Hao Luan

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Personal Homepage: https://edmundluan.github.io/

Education

Harbin Institute of Technology, Shenzhen — Shenzhen, CHN
Bachelor of Engineering in Automation — *Sep. 2017 – Jun. 2021 (expected)*

- Overall GPA: 3.79/4.00
- Major GPA: 3.74/4.00

Research Experience

Undergraduate Research Assistant — Oct. 2019 – Present
MAS Lab, HIT Shenzhen — Shenzhen, CHN
Supervisor: Assoc. Prof. Jie Mei — *School of Mechanical Engineering and Automation, HITSZ*

- Proposed a consensus control framework addressing the distributed consensus problem for multi-agent systems (MASs) with time-varying state constraints, uncertainties, and disturbances under switching directed topologies.
- Presented distributed consensus algorithms, theoretical proof of convergence, numerical simulations, and physical experiments for validation.

Visiting Research Student — Nov. 2015 – May 2016
Robotic Laboratory, Sun Yat-sen University — Guangzhou, CHN
Supervisor: Prof. Hui Cheng — *School of Data and Computer Science, SYSU*

- Optimized and implemented a centralized offline task-allocation algorithm for multi-robot systems based on the Ant Colony System.

Publications

- **H. Luan**, J. Mei, H. Yu, and G. Ma, "Distributed constrained consensus of multi-agent systems with uncertainties and disturbances under switching directed graphs", *IEEE Transactions on Neural Networks and Learning Systems (submitted)*, 2021.

Honors & Awards

Honorable Mention in the Mathematical Contest In Modeling(MCM)	2020
Undergraduate Academic Merit Scholarship	2018, 2019, 2020
Third Prize in the National Olympiad in Informatics in Provinces (Guangdong)	2016
Honor Roll in the American Mathematics Contest(AMC) 12, and invited to the AIME	2016

Selected Projects

Unmanned Palletizing Using Six-axis Robot Arm — Apr. 2020 – Jul. 2020
Advisor: Prof. Yunjiang Lou, Associate Dean

- Designed robot manipulator control algorithms using forward and inverse kinematics and LFPB trajectory planning. Built position management system to add, store, modify and delete position information of objects.
- Achieved fast palletizing motions with high accuracy.

Vision-Based Auto Parking — Oct. 2019 – Dec. 2019
Advisor: Prof. Haoyao Chen

- Identified a specific parking sign by adopting filtering, color segmentation, perspective transformation, Canny edge detection and rectangle envelope.

- Designed an online close-loop controller to control angular and linear velocities of an autonomous car, by employing multiple control schemes and using image information of the detected parking sign.
- Integrated searching, detection, and motion control on ROS and successfully realized fully automated parking.

Skills

Languages: English, Mandarin Chinese, Cantonese
Programming: C/C++, Julia, Pascal, Python
Tools: Git, MATLAB, Wolfram Mathematica, Microsoft Office, ROS, VS Code, LaTeX

Extracurricular Activities

Soccer player on the HITSZ Student Soccer Team 2017 – 2021

Volunteer services on 2018 Hong Kong Universities and Colleges Forum at HITSZ 2018