

YONAH GOLDBERG

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EXPERIENCE

Internships

WebstaurantStore Software Engineering Intern

📅 May 2023 - Aug 2023 📍 Lititz, PA

- Developed and managed **20+ websites** on the Marketing Sites team which drive traffic to WebstaurantStore.com.
- Integrated marketing sites with a Redis database to cache catalog items and **increase the performance** of the websites.
- Created an internal tool on the VersaHub team for viewing sensor data collected from smart kitchen IOT devices using **SQL queries, C# .NET server endpoints, and a React front-end.**

Research

Carnegie Mellon University Penrose

📅 Jan 2023 - May 2023 📍 Pittsburgh, PA

- Advised by Josh Sunshine on Penrose: <https://penrose.cs.cmu.edu/>, a **domain specific language** for creating mathematical diagrams.
- Worked on running the Penrose **compiler** and **optimizer** on a separate thread using **web workers** and communicating updates to the UI thread using a message passing protocol.
- Rendered Penrose diagrams as the optimizer runs, allowing users to view diagrams converge on their optimal depiction.

Carnegie Mellon University Skeema

📅 May 2022 - Aug 2022 📍 Pittsburgh, PA

- Developed a React Native mobile application, mirroring the functionality of the existing Skeema chrome extension, allowing users to **organize tabs on mobile devices.**
- Integrated the mobile app with a **Firestore Firebase database**, so users can **authenticate** and **sync** their tabs, tab groups, and work-spaces on desktop with those on mobile.

Teaching Assistant

Carnegie Mellon University Computer Systems

📅 May 2022 - December 2022 📍 Pittsburgh, PA

- Taught recitations, held office hours, assisted lectures, wrote weekly written homework, answered online questions.
- Assisted in development, including writing an implementation of a working solution key, of a new **parallel programming lab**, where students implement a parallel version of the Linux command line tool, grep, in C.

TECHNICAL SKILLS

Programming Languages

- OCaml, Rust, Go, Python, C, C++, Java, JavaScript, x86 Assembly

Tools/Frameworks

- Compilers, Linux, Git, GitHub, React/React Native, SQL, TCP/UDP

EDUCATION

Carnegie Mellon University

B.S in Computer Science; GPA: 3.64

Varsity Cross Country/Track

📅 Aug 2021 - May 2025

PROJECTS

C0 Compiler | Ocaml

- Compiler for C0, a memory safe subset of C, for CMU Compiler Design, targeting x86-64 assembly and LLVM IR.
- When targeting LLVM IR and compiling to X86-64 with LLC -O3, achieved being **only 7.5% slower than Clang -O3** run on equivalent C code.
- Converts to static single assignment form and performs **peephole optimizations, constant/copy propagation, tail recursion optimization, and dead code elimination.**

Efficient Chess Move Generator | Rust

- Created an efficient chess move generator using **bitboards**, the same board representation as the highest rated engines like Stockfish

GatesMaps @ HackCMU | Node JS, React

- Created a web app to help students navigate the confusing layout of the Gates Center for CS at CMU.
- Mapped out the 6th and 7th floors of Gates as a graph, with hallways as edges and vertices as hallway intersections, to direct students using **Dijkstra's Path Finding Algorithm.**
- Collected user input on navigation time for every trip to adjust weights between vertices and provide an **accurate arrival time estimate.**

Maze Solver | Java

- Users draw a maze on a grid with walls, a start point, and an end point.
- Solves the maze with Dijkstra's algorithm and presents the user with the shortest path from start to finish.

COURSEWORK

- Compiler Design and Optimization
- Functional Programming
- Distributed Systems
- Computer Security
- Foundations of Software Engineering
- Data Structures and Algorithms
- 3D Calculus
- Matrices and Linear Transformations
- Probability and Computing