# Benjamin W. Graham

**Carnegie Mellon Electrical and Computer Engineering**

## Experience

2019 - present
### CEO
Moonpy Inc.
- Developing a high-performance Python distribution using an LLVM backend.
- Currently valued at $3M based on pre-seed funding.

2020
### Software Engineering Intern
RedHat
- Updated the Cockpit Session Recording module to provide a web interface for the tlog application. The interface was moved to the React library for PatterFly 4, and continuous integration was added to the repository using Docker.
- Implemented backup-and-restore functionality for the authentication application FreeOTP on Android.

2019
### Undergraduate Research Assistant
Cylab Security and Privacy Institute
- Built a visualization tool to detect and monitor the distribution of malicious software in a partnership with Northrup Grumman.
- Implemented an augmented reality haptic system for first responders for the NIST haptic challenge. The entry received first place in the NIST Haptic Interface for Public Safety Challenge.
- Developed a web application to graphically model the behavior of artificial intelligence algorithms.

2018
### CERT Security Automation Intern
Software Engineering Institute
- Used Python and Angular for web application development for simplified SiLK internet traffic analysis.

2015 - 2017
### Software Intern
Carnegie Mellon Robotics Institute
- Wrote software using Swift and Metal for displaying interactive 3D data on mobile devices under the supervision of Professor Simon Lucey.
- Wrote Python and Matlab code for use in a 3D image camera calibration system under the supervision of Professor Fernando De la Torre.
- Designed, 3D printed, and assembled a robot under the supervision of Professor Alonzo Kelly.

## Projects

2021 - present
### LLVM IR Parser for Tree-sitter
- Maintainer for Tree-sitter's LLVM parser and highlighting module.

2021 - present
### Chess Engine
- Programmed a 1900-rated chess engine from scratch.

2020 - present
### X Window Manager
- Made a functional tiling window manager for the X Window System.

2020
### C Compiler
- Developing a C compiler for CMU's Compiler Design course, written in Ocaml.

2019
### Com-Unity Web Application
- Created a inter-dorm request application for SteelHacks using Node.js.
- Won Snapchat prize for best social media integration.

2018
### PyDoom Video Game
- Developed a 90's style first person video game inspired by Doom and Quake.
- Won first prize overall at the 15-112 Project Showcase.

## Education

2018 - 2021
### Carnegie Mellon University
- Studied Electrical and Computer Engineering.
- Relevant courses include *Compiler Design - Distributed Systems - Parallel and Sequential Data Structures and Algorithms - Introduction to Computer Security - Software Engineering for Startups - Introduction to Computer Systems - Structure and Design of Digital Systems - Functional Programming*

## About


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**Github**
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**Interests**
Coding - Mechanical Keyboards - 3d-Printing - Semiprime Factorization

## Awards

- McGinnis Venture Competition winner
- RedHat "Achievement of Awesome"
- First place in the NIST Haptic Interface for Public Safety Challenge
- Snapchat Prize for Social Media Integration at SteelHacks
- 15-112 Project Showcase winner
- First prize at Hack112
- Duquesne Award for Computer Science at PJAS

## Skills

### Programming Languages
- C
- C++
- Python
- Ocaml
- Javascript
- Java
- Go

### Libraries, Frameworks, and Toolchains
- LLVM
- Emscripten
- OpenGL
- OpenCV
- React
- Node.js
- Angular
- Unreal Engine

### Platforms
- Linux
- Windows
- Android
- IOS
- HTC Vive

### Software
- Git
- Android Studio
- Fusion 360