JACK YI YANG

+1(909)660-0016 | jmuyiyang@gmail.com | jyiyang.github.io

EDUCATION

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
Master of Science in Robotics, QPA: 3.89/4.33 — August 2019
Thesis: *Surfel-based RGB-D Reconstruction and SLAM with Global and Local Consistency*

Harvey Mudd College — Claremont, CA
Bachelor of Science in Engineering, GPA: 3.79/4.00 — May 2017

Relevant Coursework

• Robot Localization and Mapping • Geometry-based 3D Computer Vision • Machine Learning • Robot Manipulation • Discrete Differential Geometry • Signal and Control • Embedded Systems

RESEARCH EXPERIENCE

Robot Perception Lab, Robotics Institute, Carnegie Mellon University, — Fall 2017-Fall 2019
Advisor: Prof. Michael Kaess

- Developed state-of-the-art dense mapping, visual odometry, and SLAM algorithms.
- Conducted research that focused on improving the quality of dense 3D map reconstructed from RGB-D camera, lidar, and IMU.

Lab for Autonomous and Intelligent Robotics, Harvey Mudd College — Fall 2014-Spring 2017
Advisor: Prof. Christopher Clark

- Designed and implemented a 3D traffic simulation environment in multi-robot motion planning.
- Built a multi-robot platform for testing and verification.

PUBLICATIONS

Surfel-Based Dense RGB-D Reconstruction with Global and Local Consistency

- IEEE International Conference on Robotics and Automation (ICRA) 2019, **Yi Yang**, Wei Dong, and Michael Kaess

GPU Accelerated Robust Scene Reconstruction

- IEEE International Conference on Robots and Systems (IROS) 2019, Wei Dong, Jaesik Park, **Yi Yang**, and Michael Kaess

WORK EXPERIENCE

SLAM Engineer, *Phiar Technologies, Inc.*, Redwood City, CA — Fall 2019-Present

- Engineering kinematic, feature correspondence, filtering, and optimization of the visual inertial odometry system using camera, IMU, GPS and vehicle odometer.
- Developing systems for real-time AR experience on resource-constrained mobile devices.
- Beta-launched the first AR navigation app on iOS.

Robotics Engineer, *Zenith Robotics*, Hong Kong SAR, China — Summer 2017

- Developed aerial camera localization and planning systems using DJI Phantom 4 drones.

Software Engineer Intern, *Apple Inc.*, Cupertino, CA — Summer 2016

- Developed systems for gesture state estimation from inertial sensors on wearable devices.

SELECTED PROJECTS

Improving Feature Extraction in SLAM using Semantic Segmentation — Spring 2018

- Implemented an ORB feature weighting scheme in bundle adjustment using semantic information.
- Improved the absolute trajectory error on KITTI dataset by 5% comparing to monocular ORB-SLAM.

Rooftop Inspection: Mapping and Damage Detection — Fall 2017 - Fall 2018
Sponsored by American Family Insurance. 4-person team.

- Applied dense mapping algorithms to construct accurate 3D map of the rooftops using flying drones.

- Improved visual odometry tracking in area with repeated texture by combining photometric and geometric information.

Rapid Bottle Thickness Detection on Production Line Spring 2016

Sponsored by Niagara Bottling LLC. 7-person team.

- Implemented a driver program to efficiently extract IR image from a high speed camera.
- Designed a fast image processing algorithm for production line bottle edge and thickness detection.

SKILLS

- **Programming Languages:** C/C++, Python, Matlab, Swift
- **Tools:** ROS, OpenCV, CUDA, OpenGL, NumPy
- **Languages:** Fluent in English, Chinese, conversational in Japanese