Ella Majkic

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EDUCATION

University of British Columbia — Bachelor of Applied Science *2023 - 2028*
Major in Engineering Physics, Minor in Honours Mathematics **GPA: 90%**
Awards: Trek Excellence Scholarship; Eric P. Newell Engineering Award; Dean's Scholar

SKILL SUMMARY

Software: C, C++, Python, Git, Linux, ROS, OpenCV, TensorFlow, MATLAB, Java, JavaScript
Tools: KiCad, OnShape, LaTeX, CMake, Bash/Linux Shell, Apptainer, GDB, Excel, MS Office

EXPERIENCE

TRIUMF Particle Accelerator *Jan 2025 - May 2025*
Research Engineer Co-op, PIONEER Experiment

- Developed and tested Purity Monitor Assembly (PUMA) calibration for rare pion decay experiment
- Simulated electron drift using COMSOL and C++, validating models against experimental data
- Designed and built a vacuum system for PUMA calibration tests, achieving stable 1e-6 bar
- Led first successful PUMA calibration tests, performing statistical analysis in Python and MATLAB
- Implemented RS-232-based data acquisition for vacuum gauges and detector readout in LabVIEW

UBC Open Robotics *Sept 2023 - Mar 2025*
Software Engineer, Navigation Subteam

- Developed autonomous navigation for service robot competing at international RoboCup@Home
- Used Python to implement ROS-based navigation algorithms and SLAM in dynamic environments

PROJECTS [Portfolio]

Simulated Detective Agent *Deep Learning, TensorFlow, ROS, Computer Vision, CNN, Linux*

- Trained and integrated multiple robust machine learning models from scratch to enable a ROS robot agent to autonomously solve a detective-style task in Gazebo simulation
- Designed and trained a convolutional neural network on a custom, augmented 1,000+ image dataset, achieving 99% validation accuracy on alphanumeric character reading
- Used YOLOv8 and OpenCV for dynamic clue board and NPC detection in environment
- Applied imitation learning to train a neural policy achieving perfect driving through course

Autonomous Pet Rescue Robot *C++, Electronics Design, Rapid Prototyping, PCB Assembly*

- Developed, prototyped, and built a fully autonomous robot capable of line following through a multi-terrain course while identifying and retrieving pet stuffies
- Designed and soldered electrical systems for motor control, microcontroller integration, and sensing
- Wrote C++ libraries to interface with 2D LiDAR, H-bridges, phototransistor sensors, and dynamic claw, enabling the robot to perceive and interact with its environment

PID Motor Control *Digital Logic, Electronic Hardware, Circuit Design, Counters, Latches*

- Built a fully hardware-implemented PID controller for active motor speed control
- Processed phototransistor speed outputs using Schmitt triggers, DACs, op-amps, and digital logic