Evan Tan

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EDUCATION

Monash University Melbourne, Australia
Bachelor of Robotics and Mechatronics Engineering (Upper Second-Class Honors) July 2017 - December 2021

- Specialization in Artificial Intelligence
- **Key Achievements:** 2019/2020 - Engineering Leadership Program, 2018 - 1st place Australasian FSAE Business Presentation
- **Relevant Coursework:** Machine Learning, Deep Learning, Computer Vision, Robotics, Probability & Discrete Mathematics

Monash Motorsport Melbourne, Australia
Autonomous Systems Engineer March 2019 – March 2020

- Streamlined development of Australasian FSAE's first driverless car by analyzing path planning algorithm performance
- Developed perception pipeline for the Junior Project through LiDAR point cloud filtering and cone detection using C++ and ROS
- Improved code maintainability by documenting codebase and refactoring using C++ coding standards

EXPERIENCE

AIDrivers Singapore
Autonomy Engineer March 2021 - May 2021

- Co-led the company's first computer vision safety product and oversaw a team for the machine learning pipeline
- Achieved model accuracy over 80% using instance segmentation and computer vision in Python

AIDrivers Singapore
Autonomy Engineer Intern December 2020 - March 2021

- Successfully automated configuration of development environment using Ansible and Bash scripts
- Improved reliability via containerization of production environment using Docker
- Performed calibration and testing for autonomous sensor suite

SKILLS

Languages: Python, C/C++, MATLAB, JavaScript, HTML, CSS, Solidity
Software: Docker, Ansible, Git, Bash, Unix/Linux, ROS, Gazebo, Raspberry Pi, SolidWorks, Siemens NX
Libraries: PyTorch, NumPy, OpenCV, matplotlib, Jupyter, Shapely

PROJECTS

Deep Reinforcement Learning for Intelligent Traffic Management September 2021 - October 2021

- Achieved 47% lower waiting time and 10% increased average speed by crafting a novel reward function with expert information for traffic intersections in SUMO-RL
- Managed a team to collaboratively share models and training data using TensorBoard, and enforced version control using Git

Neural Networks and Deep Learning July 2021 - November 2021

- Designed custom convolutional neural networks for image classification problems in PyTorch, using additional image transformations to diversify dataset
- Studied occlusion sensitivity on model predictions and visualized the output of convolutional layers

Computer Vision March 2021 — May 2021

- Implemented computer vision algorithms such as image convolutions, canny edge detection with non-maxima suppression, K-means clustering, image stitching, and stereo reconstruction in MATLAB

Teleoperated Pose Estimation Robot July 2020 - November 2020

- Achieved 100% pose estimation accuracy of detected objects with an average of 0.29m discrepancy with max range of 10m, by combining non-linear regression, bounding box size and intrinsic camera properties
- Accelerated model inference speed by 288% for object detection using OpenCV
- Led a team for data annotation and labelling for custom objects and trained model on cloud computing resources
- Created scripts to gather annotation datasets for the machine learning pipeline using for ROS and Gazebo simulator in Python
- Optimized program runtime by 74% through code profiling and analyzing individual components

Autonomous Inverted Pendulum Self-Balancing Robot July 2019 — November 2019

- Extracted key objects in cluttered environments through image processing using OpenCV, allowing robot to autonomously navigate around a track
- Successfully enabled I^2C and UART communication protocols between components by interfacing Raspberry Pi with camera, orientation sensor, and MSP430 micro-controller according to drawn schematics