HARUN YILMAZ

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Research Objective

My objective is to advance research in reliable and trustworthy software, specifically through formal methods for verifying system correctness. My experience in formal methods for neural networks and run-time verification at ISTA drives this passion. I aim to pursue a PhD in Computer Science, contributing to the field of software quality.

Education

- **Sabancı University** *2021 - Current*
  BSc Computer Science and Engineering Istanbul, Turkey
  - *CGPA*: 3.8/4.0 (Expected Graduation: 2026)
  - *Relevant Coursework*: Formal Languages and Automata Theory *(Ranked 1st)*, Programming Languages, Operating Systems, Distributed Systems, Algorithms, Logic and Digital System Design, Discrete Mathematics, Linear Algebra
- **Vrije Universiteit Amsterdam** *Feb - July 2024*
  Exchange Program Amsterdam, Netherlands
  - *Term GPA*: 9.1/10
  - *Relevant Coursework*: Computer Organization (10/10, outstanding performance), Computer Networks, Applied Programming for AI
- **Kayseri Science High School** *2017 - 2021*
  High School Kayseri, Turkey
  - *CGPA*: 96.8/100
  - Ranked in the top 0.03% among 2.6 million participants in the national university entrance exam

Experience

- **Institute of Science and Technology Austria (ISTA)** *June 2025 - Current*
  Research Intern (ISTernship) Klosterneuburg, Austria
  - Working with Thomas Henzinger Group on the verification of AI-enabled control systems with run-time verification and safe reinforcement learning.
- **Sabancı University** *Jan 2025 - Current*
  Undergraduate Assistant for Operating Systems Course Istanbul, Turkey
  - Mentoring over 200 students via weekly office hours and recitations, clarifying OS concepts (process scheduling, concurrency, memory management)
  - Proctoring exams, designing practice materials, providing feedback to align student progress with course objectives

Projects

- **Developing a Transpiler for Concurrent Program Verification via Boogie IVL Extensions** *2025-Current*
  Advisor: Dr. Süha Orhun Mutluergil | Tools: Boogie IVL, C#
  - Developing a transpiler from a high-level language to Boogie IVL to enable automated verification of concurrent programs
  - Extending Boogie's intermediate representation with concurrency primitives (e.g., atomic blocks, message-passing semantics)
- **Compiler Frontend with Static Analysis** *2024*
  Tools: C, Flex, Bison [ ]
  - Developed Flex/Bison-based compiler frontend with symbol tables and semantic checks for a small language
- **Concurrent Queue with Work Stealing** *2024*
  Tools: C, POSIX Threads, Synchronization primitives [ ]
  - Implemented a concurrent queue algorithm inspired by Michael & Scott's with work-stealing for multi-core scheduling
- **LC-3 Virtual Memory System** *2023*
  Tools: C, Assembly [ ]
  - Extended LC-3 VM with paged memory management, address translation and process control blocks
- **Wearable Health Analytics** *2023*
  Tools: Python, Pandas, SQLite [ ]
  - Analyzed Garmin data to correlate sleep, activity, and stress metrics. Performed statistical analysis and hypothesis testing.

Honors and Awards

- **OeAD Scholarship for ISTernship Summer Program** *June 2025*
  OeAD, Austria's Agency for Education and Internationalisation [🌐]
  ◦ Awarded a scholarship to participate in the highly competitive ISTernship Summer Program at the Institute of Science and Technology Austria (ISTA), conducting research for 3 months within a leading research group.

- **Dean's List: High Honor** *2022-2025*
  Sabancı University Faculty of Engineering and Natural Sciences (FENS) [🌐]
  ◦ Consistently recognized on the Dean's List for High Honors every semester throughout my university education (2022 - 2025), achieved by maintaining a term GPA of 3.5 or higher.

- **Sakıp Sabancı Outstanding Achievement Scholarship** *September 2021*
  Sabancı University [🌐]
  ◦ Awarded a comprehensive scholarship covering full annual tuition, a monthly stipend, and dormitory fees. This scholarship is granted to top-ranking students admitted through the Full Scholarship quota.

Technical Skills

- **Programming Languages:** C, C++, Python, Scheme, OCaml, Verilog HDL, Prolog, MySQL
- **Development Tools:** Git, LaTeX, Flex/Bison, POSIX Threads
- **Web Technologies:** HTML, CSS, JavaScript

Natural Languages

- **Turkish:** Native
- **English:** Advanced (Proficient in academic writing and reading, fluent in professional communication)

Volunteering and Leadership

- **SUDOSK (Sabancı University Outdoor Sports Club)** *2023 - Current*
  President & Board Member
  ◦ Led as President and Board Member, organizing outdoor sports events and managing club administration to promote a healthy, active community

- **Civic Involvement Project (CIP), Sabancı University** *2022*
  Volunteer
  ◦ Volunteered in coastal cleanups and animal shelter work to support environmental conservation and animal welfare

- **ELELE Health Education and Charity Foundation** *2022 - 2023*
  Volunteer – Celiac Disease Support
  ◦ Assisted celiac disease support by organizing awareness campaigns, fundraising events, and distributing gluten-free food packages

Hobbies and Interests

Rock climbing, Bouldering, Drumming, Outdoor sports (mountaineering, hiking, cycling)

References

- **Dr. Süha Orhun Mutluergil** *Computer Science and Engineering, Sabancı University*
  Email: suha.mutluergil@sabanciuniv.edu Faculty Member
- **ir. Jesse John Robert Donkervliet** *Vrije Universiteit Amsterdam*
  Email: j.j.r.donkervliet@vu.nl Computer Science Teacher