

Ella Majkic

UBC Engineering Physics

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EDUCATION

University of British Columbia

2023 - 2028

Bachelor of Applied Science in Engineering Physics; Minor in Honours Mathematics

GPA: 90%

Awards: *Trek Excellence Scholarship; Eric P. Newell Award in Engineering; Dean's Scholar; Dean's List*

SKILL SUMMARY

Languages, Frameworks: C, C++, Python, Java, JavaScript, HTML/CSS, TensorFlow, NumPy, Keras

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

EXPERIENCE

TRIUMF Particle Accelerator

Jan 2025 - May 2025

Research Assistant, PIONEER Experiment - Co-op

- Validated Purity Monitor Assembly (PUMA) calibration device for rare pion decay experiment
- Created physics simulations of particle behaviour in PUMA using COMSOL Multiphysics and C++
- Programmed simulations in Linux, using GDB for debugging and CMake for build automation
- Designed a vacuum system achieving ideal 10^{-6} bar pressure, enabling first PUMA calibration tests
- Performed first tests of PUMA calibration device in vacuum and Argon gas
- Conducted robust data analysis of experimental results using MATLAB and Python

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 allowing the robot to navigate new, dynamic environments
- Evaluated and integrated LiDAR sensors for SLAM, balancing precision and cost-performance

PROJECTS

ROS Machine Learning Project

Sept 2025 - Present

- Integrated and trained multiple robust machine learning models from scratch and programmed Python scripts for a ROS robot to autonomously solve a detective puzzle
- Designed a convolutional neural network architecture and trained CNN from custom data-augmented image dataset, achieving 99% validation accuracy and perfect clueboard reading
- Used YOLOv8 and OpenCV for accurate clueboard and NPC detection and avoidance
- Won second place and achieved perfect performance score at the ENPH 353 ML competition

Autonomous Competition Robot

May 2025 - Aug 2025

- Developed, prototyped, and built a fully autonomous robot for ENPH 253 competition
- Designed and soldered electrical systems (motor control, microcontroller integration, sensing)
- Developed 10+ modular libraries using C++ to interface with sensors and execute high-level logic
- Robot capabilities included line following, item pickup, and object detection/identification