Terry Tao

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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

YOUTUBE

GITHUB

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 | I^{2}C | SPI | UART | RTK GNSS (RTCM) | UDP | SSH | TCP Networking
Fabrication / Other:
Fiber laser |CO2 laser | Waterjet | GTAW | FDM | Wire harnessing | Camera-Lidar extrinsic calibration