

# Yehonatan Ezra

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## Summary

Computer Science student at Hebrew University of Jerusalem with strong coding skills in C/C++, Python, Java. Creative and motivated with problem-solving, interpersonal skills. Independent collaborator committed to inventing solutions under pressure. Former IDF Navy deputy commander, where I led a 12-person team in high-pressure situations. Currently combining my academic ambitions with competitive athletics as a long-distance runner.

## Education

- B.Sc. in Computer Science, Hebrew University of Jerusalem** Expected 2026  
GPA: 88. Key Courses: Discrete Math (100), Nand to Tetris (94), Data Structures (95), Databases (91), Algorithms (88), Cybersecurity (pass). Machine Learning & Data Science & Computer Vision 3D (in progress).
- University of British Columbia (UBC)** - semester abroad as Hebrew University representative. 09/2024 - 01/2025

## Technical Skills

- Languages:** Python, C/C++, Bash, Java, JavaScript, SQL.
- Infrastructure & Tooling:** Linux, Git, GitHub Actions, CI/CD, LLM.

## Projects

### Group Project - AI - Powered Resume Tailoring Platform (Python, Flask, LLM, NoSQL - GitHub (JobScanner))

- Built RESTful APIs in Flask to power real-time resume customization endpoints.
- Integrated Meta LLaMA 3 via Together.ai for keyword extraction and content optimization.
- Developed a multithreaded job aggregator querying five public APIs concurrently.
- Implemented file-based caching to improve performance..

### User-Level Thread Library (C++, Linux, Signals, Context Switching - GitHub)

- Implemented a user-level thread library in C++ using `sigsetjmp`, `siglongjmp`, and `setitimer` for context switching.
- Implemented custom TCB, stacks, and manual context switching via jump buffer manipulation (SP/PC injection).
- Designed a preemptive round-robin scheduler with support for sleep, blocking, resume, and termination.
- Developed a virtual timer system to drive scheduling using `SIGVTALRM`, with precise signal masking to avoid race conditions.
- Performed intensive stress-testing to validate reliable context switching, signal handling, and memory safety under load.

### Secure Messaging Channel (Python, Cryptography, Networking - GitHub)

- Designed and implemented a secure messaging protocol using Diffie-Hellman (P-256) for key exchange, a SHAKE128-based KDF, AES-CBC encryption, and HMAC-SHA256 to provide confidentiality, integrity, and mutual authentication.
- Developed a per-message ratchet mechanism with ephemeral key rotation and nonce-based replay protection, achieving forward secrecy and robust anti-replay guarantees..
- \* Built client/server applications with a Tkinter GUI and a MITM proxy to test resilience against tampering and replay attacks.

### Additional Projects:

- Cancer Detection ML Pipeline (Python, scikit-learn - GitHub)** Built a multi-task ML pipeline on real EHR data ( 60k patients, provided by the Hebrew University) to predict metastasis sites, tumor area, and cluster patient subtypes. Applied data cleaning, embedding, correlation filtering, and imputation. Trained Random Forest and Gradient Boosting models, and used PCA, k-means, and t-SNE for unsupervised pattern discovery.
- Multi-Threaded MapReduce Framework(OS, c++ - GitHub)** Developed a scalable MapReduce engine with custom shuffle algorithm, resource-aware task scheduling, and implemented concurrency primitives (mutexes, barriers, condition variables).
- Nand2Tetris – Full Computer Architecture Stack (HDL, Python - GitHub)** Implemented the full hardware and software stack from NAND gates to a high-level compiler. developed HDL components, assembler, VM translator, and compiler.

## Professional Experience

### Instructor, Mamriot Cyber Program 06/2025 - Present

- Provided mentorship to high school students in computer science and cybersecurity fundamentals.
- Led educational sessions and guided student projects as part of Israel's elite national tech initiative.

### Private Tutor for Calculus, Hebrew University of Jerusalem 10/2021 - 02/2022

- Provided one-on-one tutoring in infinitesimal calculus for Hebrew University students.

### Deputy Commander of Shaldag-class Warship, IDF - Israel Navy 02/2017 - 11/2019

- Led a 12-person team in high-risk maritime operations, maintaining critical systems under pressure.
- Completed the Commanders' Course, focusing on leadership and tactical decision-making.

## Extracurricular

### Athlete, Competitive runner 09/2022 - Present

- Represented UBC XC Team - 1st Place, 2024 Canadian XC Championship.
- Competing in Israel National Championships (1,500m - 10k).

### , Hebrew University Running Team 09/2024 - Present

- Founded and coached a competitive long-distance running team.

## Volunteer Experience

- Etgirim** Supported athletes with disabilities in adaptive sports.honing strong teamwork skills. 01/2020 - 09/2021
- Scouts** Guided youth with special needs. Organized camps skill workshops. 09/2014 - 07/2016