Qinghai Liao (July, 2019)

CONTACT INFORMATION

Robotics and Multiperception Lab
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Hong Kong University of Science and Technology
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RESEARCH INTERESTS

Autonomous Driving, Robotics and Autonomous systems, Simultaneous Localization and Mapping (SLAM), Self-Calibration, Computer vision, Point-cloud, All-terrain mobile robots,Service robots, Networked Robotics Distributed resource allocation,Machine Learning

EDUCATION

Hong Kong University of Science and Technology, Hong Kong SAR, China P.R.

Ph.D. academic Study at Robotics and Multiperception Lab, HKUST, February 2017 to present

- Research Topic: *Autonomous Driving, Extrinsic Calibration, Sensor Fusion, Mobile Robotics*
- Adviser: Dr. Ming Liu

City University of Hong Kong, Hong Kong SAR, China P.R.

Ph.D. academic Study at Robotics and Multiperception Lab, CityU, September 2015 to February 2017

- Research Topic: *Mobile Robotics, Autonomous Driving, Extrinsic Calibration*
- Adviser: Dr. Ming Liu

Huazhong University of Science and Technology, Wuhan, China P.R.

Bachelor at the Mechanical Design Manufacture and Automation, September 2011 to July 2015

- GPA: 3.82/4.0
- Thesis Topic: *Design of shock absorber for heavy-duty CNC deep hole boring machine*
- Adviser: Professor Jingming Xie and Mr. Facheng He
- Area of Study: Mechanical Design, Mechanical Manufacturing, Control theory and engineering

EXPERIENCE

September 2017 to present, CTO at Shenzhen Unity Drive Innovation Technology Co., Ltd, Shenzhen, China
Report to: CEO Subordinates: ∼50
Achievement: Develop low-speed(<40 km/h) autonomous driving system including:

- Autonomous vehicle: 3 generation mini cargo truck, 1 sightseeing car, 1 indoor mobile robot
- Autonomous driving control system: HD mapping, Localization, Perception, Path Planning, Control, etc

- Autonoumous driving cloud management service: Autonoumous vehicle and task management, remote monitor, remote driving, etc.
- Autonomous driving related sensor system: LiDAR-Camera-IMU integrated sensor device, GNSS/INS device

Jan 2016 to Oct 2016, **Technician Support & Team Member** of B-Free and RAM Lab joint team for Cybathlon, Zurich.
Report to: Supervisor Subordinates: 0
Achievement: Provided algorithm and hardware to enhance the electric wheelchair for the competition.

June 2015 to Aug 2015, **Embedded Software Development Engineer** of QKM Technology Co., Ltd. Dongguan, China
Report to: Department Director Subordinates: 0
Achievement: Implemented Modbus Client on BeagleBone Black

June 2014 to July 2014, **Sensor Engineer** of SZ DJI Technology Co., Ltd. Shenzhen, China
Report to: Team Leader Subordinates: 0
Achievement: Performed the survey and performance test of consumer grade IMU sensor

September 2012 to April 2015, **Team Leader** of ThinkFly Studio (student team) of HUST
Report to: Mentor Subordinates: ∼15
Achievement: Developed Quadcopter fight control hardware and software

Awards

Contest Awards

- 5th in Powered Wheelchair Race of first Cybathlon Competition (full scores), Zurich, Switzerland Oct 2016
- Second Prize in the National College Mechanical Innovation Competition Division of Hubei, Hubei May 2014
- First Prize in the China Quality Sports of Robot Competition Division of Hubei in Quadcopter Program, Hubei Dec 2013
- Second Prize in the 2nd National Marine Vehicle Design and Manufacture Competition, Harbin July 2013

Student Awards

- Best Support Award of RAM Lab Nov 2017
- Best Service Award of RAM Lab Dec 2016
- Scholarship of Academic Excellence Dec 2013
- Most Improved Scholarship Jan 2013

Conference Publications

[1] Jianhao Jiao, Yang Yu, **Qinghai Liao**, Haoyang Ye, Ming Liu, Automatic Calibration of Multiple 3D LiDARs in Outdoor Environment, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2019), November 4-8, 2019, Macau, China

[2] Jianhao Jiao*, **Qinghai Liao***, Yilong Zhu, Tianyu Liu, Yang Yu, Rui Fan, Lujia Wang, Ming Liu, A Novel Dual-Lidar Calibration Algorithm Using Planar Surfaces, 2019 IEEE Intelligent Vehicles Symposium (IEEE-IV), June 9-12, 2019, Paris, France

[3] Zhengyong Chen, **Qinghai Liao**, Zhe Wang, Yang Liu, Ming Liu, Image Detector Based Automatic 3D Data Labeling and Training for Vehicle Detection on Point Cloud, 2019 IEEE Intelligent Vehicles Symposium (IEEE-IV), June 9-12, 2019, Paris, France

[4] **Qinghai Liao**, Zhenyong Chen, Yang Liu, Zhe Wang, Ming Liu, Extrinsic Calibration of Lidar and Camera with Polygon, 2018 IEEE International Conference on Robotics and Biomimetics(ROBIO 2018), Kuala Lumpur, Malaysia, December 12-15 2018

[5] Zhe Wang, Yang Liu, **Qinghai Liao**, Haoyang Ye, Ming Liu, Characterization of a RS-LiDAR for 3D Perception, The 8th IEEE-CYBER, Tianjin, China, July 19-23 2018

[6] Xudong Lin, Xian Chen, Wenchong Zhang, Tianying Sun, Peilin Fang, **Qinghai Liao**, Xi Chen, Jufang He, Ming Liu, Feng Wang, and Peng Shi, Core-Shell-Shell Upconversion Nanoparticles with Enhanced Emission for Wireless Optogenetic Inhibition, Nano Letters, v.18, (2), Febrary 2018, p. 948-956, 2018

[7] Ying Wang, Xudong Lin, Xi Chen, Xian Chen, Zhen Xu, Wenchong Zhang, **Qinghai Liao**, Xin Duan, Xin Wang, Ming Liu, Feng Wang, Jufang He, Peng Shi,Biomaterials, v. 142, October 2017, p.136-148, 2017

[8] **Qinghai Liao**, Ming Liu, Wenchong Zhang, Peng Shi,Visual Tracking and Servoing System for Experiment of Optogenetic Control of Brain Activity,Computer Vision Systems - Lecture Notes in Computer Science.Springer, Sep/2017, 2017

[9] **Qinghai Liao**, Ming Liu, Peng Shi and Wencong Zhang, A Flexible Object Tracking System for Planary Motion, *IEEE International Conference on Real-time Computing and Robotics*, RCAR 2016, June 6-10, 2016, Angkor Wat, Cambodia

Teaching Activities

2018.Semester B: HKUST Teaching Assistant: ELEC3300 - Introduction to Embedded Systems

2017.Semester A: HKUST Teaching Assistant: ELEC4010K - Machine Learning and Information Processing for Robotic Perception

2016.Semester A: CityU Teaching Assistant: MBE2029 - Electrical and Electronic Principles

Professional Service

Referee Service

- *IEEE International Conference on Robotics and Automation (ICRA)*, 2017,2018
- *International Journal of Advanced Robotic Systems*, 2016, 2017
- *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016, 2017, 2018
- *International Conference on Computer Vision Systems (ICVS)*, 2017
- *IEEE International Conference on Real-time Computing and Robotics(RCAR)*, 2016

Conference Service

- Secretary and Program Committee Member of 2017 IEEE International Conference on Computer Vision System (ICVS 2017), Shenzhen, July 2017
- Program Committee Member of 2016 IEEE International Conference on Real-time Computing and Robotics(RCAR), Angkor Wat, June 2016

Professional Memberships

Institute for Electrical and Electronics Engineers (IEEE), RAS Technical Committee on Multi-Robot Systems, 2016–present
Institute for Electrical and Electronics Engineers (IEEE), Young Professionals, 2015–present
Institute for Electrical and Electronics Engineers (IEEE), Student Member, 2015–present

Professional Skills

Programming

- C(embedded development), C++, Python, Matlab

Frameworks

- ROS, VRE-P

References

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