Shan, Huang

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EDUCATION

University of California, San Diego Sept.2018 - Jan.2020(expected)
Master of Electrical and Computer Engineering (Intelligent Systems, Robotics and Control) | *GPA: 3.62*

The Hong Kong University of Science and Technology Sept.2014 - Jun.2018
B.Eng in Computer Engineering, Minor in Robotics | *GPA: 3.7*
Honors: Dean's List, Scholarship for Continuing Undergraduate Students, Zhiyuan Scholarship-China Soong Ching Ling Foundation

PERSONAL STRENGTH

PROGRAMMING: C/C++, Python, Java, MATLAB, R, SQL, HTML, ROS, PyTorch, TensorFlow
SOFTWARE: SolidWorks, Keil, Capture, Photoshop, Microsoft Office
COURSES: OOP, Algorithm, Control Theory, Machine Learning, Image Processing, Computer Vision, Parameter Estimation
LANGUAGE: Mandarin (Native), Cantonese (Basic), English (Professional working proficiency)

RESEARCH EXPERIENCE

AUTONOMOUS DRIVING VEHICLE PLATFORM – TRITON TOWN
Summer Research Internship Project, supervised by Prof. Jack Silberman
In ECE Department at UCSD Apr.2019 - Sep.2019
Abstract: *Built integrated autonomous driving platform for education and research purposes.*

- Designed vehicle suitable for the platform based on real RC car models.
- Built indoor positioning system using camera and apriltags to localize target vehicles.
- Constructed interactive town track system for the vehicle.
- Finished control framework for users to remotely test individual autonomous driving algorithm.

SIMUTANEOUS LOCALIZATION AND MAPPING
Graduate Course Project, supervised by Prof. Nikolay Atanasov
In ECE Department at UCSD Mar.2019 - May.2019
Abstract: *Implemented SLAM and texture mapping using various sensor measurements from a differential-drive robot.*

- Used IMU, odometry and laser measurements to localize the robot and build a 2-D occupancy grid map.
- Textured the floor of 2-D map using RGBD measurements.
- Performed prediction and update step of localization based on particle filter algorithm.

IMAGE SEGMENTATION BASED ON BAYESIAN ESTIMATION
Gradeuate Course Project, supervised by Prof. Nuno Vasconcelos
In ECE Department at UCSD Oct.2018 - Dec.2018
Abstract: *Solved a pattern recognition problem to segment a "cheetah" image in statistical ways.*

- Modeled the observation space with single, multi-variate and mixed gaussian distribution.
- Performed the parameter estimation using various Bayesian estimator like MLE, MAP and EM.
- Classified the image pixels based on Bayesian decision rule and analyzed the results of each segmentation method.

REAL-TIME RECOMMENDATION SYSTEM FOR MOBILE AUGMENTED REALITY ECOSYSTEMS
Undergraduate Research Project, supervised by Prof. Pan Hui
In SyMLab at HKUST Feb.2017 - Aug.2017
Abstract: *Attended the ReadMe project, an Android based augment reality application providing real-time suggestions according to various information of the user, helped construct its framework.*

- Designed and developed the system user interface with JAVA.
- Proposed and implemented augmented reality algorithm based on user information, such as GPS and direction.
- Combined built-in sensors of smart phone with camera to provide visual aids for users.

QUADCOPTER WITH LASER RADAR
Undergraduate Research Project, supervised by Prof. Kam Tim WOO
In Robotics Institute at HKUST Feb.2017 - Jun.2017
Abstract: *Developed a quadcopter based on STM32F4 MCU with 2D mapping function using RPLIDAR.*

- Optimized flying control based on PID.
- Used ultrasound to gather height information and added constant height mode.
- Completed ground station design based on Android application to interact with quadcopter via Bluetooth.
- Added a laser radar to generate a 2D map of surroundings of quadcopter.

ACTIVITIES

ROBOMASTERS COMPETITION Jan.2017 - Jul.2017
Robot competition organized by DJI

- Completed mechanical design of hero robot chassis.
- Helped with embedded system control of gimbal.
- Involved in computer vision task to equip the soldier robot with auto-aiming function.