CHANUTH WEERARATNA

4A Mechatronics Engineering (BASc) | University of Waterloo
SEPT 2021 - 2026

chanuth.weeraratna@uwaterloo.ca
647-773-0239
chanuth11
www.linkedin.com/in/chanuth

PROFILE

- PCB Design: **Altium, OrCAD, EasyEDA, KiCAD**
- Electrical tools: **Soldering, Hot air rework, Oscilloscope, DMM, Function Generator, LTspice**
- Mechanical tools: **3D Printer, Laser Cutter, Lathe**
- Hardware: **STM32, Raspberry Pi, FPGA, ATmega**
- Programming: **Python, C, C++, MATLAB, Simulink**
- CAD: **Fusion360, SolidWorks, AutoCAD**
- Project Management: **Git, Jira, Confluence, Click-up**

WORK EXPERIENCE

Product Development Engineer (C, C++, Python) | Spectra Scientific
MAY '25 — AUG '25

- Full stack development of a submersible datalogger with real-time telemetry, integrating barometric, temp, and IR sensors
- Designed and tested custom 4-layer STM32-based PCB in Altium to interface infrared and RS-485 data via FTDI UART bridge, featuring TPS62840 buck converter, SD card, I²C peripherals, ideal diode power switching, and ESD protection
- Designed a 4-layer ATmega328P multi-sensor probe in KiCAD, integrating an 12-bit MCP3208 ADC, ASM117 LDO, and GC9A01 TFT LCD, and auto shutoff circuitry for real-time display of analog sensor data
- Built real-time data visualization and sensor calibration GUIs in C++ and Python using QT creator for embedded systems

Hardware Engineer (C, Python) | KA Imaging
JAN '25 — APR '25

- Designed and tested high speed analog circuitry in OrCAD for high voltage, power, and motherboards on latest X-ray
- Decoded I2C, SPI, and UART commands using logic analyzers to verify IMU, temp, digital pot, and pressure sensor readings
- Rectified 100Mhz clock signal using series, parallel, and AC termination to increase full-scale image channel output
- Developed Python and C test scripts to generate temp and IMU sensors plots in MATLAB and verify readings

Embedded Software/Electrical Engineer (Python, C) | Harvard Microrobotics Lab – Project CETI
SEP '23 — DEC '23

- Designed an underwater testing apparatus using Fusioin360 to characterize hydrophone SNR and streamline audio calibration for deep sea Tags mounted on sperm whales
- Designed a waterproof handheld audio amplifier in EasyEDA with adjustable gain, swappable audio interface, and shielding
- Brought-up batch of 20 whale tags for deployment by populating and validating audio, power, and sensor data using DMMs, oscilloscopes, function generators, and Raspberry Pi and STM32 testing scripts
- Experimented with FG signal pulses using a 150V/V amplifier and spectral analysis tool on Audacity to test hydrophones

Robotics Sensing R&D - Electrical Team (Python) | Forcen
JAN '23 — APR '23

- Designed and fabricated analog/digital rigid and flex PCBs in Altium with acute attention to design and manufacturing constraints for medical, industrial, and space applications
- Populated development and test jig PCBs for manufacturers, utilizing soldering and hot air rework stations/tools for components such as 0402 resistors, QFN, and BGA ICs
- Debugged the SPI signals on the test jig by oscilloscope protocol decoding and bringing-up the MCP2517 CAN FD controller
- Created data scraping and final assessment test scripts to validate sensor counts using Pandas and NumPy Python libraries
- Developed multiple software/hardware solutions to improve product throughput by validating PCBA and assembly systems

PROJECTS

Wearable Piano (C++, Python) |
MAY '24 — SEP '24

- Created a wearable to detect a pianist's finger pressure using motors, Arduino BLE, and custom force sensors
- Developed the first prototype to achieve small form factor using perf boards and interdigitated Flex PCB for force sensors

Quad-Engine Autopilot Plane (Python, C++, C#) |
AUG '22 — JAN '23

- Designed and built an RC plane from scratch using Arduinos and custom autopilot/tracking software
- Constructed the plane using servos, brushless motors, a GPS, and a gyroscope, controlled by a PS4 controller

INTERESTS

Learning Guitar, Long Runs/Walks, Basketball, Rock Climbing, Science Fiction, Piano