Ryan Chan

Email: RyanChanTech@gmail.com
Portfolio Website: www.RyanChanTech.com

EDUCATION

Cornell University **Expected May 2023**
Bachelor of Science in Electrical and Computer Engineering, Minor in Computer Science, 3.71 GPA

EXPERIENCES

Cornell Organic Robotics Laboratory – Undergraduate Research Assistant **Jan. 2021-Present**

- Conducting research on soft and bio-inspired robots during the school year
- Working on a high-speed fiber-optic system to be used for flexible strain sensors. Built amplifier circuits, programmed Teensy microcontrollers in C++, communicated with ADCs via SPI, and designed custom PCBs integrating these components in Autodesk Eagle. Achieved a sample rate of ~1 million samples per second so far
- Worked on an electrical system to control electrohydraulic HASEL tentacle actuators. Built high voltage optocoupler switching circuits, programmed Arduinos in C++, and designed PCBs in Altium Designer. Fixed an issue that was unsolved for two years

Cornell Engineering World Health (EWH) Project Team – Electrical Team Lead **Sept. 2020-Present**

- Developing medical devices for low-resource communities in a project team during the school year
- Recently promoted to lead the electrical team. Will fully manage a team of 10 to work on a United Nations project in the Spring
- Working on a camera vision to audio system to help the visually impaired with a nonprofit. Programmed Raspberry Pi's using Python and OpenCV to convert text from images into audio
- Worked on an infant NICU incubator with a hospital. Led work on the motor control and audio circuitry, PCB, and code
- Worked on a low-cost and non-invasive prosthetic surface electromyography (sEMG) armband with Invictus BCI. Led Printed Circuit Board (PCB) design using Autodesk Eagle and wrote part of the code for an MSP430 microcontroller in C++

Invictus BCI Inc. – Hardware Intern and Project Lead **Jun. 2021-Aug. 2021**

- Continued work on the prosthetic sEMG armband from Cornell EWH as an intern at Invictus BCI (a startup) over the Summer
- Led the sEMG armband team, managing a team of three
- Worked heavily on the main sEMG circuit board. Programmed ESP32 microcontrollers, communicated with medical grade AFEs via SPI, worked with wireless Bluetooth communication, and designed PCBs in Eagle. Also helped with Python data processing. Finished a 2-channel prototype that could read muscle signals at a sample rate of ~500 samples per second

B.C. Children's Hospital Research Institute – Engineering Volunteer **Jun. 2021-Sept. 2021**

- Volunteered over the Summer to help develop electronics for an infant transportation device to be used in Malawi, Africa
- Helped design the temperature regulation circuitry, led PCB design, programmed Arduinos, and participated in interdisciplinary design meetings. Finished a functional prototype that maintains temperature above 35°C and could be carried in a backpack

Dining Hall – Food Service Worker **Jan. 2020-Mar. 2020**

- Managed the beverage stations. Learned to work and communicate effectively in a fast-paced work environment

PROJECTS (More info & projects on website)

Smartwatch **Jul. 2021-Present**

- Working on a WiFi-connected smartwatch as a side project. Used an ESP32 microcontroller to display time and weather data from an online API to a TFT screen via SPI. Also designed a power regulation and charging circuit for LiPo batteries
- Finished a basic functional prototype built using Autodesk Eagle for PCB design and Fusion 360 for 3D modelling

ECE 3400 Robot **Aug. 2021-Dec. 2021**

- Built a robot using Arduinos that could navigate a complex maze using ultrasonic sensors and PID control. Also built sensors to find and read frequency of infrared targets in the maze and transmit data wirelessly to be displayed on a separate base station

YouTube Channel **2016-Present**

- Post videos of tutorials and some personal electronic projects, such as a PCB business card and a real-life game controller
- Have accumulated over 130k total views and have had some projects featured on Arduino social media and Hackaday

SKILLS

Software: Python, Java, Arduino, C/C++, JavaScript, MATLAB, Verilog, HTML/CSS, Git
Hardware: PCB Design (Autodesk EAGLE, Altium Designer), 3D Design (Fusion 360), TFT and SMT soldering