Yihan Li

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I'm applying for Ph.D. programs in the field of robotics and control for Fall 2024, with research interests in trajectory generation & motion planning, optimization, and control problems.

Education

Xi'an Jiaotong Univerity,   *September 2020 – July 2024*

Bachelor of Automation Engineering, QianXuesen Honor College

Average Score: 87/100

Main courses: Operations Research, Automatic Control Theory, Machine Learning, Numerical Analysis, Circuit, Analog and Digital Electronic Technology, etc.

University of California, Berkeley   *August 2022 – December 2022*

Visiting Student, EECS

GPA: 3.78/4.0

Selected courses: Signals and Systems (A), Data Structures (A-), Introduction to Control of Unmanned Aerial Vehicles (A-), Introduction to Embedded and Cyber Physical Systems (A-)

Publications

[1] Yifan Zeng*, Suiyi He*, Han Hoang Nguyen, **Yihan Li**, Zhongyu Li, Koushil Sreenath, and Jun Zeng. "i2LQR: Iterative LQR for Iterative Tasks in Dynamic Environments". In: *Accepted by 2023 62nd IEEE Conference on Decision and Control (CDC)* (2023).

Working Manuscripts

[1] **Yihan Li**, Yifan Zeng, Suiyi He, Koushil Sreenath, and Jun Zeng. "A Performance-enhanced Unified Planner-controller Using Predictive Path Integral with Iterative Learning Strategies". In: *To be submitted to IEEE/RSJ International Conference on Intelligent Robots (IROS)* (2024).

[2] Yifan Zeng*, **Yihan Li***, Suiyi He, Koushil Sreenath, and Jun Zeng. "Towards Better Online Maneuver for Autonomous Racing with Multiple Vehicles Through Offline Iterative Learning". In: *In proceeding of IEEE Transactions on Control Systems Technology (TCST)* (2023).

Research Experience

UC Berkeley Hybrid Robotics Group   *September 2022 – Present*
Advisor: Koushil Sreenath @UC Berkeley

- Proposed a novel joint strategy for planner and controller called Iterative Learned Iterative Linear Quadratic Regulator (i2LQR) suitable for dynamic environments and applied i2LQR in random and dynamic car racing scenarios in the follow-up work, which outperforms the state of the art Learning Model Predictive Control (LMPC) algorithm.

- Achieved iterative Model Predictive Path Integral (MPPI) control with regrouping and resample strategy, enabling the algorithm to automatically work out the overtaking tendency of static obstacles in car racing scenarios and bridging the planning process with trajectory generation, in which iterative MPPI acts as a combination of scenario generator, planner and controller.

2022 China Robot Competition   *April 2022*
Advisor: Tonghui Wu @Xi'an Jiaotong University

Core team member in agricultural water-saving irrigation competition track. Achieved the basic motion control of the intelligent car on ROS and the application and test of SLAM for localization.

National Undergraduate Research Innovative Training Program *May 2021 – May 2022*
Advisor: Yijun Yang @Xi'an Jiaotong university
Team member, took part in the work on Fast Boolean Operation of Triangular Network Model Based on GPU.

Projects

Intelligent Agricultural Irrigating Car *April 2022*
2022 China Robot Competition Project. An intelligent agricultural irrigation car with functions of automatic environment mapping, target detection and recognization, precise self-localization and motion control.

Hexapod Robot *November 2022*
Berkeley EECS 149/249 (Introduction to Embedded and Cyber Physical Systems) Course Project. A hexapod robot with basic motion control and functions including obstacle avoidance, object tracking and bluetooth control.

Awards

Third prize in 2022 China Robot Competition *April 2022*
Xi'an Jiaotong University Scholarship *October 2021*
QianXuesen Honor College Outstanding Student of the Year *October 2021*

Professional Service

Reviewer for International Conference on Robotics and Automation (ICRA) *2023*

Skills

Programming Language: C/C++, Python, Java, Matlab
Software: ROS, Git, Latex, MobaXterm
Hardware: Arduino, Raspberry Pi