Margaret Lee

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EDUCATION

University of British Columbia | *Vancouver, Canada* *05/2026*
Engineering Physics, BASc
CGPA: 3.95/4.33, Awards: Roy Nodwell Memorial Prize (2025), Dean's Honour List (2020–2025), Trek Excellence Scholarship (2022)

ETH Zürich | *Zürich, Switzerland* *09/2023 – 02/2024*
Mechanical Engineering, International Exchange
Courses: Robot Dynamics, Microrobotics, Space Research and Exploration, Virtual Reality, Distinguished Seminar in Robotics

WORK EXPERIENCE

Red Rabbit Robotics | *Vancouver, Canada* *01/2026 – 04/2026*
Hardware Engineer
- Designed precision grippers for a humanoid robot to manipulate unstructured materials, prototyping across 3D printing, laser-cut acrylic, and CNC-machined aluminum with integrated TPU for compliant, reliable grasping
- Owned the mechanical–software interface by generating URDF models from CAD for ROS simulation, working cross-functionally to validate kinematics, joint limits, and integration requirements prior to hardware build

Formlabs | *Somerville, MA, USA* *09/2025 – 12/2025*
Hardware R&D Print Process Intern
- Reduced per-layer print time by 15% by developing time-optimized Z-stage motion trajectories through analysis of 2,000+ trials with Python, maintaining mechanical stability and print quality
- Analyzed force, temperature, and ultrasonic sensor data to diagnose layer-level failures on next-gen SLA printers, mapping sensor feedback to motor positions to identify mechanical drift and force anomalies
- Characterized debris flow dynamics with OpenCV-based particle tracking to refine Z-stage control parameters

Cyber-Physical Systems Group, University of Konstanz | *Konstanz, Germany* *05/2025 – 08/2025*
Swarm Robotics Researcher (DAAD RISE Scholar)
- Developed autonomous sailboats to contribute to swarm control and limnological research on Lake Constance
- Implemented real-time obstacle avoidance using multimodal sensor fusion (mmWave radar, RGB camera, thermal camera) and classical computer vision in Python on Raspberry Pi

Microchip Technology Inc. | *Burnaby, Canada* *05/2023 – 08/2023*
Product Engineer Co-op
- Designed automated test flows with Python, thermal forcers, and Excel to characterize temperature sensors
- Diagnosed calibration hardware resolution limits causing temperature sensor error; developed a software workaround that recovered full sensor accuracy and prevented multi-month shipment delays for 1,000+ chips
- Collaborated cross-functionally with test engineering, firmware, and marketing teams to debug hardware, deliver client-specific features, and support production readiness

TECHNICAL PROJECTS

UBC Sailbot Design Team *11/2021 – Present*
Polaris, Mechanical Team
- Led mechanical design and manufacturing of the hull for an autonomous sailboat, directing subsystem teams and integrating mechanical, electrical, and software requirements under performance and stability constraints
- Optimized hydrostatic, hydrodynamic, and structural properties using ANSYS FEA and Maxsurf simulations

UBC Engineering Physics Project Lab *09/2024 – 04/2025*
LoRa Pet Tracker
- Designed a wearable PCB integrating LoRa, GPS, and IMU for real-time pet location monitoring via a mobile app
- Built custom C/C++ libraries for drivers and data processing for efficient sensor integration over I2C, SPI, and UART, optimizing for power and range
- Recipient of the Roy Nodwell Memorial Prize for a high professional standard and industry relevance

UBC Psychiatry NINET Lab *09/2023 – 04/2024*
TMS Cobot System
- Developed a 6-DOF motion compensation system using a UR3e cobot, ROS Noetic on Linux, and OptiTrack IR tracking to maintain precise TMS coil alignment with patient's head during treatment
- Implemented spatial transformations (tf2) and inverse kinematics for real-time pose correction
- Integrated force/torque sensing for compliant control and patient safety

TECHNICAL SKILLS

Mechanical	|	SolidWorks, Ansys, Maxsurf, CFRP composites, 3D printing, CNC, Milling machine, Lathe
Electrical	|	Oscilloscope, Signal generator, Soldering, Altium, PCB design/testing
Embedded	|	C, Firmware development, I2C, SPI, UART, Hardware debugging, Sensor integration
Software	|	Python (pandas, SciPy, OpenCV, NumPy, TensorFlow/Keras), MATLAB, ROS, Linux, Git