JACK YI YANG

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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

WORK EXPERIENCE

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

- Leading the effort in developing sensor fusion framework with various sensor sources, such as monocular camera, IMU, GPS and the vehicle odometer.
- Calibrating the sensor characteristics and implementing an optimization-based 6-DoF state estimator.
- Developing a real-time AR rendering on resource-constrained iOS device using Metal and SceneKit.
- Architected a new sensor data pipeline with synchronization through UDP network on vehicle.
- Beta-launched the first AR navigation app on iOS.

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

- Developed a proof-of-concept system for gesture estimation using inertial sensors on wearable device.
- Integrated the gesture estimator to a console game and use human motions as game controller inputs.
- Implemented a synchronization scheme for sensors with different clocks over LAN while reducing latency.

RESEARCH EXPERIENCE

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

- Conducted research on improving the quality of 3D reconstruction in dense SLAM systems. Sensors include RGB-D & stereo camera, lidar, and IMU.
- Benchmarked various 3D primitives and rendering methods, examples include mesh, voxel, surfel, point cloud, and signed distance function.
- Developed a fast GPU-based visual odometry using the iterative closest point method.
- Improved the visual odometry tracking by combining the dense optical flow and depth information.
- Proposed and implemented a new deformation-based model correction algorithm on GPU for dense SLAM systems.

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

- Implemented a 3D traffic simulation environment using ROS for the multi-robot motion planning problem.
- Deployed the OptiTrack positioning system for multi-robot experiments and ground truth collection.

PUBLICATIONS

Surfel-Based Dense RGB-D Reconstruction with Global and Local Consistency
International Conference on Robotics and Automation (ICRA) 2019, **Yi Yang**, Wei Dong, and Michael Kaess
GPU Accelerated Robust Scene Reconstruction
International Conference on Robots and Systems (IROS) 2019, Wei Dong, Jaesik Park, **Yi Yang**, and Michael Kaess

SKILLS

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