.
- Extended a clinical **knowledge graph** by curating and ingesting **1M+ clinical concepts**, their associations, and related encyclopedic knowledge, enabling a MedQA agent to achieve **90% accuracy**.

Graduate Research Engineer (Human-Centered AI)

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

University of Waterloo, CS HCI Lab

Waterloo, ON

- Led the R&D of an AI system that supports human decision-making during synchronous conversations by providing context-aware proactive glanceable insights, resulting in two first-author publications at [CUI '25](#) and [UIST '26](#).
- Developed a **multi-agentic RAG** workflow using **LangGraph** and Pydantic AI (structured output) with specialized decomposition and routing AI agents, integrating **Azure Foundry** for ASR and MCPs for visualization generation.
- Engineered a retrieval workflow by collecting **42,000+** data points via crawling and **scraping** constructing an **ETL pipeline** to embed unstructured data using GraphRAG mechanism for QFS retrieval.
- Prototyped PoCs by designing wireframes in **Figma** and implementing the system using **FastAPI** and **React** and deployed on **Google Cloud Run** to support mixed-methods user studies.

Research Assistant

Jun. 2023 – Oct. 2023

Tehran Institute for Advanced Studies (TEIAS)

Tehran, Iran

- Increased CS1 programming learning performance by **32%** through a personalized in-situ learning platform leveraging **in-context learning (ICL)** in LLMs, resulting in a [first-author CHI '24 publication](#) (~24% acceptance rate).
- Built an end-to-end web application using **Flask** and **Flutter** and deployed on **Firebase** to evaluate the method with **80+** high school students through a controlled comparative study, achieving **91%** preference over baseline. [\[Code\]](#)

Software Engineer

Jul. 2022 – May 2023

Cafe Bazaar

Tehran, Iran

- Collaborated in a **cross-functional agile** team to maintain a **10+ year legacy** in-app payment platform serving **50M+** users, reducing technical debt and migrating to new API schemas for consistency with internal microservices.
- Developed and deployed a **Django** backend with **RESTful APIs** and gRPC with Protobuf for a new gift card storefront using a stack including Docker and PostgreSQL to drive the platform's user engagement and retention goals.

Selected Technical Projects

SquatSage: Proactive Pose-Guided AI Strength Training Coach | [code](#)



- An on-device coaching application integrating **OpenCV**, a neural network classifier trained on **25K+** labeled data and deployed via **TensorFlow Lite**, and multimodal LLM to prevent injuries through real-time personalized feedback.

DistilKaggle: Large-Scale Computational Notebook Analytics Corpus | [code](#), [dataset](#)



- An open-source dataset of **542K** Jupyter notebooks, condensed from **300GB+** to 3GB and extracted **34** code quality metrics through **large-scale data processing**, enabling accessible scientific usage; published at the MSR'24.
- Built an **ETL** pipeline and trained a **Random Forest** model on features, achieving **37%** improvement over baseline.

Technical Skills

Languages: Python, Java, JS, C/C++, SQL, Bash || **AI Agents/RAG:** LangChain, LangGraph, Pydantic AI, Prompt Engineering, ChromaDB, FAISS || **ML/Data:** PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy ||

Education

University of Waterloo, M.Math. (Thesis, Co-op) in Computer Science

Jan. 2025 – Present (*Apr. 2027*)

GPA: 4.0 | Notable Courses: *Multi-Agent Systems, Human-AI Interaction*

Waterloo, ON

Sharif University of Technology, B.Sc. in Computer Engineering

Sep. 2019 – Jul. 2024

GPA: 4.0 | Notable Courses: *Artificial Intelligence, Object-Oriented Design*

Tehran, Iran

Publications

- 2026 **InsightToast: Proactive Information Retrieval & Glanceable Visualization in the Side Channel of Data-Rich Meetings** Mohammad Abolnejadian, Matthew Brehmer. *ACM Symposium on User Interface Software and Technology (UIST '26)*, forthcoming.
- 2025 **AInsight: Augmenting Expert Decision-Making with On-the-Fly Insights Grounded in Historical Data** Mohammad Abolnejadian, Shakiba Amirshahi, Matthew Brehmer, Anamaria Crisan. *ACM Conference on Conversational User Interfaces (CUI '25)*.
- 2025 **MoTiCPS: Energy Optimization on Multi-Objective Task Scheduling in IoT-Integrated Cyber-Physical Systems** Abolfazl Younesi, Elyas Oustad, Mohammad Abolnejadian, Mohsen Ansari, Alireza Ejlali. *IEEE Transactions on Sustainable Computing*, 10(4), 744–755.
- 2024 **Leveraging ChatGPT for Adaptive Learning through Personalized Prompt-based Instruction: A CS1 Education Case Study** Mohammad Abolnejadian, Sharareh Alipour, Kamyar Taeb. *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI '24)*.
- 2024 **DistilKaggle: A Distilled Dataset of Kaggle Jupyter Notebooks** Mojtaba Mostafavi Ghahfarokhi, Arash Asgari, Mohammad Abolnejadian, Abbas Heydarnoori. *IEEE/ACM International Conference on Mining Software Repositories (MSR '24)*.
- 2018 **Cyrus 2D Simulation Team Description Paper 2018** Nader Zare, Mohsen Sadeghipour, Ashkan Keshavarzi, Mahtab Sarvmeili, Amin Nikanjam, Reza Aghayari, Arad Firouzkoohi, Mohammad Abolnejad, Sina Elahimanesh, Amin Akhgari. *RoboCup 2018, Soccer Simulation 2D League, Team Description Paper*.

Awards, Leadership, & Service

- International RoboCup Competition** Jun. 2018
2nd Place, Soccer 2D Simulation League, *Cyrus Team* Montreal, QC
- Iran Open Robotics Competition** Apr. 2018
1st Place, Soccer 2D Simulation League, *Cyrus Team* Tehran, Iran
1st Place, Soccer 2D Simulation League - Starter, *AE Team*
- Graduate Student Representative** Oct. 2025 – Present
School of Computer Science Council Waterloo, ON
- Voting member representing graduate students in the department's governance alongside faculty and school officers.
- Teaching Assistant** Sep. 2020 – Present
University of Waterloo | Sharif University of Technology Waterloo | Tehran
- Mentored students by conducting office hours and providing technical guidance on projects as Lead TA for Compiler Design course and TA for 10+ CS courses, including Software Design, Operating Systems, and Data Structures.
 - Developed strong communication and leadership skills by designing and grading course projects and assignments as part of several teams of teaching assistants.
- Mentor — Women in Mathematics Directed Research Program** Jan. 2026 – Apr. 2026
University of Waterloo, Faculty of Mathematics Waterloo, ON
- Mentored four undergraduate students in the Women in Mathematics Directed Reading Program through a guided research project, covering HCI fundamentals (mixed-methods analysis, user studies), data source identification and curation, and an introductory exposure to LLM and retrieval-augmented generation (RAG) concepts.