Mykal Westeinde

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WORK EXPERIENCE

Project Manager | Nootka Saunas   SUMMER 2022

Managed the roll out of an in-house LTE sauna controller and built machines to automate sauna manufacturing.

- Wrote a C++ TouchGFX application on an STM32 microprocessor to build a smart saw fence for a mitre saw.
- Sourced a custom injection molded enclosure for an LTE sauna controller, created in Fusion360.
- Designed and welded a 20' long, adjustable-angle conveyor belt 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.   SUMMER-FALL 2021

Built mechanical and electrical test jigs to debug and certify mRNA production devices.

- Built a jig controlled by a python application to quantify the stick slip characteristics of a pump head in an mRNA vaccine manufacturing device.
- Built a custom non-fluid contacting pressure sensor & interface in python to detect fluid fouling rates on critical mRNA drug formulations.

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

Mechanical Design and Test Co-op | Genuine Guide Gear   WINTER 2020

Supported the product development team from the ideation phase to the manufacturing line.

- Carried out over 30 separate tests, built out test reports and analyzed the data to suggest potential product improvements.
- Designed in SOLIDWORKS and built a test jig to carry out binding impact tests more quickly and accurately than previous iterations.

Result: Reliable testing data to improve 5 products, more efficient manufacturing process.

PROJECT EXPERIENCE

Autonomous Collector Robot   SUMMER 2020

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

- Controlled the robot off an STM32 microprocessor programmed in C++, that could find cans, navigate to them, and pick them up without user input.
- Designed and soldered the electronic circuit from scratch, integrating 3 H-bridge motor drivers and 3 sensor systems.
- 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, 1st place team of 16, ability to collect all objects in under half the allotted time, five-star TA rating.

Fentanyl Quantitation Device | Profs. D. Bizzotto, G. Sammis   FALL-WINTER 2021/22

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.

- Designed a user interface in python that coordinated a potentiostat and a syringe pump through ASCII protocol.
- SLA printed a 40µl flow cell that housed an electrode for sensitive electrochemical measurements.

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

OpenCV Autonomous Vehicle Simulation   WINTER 2021

Used OpenCV and ROS in python to train a robot simulated in Gazebo to navigate a parking lot while obeying traffic rules and reading license plate numbers.

- Trained a neural network to identify license plates in a live feed live video.
- Used PID control and imitation learning to stay in a lane and avoid pedestrians and other cars.
- Programmed in a Linux environment using shell scripting while collaborating closely with a partner online with Git.

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

Person Following iRobot   WINTER 2022

- Mounted a depth camera to an iRobot and used colour thresholding and erosion dilation filtering to determine the location of a person in the camera frame.
- Wrote a PID control algorithm in python for the iRobot to navigate to and stay within a specified distance of the person.

Result: iRobot that could follow a human at an fixed distance up to 10km/hr.

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:
Solidworks Associate Cert. in Mechanical Design
40-hour Machine Shop Course
Design for Manufacturing
Fluid Path Design

Electrical:
Digital Logic Design
Circuit Analysis and Debugging
Soldering
RapidHarness

Software:
5000+ lines:
Python – Java
1000+ lines:
C – C++ – Assembly – MATLAB
Familiar:
Latex – VHDL
Other: ROS – OpenCV – Linux

HOBBIES AND INTERESTS

- Cross-country skiing – UBC Ski Team Club Lead
- Marathon Running, 3:21 PB
- Climbing and Mountaineering
- Environmental Conservation
- Ski Touring
- Guitar