

# Michał Kurek

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## Education

### HARVARD UNIVERSITY | B.A/M.S in Computer Science

September 2021 - May 2025 | Cambridge, Massachusetts | GPA 3.9/4.0

- **Relevant Coursework** Data Structures & Algorithms, Machine Learning, Programming Languages, Systems & Machine Organization, Probability Theory, Theoretical Computer Science, Artificial Intelligence, Abstraction and Design in Computation, Vector Calculus and Linear Algebra, Discrete Mathematics for Computer Science
- **Fall 2023** Graduate level: Advanced Computer Networks, Inverse Reinforcement Learning; Undergraduate level: Data Systems, Reinforcement Learning; **Spring 2024** Operating Systems, Systems Security
- Peer tutor for Harvard's Systems Programming and Machine Organization class

### KAZIMIERZ WIELKI HIGH SCHOOL | Math/Physics/English Major

September 2018 - April 2021 | Olkusz, Poland | Ranked 1 / 270 | SAT Math II test score 800, SAT Physics score 800, SAT score 1550

- Polish Minister of Education Scholarship Scholar (top 500 students with greatest achievements in the country)
- 2nd place in the XLVI Polish National Technical Knowledge Olympiad (oldest & most recognized technical competition in Poland)

## Work experience

### HARVARD PROGRAMMING LANGUAGES LAB | Research Assistant & Software Engineer

May 2023 - September 2023 | Cambridge, Massachusetts

- Contributed to a research project centered on bidirectionally transpiling ARM to RISC-V assembly code using a BERT language model aided by program synthesis & verification techniques. Key responsibilities encompassed the cloud infrastructure setup, orchestrating model inference on the Harvard compute cluster, and conducting experiments
- Gained hands-on experience in AI deployment, high-performance computing, SMT solvers, containerization with Docker

### SIEMENS DIGITAL INDUSTRIES SOFTWARE | Software Engineering Intern

July 2022 - August 2022 | Poznan, Poland

- Developed Electronic Design Automation (EDA) tools for global clients as a core member of the Tessent R&D team
- Analyzed, planned, and implemented enhancements to EDA applications, resulting in improved chip quality and risk mitigation throughout the integrated chip lifecycle

### HARVARD STUDENT AGENCIES | Coding Tutor

February 2022 - June 2022 | Cambridge, Massachusetts

- Taught a weekly international class of 20+ students of various skill levels & ages to program in Python, JavaScript, React, and object-oriented concepts. Maintained after-class office hours and problem-solving sessions

## Projects & Leadership

### CHESS ENGINE LISHEX

[github.com/MKJM2/lishex](https://github.com/MKJM2/lishex)

- Lishex is an open-source C++ chess engine I wrote over the summer capable of super grandmaster level play, estimated at ~2746 Elo in Blitz time controls. Implements a heavily pruning alpha-beta search & handcrafted evaluation function tuned with an implementation of Adam (mini-batched) on a dataset of 6 million self-play generated positions.

### PROGRAMMING LANGUAGE TAP

[github.com/MKJM2/tap](https://github.com/MKJM2/tap)

- Tap is a simple, strongly-typed interpreted programming language crafted in modern C++. Tap was created as a playground for learning programming language design, exploring C++17 and C++20 features (including modules and variants), diving into CMake project management, and implementing unit testing using GoogleTest.

### BOID SIMULATION

[github.com/MKJM2/boids](https://github.com/MKJM2/boids)

- Implemented Craig Reynolds' flocking algorithm simulating schools of fish in an interactive app built with GoLang and Ebitengine 2D rendering library. Later ported the project to WebAssembly and developed a responsive frontend with SvelteKit and TypeScript.
- Developed a design document & presentation on emergent behavior and implications for swarm robotics

## Skills

**Programming:** Proficient with C++, C, Python, Bash; familiar with GoLang, OCaml, JavaScript; working knowledge of SQL, HTML, CSS, Qt, Verilog, Tcl

**Operating Systems:** Linux (RHEL, Debian, Ubuntu), Windows 11 / 10 / 8, macOS

**Technologies:** Git, JIRA, Confluence, Docker, Tensorflow, Pytorch, ReactJS, Redux, Express.js, MongoDB, Bootstrap, Vim, CMake

## Languages & Interests

**Languages:** English (fluent), Polish (native), Japanese (beginner), German (beginner)

**Interests:** Speedcubing, game design, photography, playing the guitar