Michelle Cao

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Technical Skills

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

Technical Experience

Vehicle Integration Software Engineering Intern – Rivian Automotive, Palo Alto *May 2023 – Aug 2023*

- Filtered and processed OTA logs in JSON format using Python to extract SSD version of self driving module.
- Pulled all successful OTA logs of fleet within DataBricks to quantify and visualize the number of vehicles with a specific SSD version and the number of vehicles where SSD version reporting had not been implemented.
- Developed pipeline to validate HD Map patches by adapting HIL bench to support highway assist simulation.
- Using the Rivian Map Access Library API, developed scripts to generate VSE data for all road segments within given latitude and longitude ranges and for all potential paths from a given start coordinate through BFS traversal.
- Created scripts to filter and convert signals in HD Maps test results from PCAP to CSV format using TShark and to further process and evaluate results using pandas.

Software Engineer Co-op - Rostrum Medical Innovations, Vancouver *May 2022 – Dec 2022*

- Created a customized version of the device firmware and developed a Python script for running sensor tests.
- Programmed robot to ramp up manufacturing speed of single-use patient airway component by 30%.
- Flagged and fixed bugs in the software and firmware (ranging from cosmetic issues in the GUI to critical bugs in the fault system) leading to increased reliability and safety.
- Created, updated, and debugged unit tests for high-risk algorithms that control gas delivery.
- Updated, reviewed, and performed system test plans for the fault system and main controller.

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