

# Tung Do

M.Sc. ECE – Robotics candidate | Research Assistant | University of Michigan, Ann Arbor | Seeking Summer 2024 Internship  
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## EDUCATION

<b>University of Michigan, Ann Arbor</b>	Aug 2023 – May 2025
<i>Candidate for Master of Science in Electrical and Computer Engineering, Robotics area</i>	3.83/4.0
<b>California State Polytechnic University, Pomona</b>	Aug 2018 – May 2023
<i>Bachelor of Science, magna cum laude, in Electromechanical Systems Engineering Technology – Valedictorian</i>	3.7/4.0

## PROFESSIONAL EXPERIENCE

<b>Research Assistant/Embedded Software Engineer at the University of Michigan, Ann Arbor</b>	Ann Arbor, MI
<u>Heron Autonomous Maritime Robots Research with UM Field Robotics Group</u>	Dec 2023 - Present
<ul style="list-style-type: none"><li>Set up the simulation environment using Window WSL2 and docker to run ROS2 and Gazebo to do simulation tests with the robot.</li><li>Analyzed code from Virtual RobotX to develop our research.</li></ul>	
<u>TD-Rex Rover Research with ROAHM Lab</u>	Aug 2023 - Present
<ul style="list-style-type: none"><li>Migrated the legacy code of ROS Python from the Jetson TX2 board to the Jetson AGX Orin board. Then, I optimized and modified the legacy code to be compatible with the new version of PyTorch, TensorFlow, CUDA, CUDNN, and NumPy.</li><li>Optimizing the board's performance with UNet deep learning architecture to increase the semantic segmentation's efficiency.</li><li>Implement the algorithm from the simulation into real-world behavior of multi-agent experiments for both rovers.</li><li>Built and programmed embedded control on STM32 VESC and Jetson TX2's Linux environment for a second autonomous rover.</li></ul>	
<b>Embedded Software Engineer</b>	Aug 2022 – May 2023
<u>Unmanned Aerial &amp; Ground Vehicle (UAV &amp; UGV) for Northrop Grumman Collaboration Project</u>	Pomona, CA
<ul style="list-style-type: none"><li>Developed Python scripts on Jetson Nano's Linux environment and uploaded the mission to the Pixhawk. Launched autonomous flights, keeping the UAV in the air at 200 feet from the ground for 10-minute flights.</li><li>Programmed STM32 microcontroller using Embedded C and controlled it using the Raspberry Pi through serial communication. Integrated ROS Python to communicate between two Raspberry Pi to control the UGV wirelessly in a range of 700ft.</li><li>Successfully demo both UAV and UGV to Northrop Grumman.</li></ul>	

## PROJECTS

<b>Monocular 3D Object Detection   Team Lead</b>	Oct 2023 – Dec 2023
<ul style="list-style-type: none"><li>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.</li><li>Our team ranks 2<sup>nd</sup> place with an Average Precision (AP) value of 25.82, compared to the first team with an AP value of 32.</li></ul>	
<b>Advanced Driver Assistance Systems (ADAS) Simulation   Embedded Software Engineer</b>	Aug 2023 – Dec 2023
<ul style="list-style-type: none"><li>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.</li><li>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.</li></ul>	
<b>FPGA Projects   Hardware Engineer</b>	Jan 2023 – May 2023
<ul style="list-style-type: none"><li>Compiling/Developing a complete FPGA development toolchain for MacOS CLI users.</li><li>Developed Verilog code for I2C communication between an FPGA and a current sensor, including a clock signal synchronizing data transfer between devices. Integrated a PMOD display into the system to monitor current readings of the phone under charge.</li></ul>	
<b>Autonomous Robot Competition   Lead Engineer</b>	Aug 2022 – Dec 2022
<ul style="list-style-type: none"><li>Won 2nd place in the competition using C, C++, Python, OpenCV on Raspberry Pi, and STM32 microcontroller.</li><li>The robot was praised as the best and most stable performance throughout the competition. The hardware never had any issues.</li><li>Administered weekly meetings to check progress, give feedback, test more than 200 times, and assign new tasks to 6 team members.</li></ul>	
<b>Autonomous/RC Mecanum Wheel Tesla Roadster 1:6   Project Owner</b>	Jan 2022 – Dec 2022
<ul style="list-style-type: none"><li>Successfully developed wireless control/automatic features, including signal lights, driving wheel, windshield wiper, backlights, and headlights, on the vehicle with 6 Arduinos communicating with each other through NRF24L01 radio modules within a range of 160ft.</li><li>Successfully developed autonomous functions, including self-parking and object avoidance, using C and C++.</li></ul>	

## SKILLS

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