Ella Majkic

UBC Engineering Physics

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Summary

Languages: C, C++, Python, Java, HTML/CSS

Tools/Environments: Git, Linux (Xubuntu), ROS, CMake, MATLAB, KiCad, OnShape, ROOT

Education

University of British Columbia *2023 - 2028*

BASc in Engineering Physics, Pursuing Minor in Honours Mathematics GPA: 90%

Awards: *Trek Excellence Scholarship; Dean's Scholar; Dean's List*

Experience

TRIUMF Particle Accelerator *Jan 2025 - May 2025*

Research Assistant, PIONEER Experiment

- Developed and tested Purity Monitor Assembly (PUMA) instrument for rare pion decay experiment
- Created physics simulations of particle behaviour in PUMA using COMSOL Multiphysics and C++
- Wrote scripts in Linux, using GDB for debugging and CMake for build automation
- Designed and built a vacuum system, reaching desired 10^{-6} bar pressure for PUMA testing
- Collected data in vacuum and Argon gas, and performed data analysis using Python and MATLAB

UBC Open Robotics *Sept 2023 - Mar 2025*

Software Engineer, Navigation Subteam

- Programmed autonomous navigation of service robot for international RoboCup@Home competition
- Used ROS to write Python scripts for robot to navigate new dynamic environments
- 3D printed parts designed using OnShape for robot chassis
- Collaborated with large student design team to achieve project goals and deadlines

Projects

ROS Machine Learning Project *Sept 2025 - Present*

- Developing ROS Python scripts for robot to drive in simulated environment using OpenCV
- Training a machine learning model to read clues and solve a puzzle while driving in simulation

Autonomous Competition Robot *May 2025 - Aug 2025*

- Developed, prototyped, and built a fully autonomous robot for ENPH 253 competition
- Designed and soldered robot's electrical systems (motor control, power distribution, microcontroller integration), and developed C++ libraries to interface with advanced sensors
- Robot capabilities included line following, claw item pickup, and object detection/identification

PI Motor Controller *Sept 2024 - Dec 2024*

- Built a circuit capable of setting and controlling the speed of a motor using PI control in hardware
- Worked with digital components including Schmitt Triggers, D-Latches, ripple counters, and more