Henry Liao

hliao62@gatech.edu
501 6th St NW, Atlanta, GA 30318| (425) 588-9319
https://s-hliao.github.io/portfolio-react/ | https://www.linkedin.com/in/henry-liao-890470198

Education

Georgia Institute of Technology, Atlanta, GA   *August 2021 ~ December 2024*
- BS in Computer Science, GPA: 4.0

Experience

Mars Simulation Software @ NASA JPL Robotics| Intern   *August 2023 – Present*
- Halved the build time for simulation flight software by migrating the build system from CMake to Bazel, reworking dense dependencies, parallelizing code generation, and custom Clang tooling
- Demonstrated modularized run of Perseverance rover simulation software for potential inheritance for future missions

RACER Project @ University of Washington RLL| Undergraduate Research Intern   *May 2023 – August 2023*
- Implemented unsupervised learning algorithms in PyTorch to cluster optimal autonomous driving control sequences
- Developed a CNN to learn mappings of local costmaps to optimal control sampling distributions
- Processed & interpolated control sequences from expert demonstration rosbag data
- Created model predictive control simulation in Jupyter using PyTorch and Matplotlib

AutoRally Project @ Georgia Tech ACDS Lab | Undergraduate Researcher   *June 2022 – Present*
- Established deep optical flow dynamics for pixels of interest in simulated world using Python ML model
- Implemented new objective function for MPPI controller in ROS C++ for high-speed autonomous vehicle driving based on target detection
- Constructed Gazebo world for virtual autonomous driving simulation via image recognition

AGILE Team @ LIDAR Lab | Undergraduate Researcher   *July 2021 – September 2022*
- Created PID control script for multiple drones using ROS C++ and Python
- Employed fiducial marker recognition pipeline for drone following behavior

Projects

MIT Battlecode Competition   *January 2022, January 2023*
- 2023 Finalist, 7th-8th overall out of over 200 graduate and undergraduate teams
- Led development of a bytecode-optimized Java bot which participated in the month-long annual automated Battlecode RTS game AI competition
- Led team in articulating, tracking, and achieving objectives in four successive high-intensity, week-long sprints, finished at over 4K LOC
- Designed and implemented distributed bitwise communications architecture, grid pathing algorithms, robotic state management, and game decision making

MyVFarm App | HackGT '22   *October 2022*
- Created an app for managing a vertical farm in Android Studio which offered Facebook, Google, or custom authentication
- Synced, indexed, and retrieved user profile and data using Firebase NoSQL database

Skills

Programming Proficiency
- Languages: Java, Python, C#, Android Studio, C++, MATLAB
- Packages: ROS, Numpy, PyTorch, OpenCV, Firebase, Git, React
- Operating Systems: Linux (Ubuntu), Windows

Relevant Coursework: Machine Learning / Artificial Intelligence / Robotics and Perception / Computer Organization and Programming / Design and Analysis of Algorithms / Data Structures / Object-Oriented Programming / Differential Equations / Multivariable Calculus / Linear Algebra / Probability and Statistics