Michelle Cao

4th Year UBC Engineering Physics
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Technical Skills

Software Python (OpenCV, TensorFlow, scikit-learn, NumPy, pandas, Matplotlib), C++, Java, C, MATLAB, Git
Computer Windows, Linux
Electrical Altium, Oscilloscope, Function Generator, Soldering, Digital Circuits/Logic

Technical Experience

Rostrum Medical Innovations, Vancouver *May 2022 – Dec 2022*
Engineer Co-op (Part-time), *Sep 2022 – Dec 2022*
Software Engineer Co-op, *May 2022 – Aug 2022*

- Modified firmware and developed Python script for sensor tests
- Programmed robot to ramp up manufacturing speed of single-use patient airway component by 30%
- Flagged and fixed bugs in both the software and firmware, ranging from cosmetic issues in the GUI to bugs in the fault system, leading to increased reliability and safety
- Created, updated, and debugged unit tests for high-risk algorithms
- Updated, reviewed, and performed system test plans for the fault system and main controller

Electrical Sub-team Member – UBC Thunderbots, Vancouver *Sep 2020 – Feb 2022*

- Implemented one-shot pulse functionality in firmware for the kicker and chipper
- Built a Hardware-in-the-loop (HIL) platform to validate feedback sensor hardware performance
- Designed, assembled, and tested the PCB for an emergency stop that interfaces with an Arduino
- Drafted the schematic and PCB for a Wi-Fi breakout board using Altium

AI Content Creator – M2M Tech Inc, Vancouver *Jan 2021 – Aug 2021*

- Created 10+ data analysis and AI-related projects, including image classification projects using CNNs and image generation using GANs, for an AI workshop series
- Authored 15 programming articles under a company account, 9 of which were chosen for further distribution by Medium curators. Popular articles include pieces on Waste and Pokémon Classification
- Developed resources and curriculum for Python and AI courses
- Assisted in delivering Python workshops on complex programming concepts to students ages 8-15

Projects

Machine Learning Robotics Simulation – UBC, Vancouver *Sep 2021 – Dec 2021*

- Developed an agent to navigate a parking lot in Gazebo using Python, ROS, and OpenCV
- Used PID for robot navigation and wrote movement detection software to avoid hitting pedestrians
- Extracted license plates from cars by HSV thresholding, contour detection, and perspective transform
- Constructed a CNN to classify license plate characters utilizing TensorFlow and Keras, and improved model performance and model accuracy to 95% using data augmentation, dropout, and early stopping

Graph and AI Project – UBC, Vancouver *Oct 2020 – Nov 2020*

- Implemented graph traversal algorithms (Dijkstra's, DFS, BFS) to analyze and parse Twitter user dataset
- Designed items for a virtual world via encapsulation and code reuse with subtypes and delegation
- Developed robust testing strategies using the JUnit Test Framework, achieving 88% branch coverage

Education

The University of British Columbia *Sep 2019 - May 2024 (expected)*
BASc, Engineering Physics Major, GPA: 4.00/4.33
Courses: Machine Learning, Linear Algebra, Algorithms and Data Structures, Software Construction, Digital Systems