Tyler Harp

Secret Clearance | 914.419.3667 | tharp@andrew.cmu.edu

Portfolio:
www.tharp9.myportfolio.com/

LinkedIn:
www.linkedin.com/in/tylerkharp/

EDUCATION

Carnegie Mellon University, Pittsburgh, PA
Master of Science in Mechanical Engineering/Robotics, May 2024
- Concentration in Robotic and Control Systems - GPA 4.0/4.0

Bachelor of Science in Mechanical Engineering, May 2023
- Additional Major in Robotics - GPA 3.97/4.0

RELEVANT EXPERIENCE

Robotics Engineer | Gecko Robotics | Summer 2023
- Prototyped an Adaptive Extended Kalman Filter within a Python Pandas framework on historical wheel encoder data
- Implemented the algorithm in real-time using C++ and ROS2 within a Docker container and Git repository on a Linux System

Mechatronics Engineer Intern | Advanced Optronics | Spring 2023 (Part-Time)
- Wrote C++ ESP Firmware for reading MEMS capacitive sensors for cochlear implant electrodes
- Created and iterated on custom PCBs for sensor reading hardware
- Wrote a Python client for parsing incoming data and running data analysis and visualization

Electromechanical Engineer Intern | JHU Applied Physics Lab | Summer 2022
- Worked in the Air & Missile Defense/GN&C/Flight Control Prototyping and Testing Group
- Analyzed thermal mitigation techniques with Phase Change Materials for hypersonic missiles
- Designed regeneration box circuitry and mechanical design for high torque load testing

Electromechanical Engineer Intern | Bowler Pons Solution Consultants | Summer 2021
- Prototyped a drone docking station for autonomous deployment using Arduino, stepper motors, load cells, and limit switches
- 3D modeled, fabricated, and performed FEA on a LiDAR sensor mount for versatile installation

PROJECTS

CoralBot Autonomous Coral Reef Surveying Robot | Spring 2023
- Created an autonomous, IMU-guided boat to survey reef health metrics
- Programmed Python architecture on Raspberry Pi to control microcontroller actuation and data collection subsystems

Jenga-Stacking Robotic Arm Manipulation | Fall 2022
- Programmed a robotic arm using MATLAB to stack Jenga blocks in uniform pattern from a feeder
- Worked with topics like Inverse Kinematics, Trajectory Planning, and Homogeneous Transforms

Mobile Robot Programming Challenges | Fall 2021
- Programmed Raspberry Pi based differential drive robot with a LiDAR and motor encoders in MATLAB
- Explored various topics like localization, motion planning, and feed-forward and feed-back controls

C++ Roller Coaster Simulator | Spring 2021
- Developed a C++ Object Oriented 2D Roller Coaster Simulator with graphics and user interface
- Programmed a 4D state-space model of car interaction to create a physics based simulation

ADDITIONAL EXPERIENCE

Army ROTC Cadet, Assistant Head of Planning & Operations | 2020-2023
- Trained to lead 10-40 person teams in task-oriented operations
- In charge of plan execution and optimization for a 200 cadet program

SKILLS

Software: Arduino, C++, Docker, Git, Linux, MATLAB, Python, ROS2, SolidWorks, LabView

Hardware: FDM 3D Printing, Manual Machining, Motor Control Systems, PCB Design, Rapid Prototyping, Soldering

RELEVANT COURSES

C++ for Engineers	Modern Control Theory	Robot Kinematics & Dynamics
Computer Vision for Engineers	Mobile Robot Algorithms	Robotics Systems Engineering Capstone

ACTIVITIES

Student-Athlete, Varsity Soccer Team, Carnegie Mellon | 2019-2023
CERLAB Research Assistant working on the Autonomous Welding Robot | 2021-2022

LEADERSHIP & HONORS

Mortar Board for distinguished scholarship, leadership, and service | 2022-2023
Tau Beta Pi Executive Board Engineering Honor Society | 2021-2023
Pi Tau Sigma Executive Board Mechanical Engineering Honor Society | 2021-2023
Dean's list for all semesters | 2019-2023