# Tung Do

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## EDUCATION

**University of Michigan, Ann Arbor** Aug 2023 – May 2025
*Master of Science in Electrical and Computer Engineering, emphasis in Robotics* 4.0/4.0

**California State Polytechnic University, Pomona** Aug 2018 – May 2023
*Bachelor of Science in Electromechanical Systems Engineering Technology – Valedictorian* 3.7/4.0

## PROFESSIONAL EXPERIENCE

**Research Assistant/Embedded Software Engineer at the University of Michigan, Ann Arbor** Ann Arbor, MI
*USV Autonomous Maritime Robots Research with UM Field Robotics Group* Dec 2023 - Present

- Programmed USV's Unified Robot Description Format model with ROS2 Gazebo Garden to do the test simulation.
- Extracted the Marine Hydrodynamics Lab environment from LIDAR data to program the "world" model for acquiring accurate simulation data.
- Developing autonomous marine functions using Python to implement deep learning architecture and collect data.

*TD-Rex Rover Research with ROAHM Lab* Aug 2023 - Present

- Built and programmed embedded control on STM32 VESC and Jetson TX2 board's Linux environment for a second autonomous rover to prepare for multi-agent experiments.
- Migrated the legacy code of ROS Python from the Jetson TX2 board to the Jetson AGX Orin board to increase raw GPU power.
- Solving the compatibility conflict between multiple versions of PyTorch, TensorFlow, CUDA, CUDNN, TensorRT, and NumPy to run smoothly on limited hardware of the Jetson AGX Orin board.
- Optimizing the board's performance with UNet deep learning architecture to increase the semantic segmentation's efficiency.

**Embedded Software Engineer at California State Polytechnic University, Pomona** Pomona, CA
*Unmanned Aerial & Ground Vehicle (UAV & UGV) for Northrop Grumman Collaboration Project* Aug 2022 – May 2023

- Developed Python scripts for the Jetson Nano computer to implement autonomous in-flight control on the Pixhawk controller. Accomplished the Northrop Grumman Demo's requirement for autonomously piloting the UAV in the air at 200 feet from the ground for 10 minutes to scout the test area for wildfires and injured hikers.
- Programmed embedded software using Embedded C with STM32 microcontroller and Raspberry Pi computers. Developed ROS Python to communicate between two Raspberry Pi computers to control the UGV wirelessly in a range of 700ft. Accomplished the Northrop Grumman Demo's requirement for bringing the injured hiker back to the Ground Control Station.

## PROJECTS

**Monocular 3D Object Detection | Team Lead** Oct 2023 – Dec 2023

- Analyzed and trained the MonoCon model with PyTorch, incorporating transfer learning, image augmentation, and pre-processing techniques to enhance visibility and increase detection accuracy and robustness in various weather conditions, especially fog. Our team ranks 2nd place with an Average Precision (AP) value of 25.82, compared to the first team with an AP value of 32.

**Advanced Driver Assistance Systems (ADAS) Simulation | Embedded Software Engineer** Aug 2023 – Dec 2023

- Develop Embedded C code, block diagram, and S-function to implement Manual Control, Adaptive Cruise Control, and Auto-Steering on the NXP S32 board, which controls car simulation in Simulink from a haptic wheel attached to an encoder DC motor.
- Develop embedded C code to connect the car simulation to other car simulations through the CAN network and mutually transmit each other's position to show on the screen.

**Autonomous Robot Competition | Lead Engineer** Aug 2022 – Dec 2022

- Administered weekly meetings to check progress, give feedback, test more than 200 times, and assign new tasks to 6 team members, which helped my team build a robot using C, C++, Python, OpenCV on Raspberry Pi, and STM32 microcontroller that won the 2nd place in the competition and got praised as the most stable performance robot throughout the competition.

**Autonomous/Remote Control Mecanum Wheel Tesla Roadster 1:6 | Project Owner** Jan 2022 – Dec 2022

- Developed remote control features, including signal lights, driving wheel, windshield wiper, backlights, and headlights, on the vehicle with 6 Arduinos communicating with each other wirelessly within a range of 160ft.
- Developed autonomous self-parking and object avoidance features, using C and C++ to research the performance of the Mecanum Wheel system in real-life vehicles. The vehicle can switch between idle, remote control, and autonomous modes.

## SKILLS

- Robotics: ROS, ROS2, Rviz, Gazebo, OpenCV, PyTorch, TensorFlow, CUDA, TensorRT
- Software: C, C++, Python, Linux, Bash/Shell Scripting, Vim, Git, Debugger IDE, Docker, Google Colab, MATLAB, Simulink
- Hardware: Microcontroller, x86, arch, ARM, GPIO, ADC, PWM, Timer, ISR, RTOS, CAN, I2C, SPI, USART, USB
- CAD: SolidWorks, 3D Printing