Terry Tao

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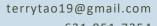631-951-7354
terrytao19.github.io/portfolio

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

Ford Motor Company | ALLEN PARK, MI
ADAS L3 Self Driving Summer Intern   MAY 2023 – AUGUST 2023

- 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

Education

University of Michigan | ANN ARBOR, MI
B.S. Robotics Engineering   AUG 2022 – APRIL 2025

EECS 203 | Discrete Math	MATH 216 | Differential Equations
EECS 280 | Data Structures	ROB 101 | Computational Linear Algebra
ROB 498 | Autonomous Vehicles	ROB 330 | Localization, Mapping and Navigation
ME 240 | Dynamics & Vibrations	ROB 204 | Human-Robot Systems

Projects and Activities

(SEE PORTFOLIO)

(See YouTube)

Formula Electric Racing (MRacing) | Autonomous System Director   SEPT 2022 - PRESENT

- Project manager for 2024 autonomous system: brakes, steering, safety electronics, controls
- Coordinated with other subteams to ensure consistent or improved levels of functionality, serviceability, mass, and speed, while meeting design requirements specified by rules
- Developed 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 ($x, \dot{x}, \ddot{x}$), 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
Communication: **Fabrication:**
CAN-HS | CAN-FD | I^2C | SPI | UART   Fiber laser | CO2 laser | Waterjet | GTAW | FDM | Wire harnessing

Other

Michigan Climbing Club   2022-PRESENT