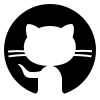
**Garrett**

(412)-897-5699 (cell)



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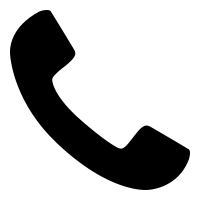
github.com/garretthagen21

347 Highview Rd

Wexford, PA 15090

garretthagen21@gmail.com

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**Hagen**

**EXPERIENCE**

***Gener-8*** - FDA approved CPM self-rehabilitation devices

*Software Development and Hardware Design (2016-Present*)

* Designed and integrated system that calculates knee flexion and rotation angle and transmits results in real-time via Bluetooth LE
* Developed wireless accelerometer and gyroscope calibration routine for intuitive, one-time machine setup via Bluetooth LE
* Utilized Firebase and Vidyo API to develop Swift/Obj-C iOS app that communicates with Gener-8 machine for at-home rehab progress monitoring, instant messaging, and video chat
* Developed functionality for Gener-8 iOS app to automatically pair with nearby Gener-8 machines via Bluetooth LE
* Developed virtual goniometer by improving an open source iOS application to calculate human joint angles using TensorFlow pose estimation

***Carnegie Robotics*** –Advanced robotics sensors and platforms

*Co-op (Fall 2019)*

* Created and maintained a sizeable C++ framework to reduce boilerplate code and provide convenient, common features for projects that utilize stereo camera functionality
* Developed and integrated C++ library for colluminated LED backlight panel to be used in MultiSense lens fitting processes
* Created C++ application to assess the quality of extrinsic and intrinsic calibrations for MultiSense cameras using OpenCV, Ceres-Solver, Boost, and GTest
* Developed a modified firmware in C and a GUI in Python to verify the functionality of MultiSense PCBs prior to the start of assembly
* Refactored existing production software to build and deploy via Docker and improved dependency handling with CMake

*Co-op (Spring 2019)*

* Developed an extensive testing suite in C++ to verify functionality of MultiSense firmware releases prior to deployment
* Utilized Qt and OpenCV to develop an interactive C++ GUI that demonstrates concurrent left/right grayscale, color, and disparity image streaming on all MultiSense camera models
* Integrated functionality to existing manufacturing software that enforces the use of a specified version using CMake and Git

*Co-op (Summer 2018)*

* Utilized ROS and OpenCV to develop a Python GUI application that simultaneously collects, organizes, and stores data from a diverse set of stereo and depth cameras
* Developed a tool in Python to package all C/C++ application dependencies into an AppImage, enabling portability across internal Linux machines

***iRevive*** – Mobile Phone and Computer Repair

*Founder (2013-Present)*

* Self-taught technician with 175+ successful repairs

***For You Inc*** – Manufacturers of Duraband® and other exercise devices

*Product Designer (2012-2015)*

* Designed and received patent for Durabat® baseball training device (used by multiple professional baseball players)

**EDUCATION**

***University of Pittsburgh*** – Main Campus Pittsburgh, PA

BS in Computer Engineering *(Fall 2016 – Summer 2020)*

Pitt Engineering Dean’s Honor List(*Fall 2017 – Present*)

*Major GPA – 3.82 / 4.0 • Cumulative GPA – 3.55 / 4.0*

***Pitt Computer Engineering Coursework***

Data Structures (*Java*), Algorithms (*Java*), Object Oriented Programming (*Java*), Mobile Robot Platforms (C++/Python), Machine Learning (*R*), Operating Systems (*C*), Computer Architecture (*C, MIPS*), Computer Networks (*C*), Software Quality Assurance (*Java*), Intro to Web Development (*Python, JavaScript, HTML, CSS*), Software Engineering (*Java*), Advanced Digital Design, Electronic Circuits Lab

***Pitt Math Coursework***

Linear Algebra, Probability and Statistics, Differential Equations, Calculus 1 & 2, Physics 1 & 2



**COMPUTER SKILLS**

***Languages*** – Swift, Java, C++, C, Python, HTML/CSS, JavaScript, Bash

***Software/Tools/Frameworks*** – Git, Mercurial, Firebase, UIKit, XCode, Android Studio, Docker, CMake, OpenCV, GTest, Selenium, JUnit, Ceres, MatLab, AutoDesk Inventor, Microsoft Office Suite

***Operating Systems*** – Linux, macOS, iOS, Windows, ROS



**PROJECTS**

***Biometric Lock*** *(2019)* – Developed Swift iOS App that communicates via Bluetooth Low Energy with Arduino that controls fingerprint scanner and solenoid lock. Designed all software/circuitry and rendered custom enclosure to house electronics in door frame

***Roommates App*** *(2019)* – Developed an Android App in Java to manage bills and responsibilities for house tenants

***Industrial Arduino*** *(2017)* – Created a custom PCB shield in Altium Designer for use in a waterproof Arduino Enclosure

***Classmates App*** *(2016)* – Designed UI mockup for a mobile app to enhance social and academic experience for students and participated in the Pitt Mobile App Challenge



**VOLUNTEERING**

***HCEF Instructor*** *(2019 - 2020)* – Taught fundamentals of computer science to middle school students who have experienced or are currently experiencing homelessness