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/) |

**About**

Looking for internship: spring-summer 2025. Dates available: May 1st 2025 – August 20th 2025.  
TLDR; I am very good at ROS, MATLAB, C++, robot math, and GNSS

**Experience**

**H3D Gamma** **|** Ann Arbor, MI May 2024 – Present

**SLAM Intern**

* Automated multi-sensor calibration using Docker ROS environments
* Evaluated GNSS receiver to determine impact on final map

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

**ADAS L3 Self Driving Intern**

* Developed a kinematics-based model to flag Duty of Care (safety envelope) violation events during L3 test drives – safety metric used to compare different driving policies
* Automated DAQ and post processing to compare CAN logs with GNSS-RTK logs with MATLAB

**Education**

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

**B.S. Robotics Engineering**

Aero AV - Controls with Disturbances, Applied SLAM, AV Startup Class, Pursuing sequential M.S. 2026

**Projects and Activities**(clickable on pdf)

Portfolio [Qr code

Description automatically generated](https://terrytao19.github.io/portfolio/) Youtube [Qr code

Description automatically generated](https://www.youtube.com/@terrytao19)Github [A qr code with a dinosaur

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

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

* **Leading the development of the first ever autonomous car at MRacing, responsible for onboard perception + reasoning, controls, safety electronics / radio, e-brakes, power steering**
* **Using ROS, C++, Python –> Linearized dynamics for EKF state estimator (INS + camera fusion)**
* **Trained custom YOLO model for 3D cone detection + mapping –> converted to TensorRT**
* **Managed sponsorship of over $30,000 worth of sensor / processing hardware from sponsors**

**Personal Startup Research** 2024-Present

* **Developing a PRN code based near-field localization network with the express goal of sub-centimeter accuracy in areas with poor satellite line of sight**
* **Researching current methods used by 5G, A-GPS and D-GPS and combining method**
* **Goal is to pursue this as PhD project then spin it into a startup**

**Ground Effect Plane Controls | Class Project** 2023-Present

* **Used MATLAB and Simulink to create a 6DOF EOM solver with additional ground effect dynamics**
* **Designed decoupled altitude, airspeed, and heading controllers, tuned nested PID controllers**
* **Applied waypoint following, result is a plane capable of navigating any set of waypoints in order, at a setpoint altitude of 5m above water under reasonable wave and wind disturbances**

**SLAM Robot | Class Project** 2023-Present

* **Tuned wheel velocity PID and trajectory following PID, applied differential drive wheel odometry**
* **Applied action model state estimator, LiDAR occupancy grid mapping, particle filter for fusing**
* **Applied A\* path planning and frontier exploration to automatically map new environments**

**Stewart Platform (6DOF parallel manipulator) | Personal Project** 2021

* **Embedded C: position control of end effector using microcontroller – PID, inverse kinematics**
* **IMU lateral acceleration dampening and angular setpoint following on end effector – see website**

**Skills**

**Programming:**

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

**Software:**

**Solidworks | Siemens NX | Fusion 360 | Kernel | YOLO | Jetson OS | Canalyzer | Ubuntu**

**Communication:**

**CAN | I2C | SPI | UART | RTK GNSS (RTCM) | UDP | SSH | TCP Networking**

**Fabrication / Other:**

**Fiber laser |CO2 laser | Waterjet | GTAW | FDM | Wire harnessing | Camera-Lidar extrinsic calibration**