Mykal Westeinde

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WORK EXPERIENCE

Project Lead | Nootka Saunas

Managed the roll out of an LTE sauna controller and designed machines to automate sauna manufacturing.

- Wrote a C++ TouchGFX application on an STM32 microcontroller to build a smart saw fence for a mitre saw.
- Developed and sourced a custom injection molded enclosure for an LTE sauna controller. Used fill analysis and Quasi Static FEA in Fusion360 to optimize part for moldability and produce durable snap fit joint.
- Designed and welded a 20' long, adjustable-angle conveyor belt in to transport sawdust into a waste bin.

Result: Reduced sauna production time by 4 hours per sauna, fabricated 300 functioning LTE sauna controller units.

Instrumentation Engineer Co-op | Precision NanoSystems Inc.

Built and automated test jigs to debug and certify mRNA production devices.

- Developed a jig controlled by a Python application to quantify the stick-slip characteristics of a pump head in an mRNA vaccine manufacturing device.
- Created a custom non-fluid contacting pressure sensor & interface in Python to detect fluid fouling rates on critical mRNA drug formulations.
- Designed new output nozzle geometries in SOLIDWORKS to allow for 10x higher flowrates in next generation microfluidic cartridges.

Result: Identified and fixed a critical pump head friction issue to help expedite the manufacturing process of covid vaccines in Asia.

Founder, Owner, and Operator | Chelsea Property Services

Founded a seasonal landscaping company specializing in complete backyard renovation projects.

- Managed 5 full time employees & did 90k/summer in revenue.
- Completed over 90% of jobs on time and under budget by managing deadlines effectively with an efficient team.
- Sold the name and goodwill of the business, which still runs today.

Result: Created business with over 120 happy clients, 5-star Google and Facebook rating.

PROJECT EXPERIENCE

Autonomous Collector Robot

Designed and built an autonomous robot powered by a BluePill microcontroller capable of tape following, can collection and shooting ping pong balls into cups.

- Programmed an STM32 microcontroller to interpret sensor information to actuator components with C++ code on the PlatformIO framework.
- Designed and soldered the electronic circuit from scratch, integrating 3 H-bridge motor drivers, a reflectance sensor tape tracker, and an infrared signal filter processing system.
- Became a teaching assistant for the course where I helped students debug over 15 custom H-bridges and assisted 5 teams to develop an effective tape following algorithm by communicating effectively over zoom.

Result: 1st place robot of 64, ability to collect all objects in under half the allotted time, five-star TA rating.

SUMMER 2020

SUMMER 2022

SUMMERS 2017-19

SUMMER-FALL 2021

Fentanyl Quantitation Device | Profs. D. Bizzotto, G. Sammis

FALL-WINTER 2021/22

WINTER 2021

Professors D. Bizzotto, G. Sammis

Integrated a novel fentanyl quantitation electrochemical method into a portable, automated device that can detect the fentanyl concentration of a drug sample.

- SLA printed a 40µl flow cell that housed an electrode for sensitive electrochemical measurements.
- Designed a multithreaded Python application that coordinated a potentiostat and a syringe pump through ASCII protocol.

Result: Desktop system that reduced sample detection time from 8 hours to 20 minutes.

OpenCV Autonomous Vehicle Simulation

Constructed control software for a simulated robot in an ROS Gazebo environment using imitation learning and computer vision techniques in Python.

- Implemented three neural networks with TensorFlow alongside OpenCV methods in computer vision to identify license plate numbers in a live feed video and navigate a simulated driving environment.
- Worked in a purpose-built Linux environment and maintained consistent version control with a partner on GitHub.

Result: 1st place team of 16, 100% accuracy of license plate reader.

EDUCATION

Bachelor of Applied Science Engineering Physics	EXPECTED IN APRIL 2023
The University of British Columbia, Vancouver, BC	
CSWA SOLIDWORKS Associate Certification in Mechanical Design	WINTER 2020
PHAS Machine Shop Course	FALL 2019

40-hour course with lathes, mills, waterjet cutters and modelling.

SKILLS AND CERTIFICATIONS

Mechanical:	Electrical:	Software:
SOLIDWORKS Associate Cert. in	Digital Logic Design	5000+ lines:
Mechanical Design	Circuit Analysis and Debugging	Python Java MATLAB
40-hour Machine Shop Course	Soldering	1000+ lines:
Design for Manufacturing	RapidHarness	C C++ Assembly Arduino
Fluid Path Design	1	Packages:
Injection mold and FEA analysis		Tensorflow OpenCV ROS Linux

INVOLVEMENT

Club Lead, UBC Nordic Ski Team

- Racing with the UBC Thunderbirds as a national level cross-country skier while working with a team of 5 to build and manage a strong and successful team.
- Maintaining relationships with local clubs, securing \$3k+ in fundraising a year and organizing training and racing logistics for 20 high performance athletes.

HOBBIES AND INTERESTS

- Cross-country skiing UBC Ski Team Club Lead
- Marathon Running
- Climbing and Mountaineering

- Environmental Conservation
- Ski Touring
- Guitar

2019-PRESENT