

ZHENG, Fan 郑帆

✉ fzheng@link.cuhk.edu.hk 🌐 fzheng.me

Experience

2015-2016 Shenzhen & Hong Kong, China

VisionNav Robotics, Internship on SLAM

- Develop a real-time SLAM system for localizing an AGV in indoor industrial environments, by fusing odometry and monocular vision
- Achieve ~10cm localization accuracy

2013 Wuxi, China

Atlas Copco (Wuxi), Internship on Robotics

- Develop a 6-DoF robotic arm prototype for deburring edges of air compressor rotors
- Complete a prototype whose end-effector can move along a desired trajectory

Projects

2012-2014 Hangzhou, China

Mechanical Design for Humanoid Robots

- Work for *ZJUDANCER*, a team developing humanoid football player robots
- Design robot mechanical structure, build 3D models in SolidWorks, draw machining drawings and contact with manufacturers for parts manufacturing, assemble and maintain the robot
- Lead the mechanical group in 2013-2014

2013-2014 Hangzhou, China

Tactile Sensors Test Platform Development

- Final-year project including both hardware and software development
- Develop a mechatronic platform with 3D translation and 3D rotation, which can precisely move the stimulator tip to execute test work of required motion on tactile sensors

2014-2019 Hong Kong, China

Odometry/IMU-Aided Visual State Estimation

- Ph.D. thesis research work
- Develop visual state estimation systems aided by odometry/IMU for ground vehicles, by utilizing the motion prior information in a graph optimization framework
- Achieve better accuracy and robustness than state-of-the-art visual or visual inertial estimation systems

Publications

- **Fan Zheng**, Yun-Hui Liu. "SE(2)-Constrained Visual Inertial Fusion for Ground Vehicles". *IEEE Sensors Journal*, vol. 18, no. 23, 2018.
- **Fan Zheng**, Hengbo Tang, Yun-Hui Liu. "Odometry-Vision-Based Ground Vehicle Motion Estimation With SE(2)-Constrained SE(3) Poses". *IEEE Transactions on Cybernetics*, 2018.
- **Fan Zheng**, Yun-Hui Liu. "Keypoint Matching Outlier Removal with 3DMP Histogram Voting". *Proc. World Congress on Intelligent Control and Automation (WCICA)*, 2018.
- **Fan Zheng**, Yun-Hui Liu. "A Geometric Model for Fusing IMU into Monocular Visual Localization of 3-D Mobile Robots". *Proc. IEEE International Conference on Real-time Computing and Robotics (RCAR)*, 2016.

Education

2014-2019 Hong Kong, China

The Chinese University of Hong Kong

- Ph.D. in Mechanical and Automation Engineering

2010-2014 Hangzhou, China

Zhejiang University

- B.Eng. in Mechatronic Engineering
- Minor in Morningside Cultural China Leadership Program (CCLP)

Teaching

as Teaching Assistant

- Robotics 2015/2016
- Modern Control and Theory 2014/2015
- Mechanics of Materials 2014/2015

Voluntary Service

- Student ambassador, HKPFS Summer Workshop, CUHK Engineering 2015
- Student Helper, IEEE ROBIO international conference 2014
- Manager, 4th CCLP Graduation Ceremony 2014

Skills

Languages

- Mandarin, Teochew (native)
- English, Cantonese (fluent)

Programming

- C++(Qt, ROS, OpenCV, Eigen, g2o, Ceres Solver)
- Python
- MATLAB

Softwares

- MS Office
- SolidWorks, AutoCAD
- \LaTeX
- Bash, Git, Vim, CMake, etc.

Honors

- Hong Kong PhD Fellowship (Top ~200 in Hong Kong) 2014
- Top-8 Team in RoboCup, Humanoid Kidsize 2014
- Championship in RoboCup China, Humanoid Kidsize 2013
- National Scholarship (1/72) 2012