Peiliang Li

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Research Interests

3D Object Detection and Motion Tracking, Visual-inertial State Estimation, Autonomous Perception, Augmented Reality, Computer Vision, Deep Learning

Education

Hong Kong University of Science and Technology, Hong Kong, China

Ph.D., Electronic & Computer Engineering, Sep 2016 - Jun 2020 (*Expected*)

- Advisors: Prof. Shaojie Shen

University of Science and Technology of China, Hefei, China

B.S., Electronics Science and Technology, Sep 2012 - Jun 2016

- Thesis of Bachelor: Design and Implementation of Visual-Inertial Odometry
- Advisor: Prof. Bensheng Qiu, Wei Lu

Teaching & Internship

AI Research Intern Apr 2019 - Aug 2019

Apple Inc, Bay Area, US
AI Research Team

Teaching Assistant Mar 2017 - Jun 2017 & Sep 2017 - Dec 201

Hong Kong University of Science and Technology
ELEC 1110: Introduction to Electronic Robot Design,
ELEC 5660: Introduction to Aerial Robotics

Algorithm Intern Jul 2015 to Aug 2016

DJI Ltd, Shenzhen
Moving object estimation and following, GPS-IMU fusion on mobile phone

Research Experience

3D Object Detection and Motion Tracking Apr 2017 - Present

Exploring optimal ways of combining deep learning with 3D geometry to enable accurate and robust 3D object detection and motion estimation.

Developing general 3D detection frameworks using adaptive sensor inputs (monocular, stereo, LiDAR, and multi-sensor fusion).

Visual-inertial State Estimation (VINS) Sep 2016 - Jul 2017

Fusing the monocular camera, IMU, and loop information in a tightly-coupled manner, VINS achieves accurate and low drift 6-DoF state estimation, which boosts multiple applications (UAV navigation, Augmented Reality).

Publications & Preprint

1. **Peiliang Li**, Siqi Liu, Shaojie Shen. "Multi-3D: a General and Flexible 3D Object Estimation Framework for Monocular, Stereo and Point Cloud" *In Submission.*
2. **Peiliang Li**, Xiaozhi Chen, Shaojie Shen. "Stereo R-CNN based 3D Object Detection for Autonomous Driving." *In IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Long Beach, California, Jun, 2019.
3. **Peiliang Li**, Tong Qin, Shaojie Shen. "Stereo Vision-based Semantic 3D Object and Ego-motion Tracking for Autonomous Driving." *In Proc. of the European Conference on Computer Vision (ECCV)*, Munich, Germany, Sep, 2018.

4. Tong Qin, **Peiliang Li**, Shaojie Shen. "VINS-Mono: a Robust and Versatile Monocular Visual-Inertial State Estimator." *IEEE Transactions on Robotics (TR-O 2018)* **Best Paper Honorable Mention**.

5. Tong Qin, **Peiliang Li**, Shaojie Shen. "Relocalization, global optimization and map merging for monocular visual-inertial SLAM." *In Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, May 2018.

6. **Peiliang Li**, Tong Qin, Botao Hu, Fengyuan Zhu, Shaojie Shen. "Monocular Visual-inertial State Estimation for Mobile Augmented Reality." *In Proc. of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*, Nantes, France, Oct 2017.

Public Software

Stereo R-CNN: `https://github.com/HKUST-Aerial-Robotics/Stereo-RCNN` (300+ Stars)
VINS-Fusion: `https://github.com/HKUST-Aerial-Robotics/VINS-Fusion` (600+ Stars)
VINS-Mono: `https://github.com/HKUST-Aerial-Robotics/VINS-Mono` (1700+ Stars)
VINS-Mobile: `https://github.com/HKUST-Aerial-Robotics/VINS-Mobile` (800+ Stars)

Awards

Research Awards
- Honorable Mention for the 2018 IEEE T-RO Best Paper award — Apr 2019

Travel Awards
- ECCV conference, Munich, Germany. — Sep 2018
- ISMAR conference, Nantes, France. — Oct 2017

Student Awards — University of Science and Technology of China
- The Best Creative Award for DJI Developer Challenge — Feb 2015
- The first Prize for USTC Electric Design Game — Oct 2014
- "Guosheng Sun" Leadership Scholarship — Sep 2014
- "Li Liu" Leadership Scholarship — Sep 2013
- The Runner-Up for USTC RoboGame — Oct 2013