KAHBOD AEINI

Electrical and Computer Engineering Department, University of Waterloo, Waterloo, Ontario, Canada

kaeini@uwaterloo.ca — LinkedIn — Website — Google Scholar

EDUCATION

University of Waterloo — Jan 2026 - Ongoing
PhD in Electrical and Computer Engineering
Supervisor: Prof. Wojciech Golab

University of Calgary — 2023 - 2025
Master of Computer Science
Supervisor: Prof. Philipp Woelfel
Thesis: *A Space-Optimal Randomized Wait-Free Lock*

Sharif University of Technology — 2019 - 2023
Bachelor of Computer Engineering
Thesis: *Fraud Detection from Sequences of Bank Transactions Using Various Machine Learning Algorithms*

National Organization for Development of Exceptional Talents — 2013 - 2019
High School Diploma in Mathematics and Physics

RESEARCH INTERESTS

Distributed Systems, Concurrent & Randomized Algorithms, Advanced Data Structures, Blockchain, Database Systems, Machine Learning and Computational Biology

PUBLICATIONS

Kahbod Aeini.
A Space Optimal Randomized Wait-Free Lock.
Master's Thesis, University of Calgary, 2025.

EXPERIENCE

PhD Student, Research Assistant, Distributed Algorithms — Jan 2026 - Ongoing
Adviso: Prof. Wojciech Golab, University of Waterloo
Conducting research on distributed algorithms, focusing on the design and analysis of efficient algorithms for synchronization, consensus, and fault tolerance in distributed systems.

Software Engineer Intern, ArcTrade — Dec 2025 - Ongoing
- Developing backend services and APIs for financial trading applications using Python and Docker.
- Collaborating with cross-functional teams to design scalable and efficient software solutions.

Master Student, Research Assistant, Distributed Algorithms — Jun 2024 - Jun 2025
Supervisor: Prof. Philipp Woelfel, University of Calgary
Designed and analyzed randomized wait-free lock algorithms achieving optimal trade-offs between space and time complexity in shared memory systems, including the first space-optimal algorithm and complementary time-optimal variants.

Bioinformatics, Research Assistant (Volunteer, Remote) — Feb 2023 - Aug 2023
Supervisor: Prof. Mehdi Pirooznia, Johns Hopkins University
Conducted feature selection and developed machine learning models to predict immune cell composition in lung cancer. Performed identification of immune cell types, analysis of differentially expressed genes, functional enrichment analysis, and classification of cancer subtypes using machine learning techniques.

Data Engineer, AI Lida   Feb 2022 - Sep 2022

• Developed, maintained and optimized data pipelines for ETL processes using Python and PostgreSQL.
• Collaborated with the security department to gather requirements and deliver data solutions that supported business objectives.
• Interviewed, hired, trained and supervised a team of 5 data engineer interns, providing mentorship and performance feedback.

Deep Learning, Research Assistant, Machine Learning   Oct 2021 - Feb 2022

Supervisor: Dr. Fatemeh Baharifar & Dr. Vahid Motaghed, *IPM*

Developed and evaluated face clustering algorithms using graph convolutional networks (GCN) for linkage prediction and pairwise classification approaches.

TEACHING EXPERIENCE

University of Calgary   2023 - 2025

Led and managed TA teams across undergraduate and graduate courses (up to 300 students), covering algorithms, programming, and theoretical computer science.

• **Theoretical Foundations of Computer Science II (Winter 2024 & 2025 & 2026)** — Coordinated 7 TAs, supported 150+ students in automata theory and probability.
• **Programming Paradigms (Fall 2025)** — Managed 6 TAs, organized and held tutorials in Haskell & Prolog for 75+ students.
• **Randomized Algorithms (Graduate, Fall 2024)** — Delivered tutorials on randomized data structures, lower bound techniques, and complexity classes.
• **Python Programming (Fall 2023)** — Taught fundamentals of Python, data structures, and algorithms for 50+ students.

Sharif University of Technology   2020 - 2022

Served as Head TA across multiple undergraduate courses, leading and mentoring TA teams of 10-25 members while supporting 200+ students in core computer science subjects.

• **Data Structures and Algorithms** — Designed assignments & projects, led TA group of 25+.
• **Numerical Calculations** — Developed final project curriculum, led TA group of 10+.
• **Mobile Programming** — Designed and graded Android development projects.

AWARDS AND SCHOLARSHIPS

Departmental Research Award, Department of Computer Science, University of Calgary   2023

Won the RA award, which is granted to the best students in each department to step away from TA responsibilities and focus on their research

Top 100 Students in Country   2019

Ranked 94 (31st in the Region) in National Universities Entrance Exam among around 160,000 participants

National Elites Fellowship   2019

Fellowship in Iran's National Elites Foundation

SKILLS

Languages: Python, R, Haskell, Java, C/C++, Prolog, Android

Frameworks & Tools: PyTorch, TensorFlow, scikit-learn, Django, Numpy, Pandas, OpenCV, limma

Databases: PostgreSQL, MongoDB, MySQL

Other: Linux, NixOS, Kali