Terry Tao

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| terrytao19@gmail.comEnvelope with solid fill |
| 631-951-7354Receiver with solid fill |
| terrytao19.github.io/portfolio[Earth globe: Americas with solid fill](https://terrytao19.github.io/portfolio/) |

**Objective**

Looking to continue my ca­­reer by applying experience from Ford, MRacing and personal projects. Seeking to further develop my practical knowledge with strong technical mentorship at an autonomy, controls, or AI focused internship opportunity during spring-summer 2024.

**Experience**

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**Education**

**Ford Motor Company** **|** Allen Park, MI May 2023 – August 2023

**ADAS L3 Self Driving Summer Intern**

* Developed a kinematics based model to flag longitudinal Duty of Care (safety envelope) violation events during L3 test drives – to be used in future tests to compare driving policies, safety metric
* Automated testing of ECU interface, debugged at least 3 issues related to CAN message packing, transmitting, gatewaying and receiving – used canalyzer and MATLAB to detect and analyze bugs
* Automated data acquisition and post processing on L3 mule F150 with MATLAB / python scripts
* Learned about how large companies manage project timelines – agile, scrum

**University of Michigan** **|** Ann Arbo­­­r, MI Aug 2022 – April 2025

**B.S. Robotics Engineering**

Autonomous Vehicles - Controls with Disturbances, Applied SLAM, Human-Robot Systems

**Projects and Activities**

(See Portfolio)

[Qr code

Description automatically generated](https://terrytao19.github.io/portfolio/)

(See YouTube) [Qr code

Description automatically generated](https://www.youtube.com/@terrytao19)

**Formula Electric Racing (MRacing) | Autonomous System Director** Sept 2022 - Present

* **Leading the development of the first ever autonomous car at MRacing, responsible for e-brakes, power steering, safety electronics / radio, controls, onboard perception + reasoning**
* **Coordinating with other subteams to ensure consistent or improved levels of functionality, serviceability, mass, and speed, while meeting design requirements specified by rules**
* **Programmed and tuned a SLAM software stack with a ROS architecture, Python and C++**
* **Implemented Patchwork++ algorithm for online LiDAR ground segmentation and developed a custom nearest neighbors based cone clustering algorithm, custom LiDAR-camera fusion**
* **Trained a custom YOLO object model for traffic cone detection and perspective mapping**
* **Managed sponsorships from autonomy focused companies for hardware components**
* **Oversaw acquisition of over $40,000 worth of sensor / computer hardware from sponsors**

**FIRST Robotics (FTC) | Team President** 2018-2022

* **Ranked top 40 internationally at Maryland Tech Invitational – led the team to success**
* **Programmed a triple dead-wheel odometry localizer in Java to perform manipulation tasks fully autonomously and optimized pose trajectories (x, ẋ, ẍ), state machine based proprioception**
* **Iteratively Designed mechanisms in Fusion and Solidworks to manipulate small plastic objects efficiently (grippers, conveyors, linear slides, drivetrain, etc.)**

**Stewart Platform** 2021

* **Designed, built, programmed a 6-DOF parallel manipulator for a regional ISEF research project**
* **Developed kinematics and dynamics control model on microcontroller – embedded C**
* **Implemented IMU acceleration dampening on end effector – applications in offshore platforms**

**Other** 2019-2021

* **Designed and built a custom dual-nozzle 3D printer to print dissolvable support material**
* **Developed silicone tether-less pneumatic artificial muscles for a regional ISEF competition**

**Skills**

**Programming:**

**Java | Python | C++ | OpenCV | ROS | Julia | Git | MATLAB | Pytorch | R | Simulink**

**Software:**

**Solidworks | Siemens NX | Fusion 360 | Onshape | Simplify3D | Blender | YOLO | Supervisely | Canalyzer**

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| **Communication:**  **CAN-HS | CAN-FD | I2C | SPI | UART** | **Fabrication:**  **Fiber laser |CO2 laser | Waterjet | GTAW | FDM | Wire harnessing** |

**Other**

**Michigan Climbing Club** 2022-Present