Terry Tao

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terrytao19.github.io/portfolio

Objective

Looking to begin my career by applying experience from **MRacing**, **FIRST Robotics** and **personal projects**. Seeking to further develop my practical knowledge with **strong technical mentorship** at an **automation**, **controls**, or **systems** focused **internship** opportunity during **spring-summer 2023**.

Education

University of Michigan | Ann Arbor, MI

B.S. Robotics Engineering — Aug 2022 – April 2025

- EECS 203 | Discrete Math
- EECS 280 | Data Structures
- MATH 216 | Differential Equations
- ROB 101 | Computational Linear Algebra

Harborfields High School | Huntington, NY

Advanced Regents Diploma — 2018-2022

- GPA: 4.0
- AP Scholar With Distinction
- SAT – 800 Math, 750 English

Projects and Activities

(See Portfolio)

(See YouTube)

Autonomous Formula Electric Racing (MRacing) — Sept 2022 - Present

- Developed an **Extended Kalman Filter SLAM** algorithm to **map** and **visualize** a pre-recorded lap
- Trained a custom **YOLOv7** object detection model for **cone detection**
- Implemented a **perspective-n-point** algorithm to **extract xy positions** of cone **landmarks**
- Programmed a track **boundary estimator** and track **mid-line regression** algorithm
- Integrated **regressed track radius** and **vehicle velocity** data to build an **overhead map** of the racetrack using a single **monocular** camera
- Compiling source code into **ROS nodes** to be installed on an Nvidia **Jetson**

FIRST Robotics (FTC) — 2018-2022

- Ranked **top 40 internationally** at Maryland Tech Invitational (2022)
- Programmed a triple **dead-wheel odometry localizer** to perform tasks **fully autonomously** and **optimized** velocity **trajectories** to achieve a top 40 individual score
- **CAD** lead, **Co-programmer**, Club **President** (2022)
- **Iteratively Designed** mechanisms in CAD to manipulate small plastic objects efficiently (**grippers**, **conveyors**, **linear slides**, **drivetrain**, etc.)

Stewart Platform — 2021

- Designed a **6-DOF parallel manipulator** for a regional ISEF research project
- Developed **kinematics** and **dynamics** control algorithm
- Implemented **IMU acceleration dampening** on end effector

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
Software: Solidworks | Fusion 360 | Onshape | Simplify3D | Blender | YOLO | Roboflow | MS Office
Spoken Languages: Mandarin (Native)

Leadership

Robotics Club President — 2021-2022
Senior Patrol Leader (Boy Scouts) — 2020-2021

Other Activities

Michigan Climbing Club — 2022-Present
Boy Scouts of America — 2016-2021
Varsity Golf, all-county — 2018-2020