

Mehrad Haghshenas

PHD, UNIVERSITY OF WATERLOO

Canada

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Research Interests

Formal Verification

Automated Theorem Proving

Programming Languages

Static Analysis

Compilers

Functional Programming

Education

University of Waterloo

PH.D. IN COMPUTER SCIENCE (MEMBER OF THE CRYSP LAB)

- Cumulative GPA: **94.00 / 100.00**.

Canada

Expected: Jan. 2029

Utrecht University

COMPUTING SCIENCE

- Cumulative GPA: **3.94 / 4.00** (*Summa cum laude*).
- Thesis: *Automated Verification of Hoare Triples: A Comparative Study on Static Inference of Loop Invariants* – Grade: **4.00 / 4.00**, supervised by Dr. S.W.B. Wishnu Prasetya and Prof. dr. ir. Frank van der Stappen.

Netherlands

Graduation: Jan. 2024

Awards

2025 **International Doctoral Student Award (IDSA)**, Awarded by the *University of Waterloo*.

Canada

2023 **Scholarship**, Awarded by *Utrecht University*.

Netherlands

Work Experience

ABN AMRO

FULL-TIME MAINFRAME DEVELOPER

- Reviewed and refactored legacy COBOL code. Investigated automated testing frameworks (Topaz for Total Test). Updated technical documentation. Collaborated in Agile teams following Scrum methodologies.*

Netherlands

Mar. 2024 - Dec. 2024

Hudson Dynamics B.V.

EMBEDDED SOFTWARE ENGINEER INTERN

- Worked on the development of automated vehicles. Programmed the robotic arm of an electric loader to ensure precise vertical lift path control. Designed its control system using Parker IQAN software. Modeled the arm's search space with Denavit–Hartenberg notation and applied forward and inverse kinematic analysis.*

Netherlands

Jun. 2023 - Dec. 2023

Volunteering Activities

Artifact Evaluation Committee

PROGRAM COMMITTEE MEMBER

- Served on the committee for the Proceedings on Privacy Enhancing Technologies symposium, reviewing the *ReporTor: Facilitating User Reporting of Issues Encountered in Naturalistic Web Browsing via the Tor Browser* artifact to ensure reproducibility.
- Contributed to the open science mission by providing feedback to authors on artifact quality, completeness, and reusability.

PoPETs

Oct. 2025

Hack the North

PARTICIPANT

- We developed *CodeMind*, a local-first, searchable timeline tool that documents AI coding sessions. The tool uses a custom Model Context Protocol (MCP) server to ingest sessions from Cursor/Claude, and an OpenAI-based LLM to extract and index key information.

University of Waterloo

12 – 14 Sep. 2025

Rust Z3 bindings

OPEN-SOURCE CONTRIBUTOR TO THE [Z3 RUST API](#).

- Contributed feature enhancements including floating-point NaN constructors, Int–Real mixed arithmetic, 128-bit integer support, string comparison, sequence utilities, and rounding-mode APIs. Implemented correctness fixes such as improved handling of *Probe::lt* arguments and model retrieval documentation. Authored the [Rust bindings guide](#), published on the official Z3 project website.

GitHub

Sep. 2025

Stanford University Code in Place

VOLUNTEER TUTOR

- Volunteer tutor for Stanford's Code in Place (2023, 2024, 2025), mentoring 15 students over 6 weeks each year.

Online

Apr. – May 2023, 2024, & 2025

Formal Methods Europe

MEMBER

- An organization that promotes research in formal methods to improve software and hardware systems.

Europe

Oct. 2023 – Present

Utrecht University Hackathon

PARTICIPANT

Netherlands

24 – 25 May 2023

- Co-hosted by SUE Co., the event focused on the applications of AI in Software Development, GitHub Copilot, and AWS.

TEDx Organizing Committee

ORGANIZING COMMITTEE VOLUNTEER, TEDx EVENT.

Netherlands

15 Apr. 2023

- Served on the organizing committee for a TEDx event focused on the themes Fight or Flight and Sustainability.

Teaching Assistant

Software and Systems Security

Canada

CS 453 / 698 @ UNIVERSITY OF WATERLOO

May 2025 - Aug. 2025

- Authored Assignment 2 for CS 453/698, designed to teach students fuzzing, differential testing, and reducing test cases via delta debugging.

Introduction to Computer Science 2

Canada

CS 116 @ UNIVERSITY OF WATERLOO

Jan. 2025 - May 2025

- Graded assignments on the fundamentals of programming.

Summer School

Queen Mary University of London

England

THREE-WEEK COURSE: *Business and Society: The Changing World of Work*

Jul. 2022–Aug. 2022

- 15 UK credits (7.5 ECTS); grade: **A** (75.6/100).

Utrecht University

Netherlands

ONE-WEEK COURSE ON *Advanced Functional Programming in Haskell* (DR. WOUTER SWIERSTRA)

Jul. 2022

- No exam was administered.

Miscellaneous

Languages

English (**IELTS 8.5**, taken on Nov. 3, 2023), Persian (native), French (A1).

Programming

Rust, Coq, C, Python, Haskell, Java, COBOL, MATLAB, JavaScript, R, SQL, C#.

Relevant Courses

Software & Systems Security, Languages & Compilers, Functional Programming, Software Testing & Verification, Logic for Computer Science, Operating Systems, Software Verification Using Proof Assistants.