Margaret Lee

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EDUCATION

The University of British Columbia | Vancouver, Canada   *09/2020 – 04/2026*
Engineering Physics, Bachelor of Applied Science
Awards: Roy Nodwell Memorial Prize (2025), Dean's Honour List (2020-2025), Trek Excellence Scholarship (2022), GPA: 4.00/4.33

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

WORK EXPERIENCE

Cyber-Physical Systems Group, University of Konstanz | Konstanz, Germany   *05/2025 – Present*
Swarm Robotics Research Intern
- Deploying autonomous sailboats to implement swarm control and contribute to limnological research
- Implementing multimodal obstacle detection using an mmWave sensor, fisheye camera, and thermal camera with a Raspberry Pi for real-time obstacle avoidance while sailing on Lake Constance
- Developing classical computer vision Python algorithms for object segmentation and sensor fusion

Microchip Technology Inc. | Burnaby, Canada   *05/2023 – 08/2023*
Product Engineer
- Created test flows with Python scripts, thermal forcers, and Excel to characterize performance of temperature sensors on ethernet PHY chips
- Identified and documented issues with sensor calibration at production, validated new calibration flow, and implemented workaround to make previous products fulfill requirements
- Collaborated with product testing, marketing, and software teams to troubleshoot devices, meet client needs on time, and write internal and client-facing firmware allowing for product launch

Adele Diamond Lab | Vancouver, Canada   *11/2021 – 04/2022, 09/2022 – 04/2023*
Interactive Media Developer
- Programmed games in TypeScript for psychiatric studies to test memory and cognitive abilities in children
- Adapted to new programming language in 2 weeks to optimize a game, increase testing case size by 40%, and improve correctness for nationwide deployment
- Developed and debugged Java and JavaScript programs for numerical sequence generation, data formatting, and file filtering to improve the lab's organization system

PROJECTS

UBC Engineering Physics Project Lab | Vancouver, Canada   *09/2024 – 04/2025*
LoRa Pet Tracker
- Designed a PCB integrating LoRa, GPS, and IMU modules to create a compact, low-power pet tracker with 48+ hours of battery life for real-time location monitoring via mobile app within a communication network
- Developed custom C and C++ libraries for drivers and data processing, optimizing low-power and long-range performance, utilizing I2C and UART protocols for seamless sensor integration
- Awarded the Roy Nodwell Memorial Prize for a high professional standard, original contribution, and industry relevance

UBC Sailbot Design Team | Vancouver, Canada   *11/2021 – Present*
Polaris
- Managed a 10-member team tasked with designing and building the hull and keel of a fully autonomous sailboat to collect oceanic data during weeks-long missions in the Pacific Ocean
- Designed hull, bulkheads, and keel using structural and hydrodynamic analysis with Maxsurf, Ansys, Excel, and SolidWorks ensuring optimal performance and durability for our ocean missions
- Manufactured hull from CFRP sandwich panels using hand layup and vacuum bagging techniques

UBC Department of Psychiatry NINET Lab | Vancouver, Canada   *09/2023 – 04/2024*
Transcranial Magnetic Stimulation (TMS) Cobot System
- Developed a robotic system to increase the efficacy of TMS in treating depression using a UR3e cobot arm, IR camera, and physiological signals to target and stimulate specific points in the brain
- Programmed a cobot arm in Python with ROS Noetic to implement smooth motion tracking using IR camera and force feedback with TF library for transformations between image space and robot space

SKILLS

Mechanical | SolidWorks, Ansys, Maxsurf, FDM 3D printing, Milling machine, Lathe, Composites (CFRP)
Electrical | Oscilloscope, Signal generator, Soldering, Circuit board debugging, Altium
Software | Python, C++, C, MATLAB, TypeScript, Git, OpenCV, TensorFlow, ROS, Linux