Carson Graham

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Skills

— Extensive experience with Java (5 years) and Kotlin (3 years), two JVM languages.
— Experience with low-level languages like C, C++, and x86 Assembly.
— Experience with functional programming paradigms in the primary forms of Haskell..
— Experience with standard GNU/Linux systems and programs, specifically Debian, Alphine, and Arch Linux.
— Experience with SQL, specifically SQLite.
— Experience in web development, HTML/CSS/JS, and the language of Typescript, as well as varients such as JSX, TSX, and SCSS. (See: Personal website)
— Experience in scripting languages such as Bash and Python.
— Experience with Docker, and Docker Compose.
— Experience managing git, as well as github, on projects with several developers.
— Experience with build tools such as Make, Makepkg, and Gradle.
— Leadership experience. (See: Robotics, CSCS)

Leadership

Oakton HS FRC Robotics Club, Programming Lead

I am one of the two programming leads for the Oakton HS FRC team, a competitive robotics organization. During the season, which is 6-10 weeks, we meet about 10-30 hours a week. I am the main lead and, along with our 2 existing members, helped our 3 new programmers learn both C++and Git. Under my guidance, we adopted a mix of git-flow and trunk-based development, which is documented on the project wiki. I was also a Dean's List Semifinalist for FIRST robotics, an individual competition for personal experience and accomplishments.

Oakton HS Computer Science and Cyber Security Club, President

I am the president of the Oakton CSCS (Computer Science and Cyber Security) Club, one of the largest student-run clubs at my high school. The club includes 6 elected officers, 50 official members, and about 150 members on our public Discord server. The club participates in Cyber Patriot, as well as several other CTFs and Computer Science competitions. As the president, my job is to make sure everything gets done, planning meeting agendas and club projects, and sharing my technical experience with other club members.

Formal Education and Certifications

— AP Computer Science A, *Intro to Java and Computer Science* (Scored a 5 on the AP test freshman year)
— Advanced Computer Science AB, *Advanced Data Structures and Algorithms*
— Oracle Associate Certification, *Foundations to Java SE 8* (Acquired at age 14)
— Oakton High School student, expected to graduate 2022 with an advanced diploma

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Work Experience

AI Intern for Octo Consulting. 3 Months, Summer of 2020

— Oboost (Octo-Boost), is a AI-Powered Search-Database Enhancer.

Oboost is a process that proxies query requests to a search database such as ElasticSearch, but uses Machine Learning (ML) to reshuffle the resulting documents so the most relevant results are the first results the end user sees, without any change any existing infrastructure, frontend, or database.

I mainly focus on the demo frontend, as well as setting up the development/production environments. I also helped present this project during a presentation to the entire company.

Uses Docker, Python, Pytorch, and Flask for the backend, and Docker, React, HTML/CSS/JS for the demo frontend. Deployed onto an AWS EC2 instance, managed by a ECS Cluster. We used AWS ECR for our docker container registry. Nginx was used as a reverse proxy, offering subdomain and HTTPS support.

— I was involved with a project aiming to read project proposals and flag statements as okay/not okay, using machine learning.

Used Angular, Typescript (frontend), Python, Flask, Pytorch

— I worked for 3 weeks on a prototype for some software with potential to be used by the US Military.

Uses C#, WPF

Personal Projects

Xenon, my personal programming language *TODO change this to "Programming Language Development". Talk about Xenon and the ML/haskell derivitive (give that project a name). Skip the technical details.*

Github Link.

Xenon is a 64 bit native programming language similar to C. While it is currently written in Kotlin, a self-hosted compiler is planned for the future. The backend is x86_64 NASM, a form of assembly, but may switch to a purely native backend eventually.

Uses C, Assembly, Kotlin, Xenon

Personal Website

https://mee42.dev

I created my personal website for publishing projects and blog posts, and host it on my domain, mee42.dev.

It's built up with Next/JS and ReactJS as the framework, written in Typescript/TSX and SCSS with CSS-in-JS. Deployment is handled with Docker/Docker Compose, and is self-hosted. NGINX is used for load balancing and HTTPS support.

Vision Pipeline, a computer vision project for pose estimation

Github Link.

In robotics, being able to estimate the robot's pose in relation to the target allows you to autonomously drive the robot better then a human can from 50 feet away. In the 2020 season, the goal was to shoot a ball through a hole from about 20 feet away, and the hope was to use a camera and some code to aim at the goal and fire with accuracy. This had moderate success, but was not completed in time for the competition.

Uses C++, OpenCV

ADN, a content delivery server

Github Link.

ADN is a content distribution server for quick and easy content distribution. I primarily designed it so I could send code and images to people through quick macros. This project has a server side and a CLI interface which communicates over an https API. The API lets users send in some text or an image and returns with a url that can be used to access that content again. When visiting the url and looking at text content - specifically, code - it will be syntax highlighted making ADN a great platform for sharing code.

Sharing images can also be a tedious task – this tool lets me take a screenshot with a couple keystrokes, then automatically puts the link on the clipboard, making sharing images and code painless and easy.

Uses HTML, JS, CSS, Kotlin