YuanHang Zhang

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Education

Shanghai Jiao Tong University **Sep. 2019 – Jun. 2023**

***Major**: Automation, **Grade**: 88.5/100, **Rank**: 21/85* *Shanghai, China*

- The SJTU Outstanding Graduate(top 10%), June 2023
- The SJTU Merit Student(top 3%), October 2021
- The SJTU Academic Progress Scholarship,2021
- The SJTU Merit Scholarship, 2020

Relevant Coursework

- Robotics(**A**)
- Computer Vision(**A+**)
- Mobile Robot(**A**)
- Motion Control System(**A+**)
- Pattern Recognition(**A**)
- Modern Control Theory(**A+**)

Research & Projects

Perception-constrained Visual Servoing Based NMPC for Quadrotor Flight **Mar. 2023 – Jun. 2023**

Undergraduate Project(A grade) Advisor: Prof. Hesheng Wang

- Addressed the Perception-Constrain problem in Image-Based Visual Servo Control (IBVS) for autonomous flight.
- Proposed a NMPC approach with a quadrotor dynamics model, incorporating visual feature constraints for enhanced control performance.
- Evaluated scheme's robustness through precise position tracking and smooth traversal of multiple rings in simulations and physical experiments.

Global Localization Algorithm Based on Field-side Barcode **Mar. 2021 – Apr. 2022**

Student Innovation and Entrepreneurship Project

- Identified barcodes through image gradient filtering.
- Utilized a fuzzy matching algorithm to accurately match barcodes.
- Applied coordinate system transformations in monocular vision to deduce camera external parameters for precise machine localization.

Competitions

UAV Intelligent Perception Technology Competition | Team Leader **Sep. 2022 – Nov. 2022**

*National Third Prize(**Top 10%**)*

- Implemented SE(3) controller for quadrotor control within the PX4-Autopilot environment.
- Deployed YOLOv5 with TensorRT for object detection and implemented P3P for pose estimation.
- Utilized RAPIDDS to generate optimized and collision-free trajectories for quadrotor navigation.

National University IOT Design Competition | Team Leader **Jun. 2022 – Sep. 2022**

*National First Prize & Harmony Innovation Award(**Top 1%**)*

- Designed 'HarClass' utilizing the distributed features of HarmonyOS.
- Leveraged Bearpi for environment awareness and formulated custom communication protocols for cloud connectivity.
- Developed a data visualization website using data received from the cloud server.

National University ICT Competition (Innovation Track) | Team Leader **Sep. 2021 – Jan. 2022**

*National Second Prize(**Top 5%**)*

- Conducted data set collection for edge devices via Socket technology.
- Utilized the MindSpore framework and Ascend chip for target detection and controlling model deployment.

National University Unmanned Vehicle Competition(Huawei) | Team Leader **Jun. 2021 – Sep. 2021**

*National Top 20(**Top 10%**)*

- Deployed YOLOv3 and YOLOv5 for target detection in TensorFlow on HiLens hardware.
- Integrated visual, distance sensors, and LIDAR data for decision and planning.

Leadership

SJTU VEX Club **Mar. 2020 – Jan. 2023**

Program Team Leader *Shanghai Jiao Tong University*

- Managed a team of 10+ undergraduates to develop algorithms for custom vehicle applications, achieving one of the highest program level among Chinese universities as well as winning lots of national champions(VEX-U track).
- Led the development of SJTU VEX's AI automation system, including full-field positioning, visual recognition, and communication modules and presented results to universities and IFI Chinese representative.

Miscellaneous

Languages: Mandarin(native), English(TOEFL-107)
Programming Languages: C++, Python, Java, Matlab
Technologies/Frameworks: ROS, OpenCV, Pytorch, Tensorflow