Benjamin Graham

Carnegie Mellon Electrical and Computer Engineering
Class of 2022

Experience

2019 — **Undergraduate Research Assistant**
Cylab Security and Privacy Institute
- Worked with Northrup Grumman on the development of visualization tools to detect and monitor the distribution of malicious software.
- Implemented a haptic system for first responders that interfaces with virtual reality scenarios 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.
- Contructed an augmented-reality headset for rescue workers to perform live indoor mapping in scenarios where visibility is compromised.

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.

Personal Projects

Mar. 2019 - present — **Python Static Analysis Tool**
- Developing a static type-analysis tool for Python to detect type errors and optimize method calls prior to runtime.

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

Nov. 2018 — **PyDoom Video Game**
- Developed a 90's style first person video game inspired by the likes of Doom and Quake.
- Used a custom physics and OpenGL graphics engine.
- Won 1st prize overall at the 15-112 Project Showcase.

Oct. 2018 — **Blockyslice Video Game**
- Lead programmer for a skill-based video game written for Hack112.
- Won 1st prize overall as well as nomination for "Most Fun".

2017 - 2018 — **Voxel-based Render Engine**
- Wrote a voxel-based graphics and physics engine for determining optimal buffer size and geometic meshing method.
- Won 1st place at PJAS, as well as the *Directors award for Computer Science* and the *Duquesne Award for Computer Science*.

2017 — **Kathode Android Game**
- Released a rhythm-based video game on the Google Play Store.
- Developed using Java and Android Studio.

Education

2018 - present — **Carnegie Mellon University**
- Student in Electrical and Computer Engineering.
- Relevant courses include *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 - Principals of Imperative Computation - Concepts of Mathematics - Fundamentals of Programming.*

About

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Skills

Languages
- C
- C++
- Python
- Java
- Javascript
- System Verilog
- SML
- x86 Assembly
- Matlab

Libraries and Frameworks
- OpenGL
- OpenCV
- Node.js
- d3
- Unreal Engine
- Angular

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

Software
- git
- Android Studio
- Fusion 360

Hardware
- Raspberry Pi
- Arduino
- Altera Cyclone V