Mengwen He

F16 Ph.D. Student

2313B Collaborative Innovation Center (CIC)
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"possunt quia posse videntur" - Virgil

Research Topics

2016–Present COllaborate Relative and Absolute Localization (CORAL)

2014–2016 Vehicle details detection and tracking using integrated data for safe prediction.

2011–2014 Calibration of multi-sensor system. Robot software development framework.

2009–2011 Scene understanding. Interactive extraction of street contents.

Education

2016.06–Presnt **Ph.D. Student**, *Department of Electrical and Computer Engineering*, USA.
Supervisor: Prof. Raj Rajkumar

2014.10–2016.04 **Research Student**, *Graduate School of Information Science, Nagoya University*, Japan.
Supervisor: Assoc. Prof. Shinpei Kato

2014.10–2016.04 **Research Assistant**, *Institute of Innovation for Future Society, Nagoya University*, Japan.
Supervisor: Prof. Yoshiki Ninomiya

2011.09–2014.07 **M.S.**, *State Key Laboratory of Machine Intelligence, Peking University*, China.
Supervisor: Prof. Huijing Zhao

2012.12 **Visiting Student**, *HEUDIASYC, Université de Technologie de Compiègne*, France.
Introducer: Researcher Franck Davoine

2007.09–2011.07 **B.S.**, *Electronics Engineering and Computer Science, Peking University*, China.
Department: Computer and Information Science

2008.09–2011.07 **B.Ec**, *National School of Development, Peking University*, China.
Note: Double Major

2004.09–2007.07 **Senior High School**, *No.1 Senior High School of Henan Oil Field*, China.
Note: General science education & Biology in higher education level

Theses

Degree Master, 2014.07
Title **Calibration Method for Multi-LiDAR System Based on Multi-Type Geometry Features Alignment in 3D Point-Cloud**
Supervisor Prof. Huijing Zhao

Degree Bachelor, 2011.07
Title **Interactive Extraction of Street Contents Using Vehicle-borne Data**

Supervisor Prof. Huijing Zhao

Publications

Title **Accurate and Robust Model-Based Vehicle Tracking Method Using Rao-Blackwellized and Scaling Series Particle Filters**
Authors **Mengwen He**, Eijiro Takeuchi, Yoshiki Ninomiya, Shinpei Kato
Publisher *IEEE Int. Conf. on Robotics and Automation (ICRA), 2016, [Submitted]*
URL `https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1070_MS.pdf`
Video `https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1070_VI_i.mp4`

Title **A Robust Real-time 2D Virtual Scan Generation Method for Obstacle Detection in Complex Urban Environment**
Authors **Mengwen He**, Eijiro Takeuchi, Yoshiki Ninomiya, Shinpei Kato
Publisher *IEEE Int. Conf. on Robotics and Automation (ICRA), 2016, [Submitted]*
URL `https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1084_MS.pdf`
Video `https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1084_VI_i.mp4`

Title **Calibration Method for Multiple 2D LiDARs System**
Authors **Mengwen He**, Huijing Zhao, Jinshi Cui, Hongbin Zha
Publisher *IEEE Int. Conf. on Robotics and Automation (ICRA), 2014*
URL `https://github.com/alexanderhmw/Papers/blob/master/ICRA14_0901.pdf`

Title **Pairwise LiDAR Calibration Using Multi-Type 3D Geometric Features in Natural Scene**
Authors **Mengwen He**, Huijing Zhao, Franck Davoine, Jinshi Cui, Hongbin Zha
Publisher *IEEE Int. Conf. on Robots and Systems (IROS), 2013*
URL `https://github.com/alexanderhmw/Papers/blob/master/IROS13_1457.pdf`

Title **Computing Object-based Saliency in Urban Scenes Using Laser Sensing**
Authors Yipu Zhao, **Mengwen He**, Huijing Zhao, Franck Davoine, Hongbin Zha
Publisher *IEEE Int. Conf. on Robotics and Automation (ICRA), 2012*
URL `https://github.com/alexanderhmw/Papers/blob/master/ICRA12_1028.pdf`

Title **Range Image Segmentation and Classification in Large Urban Environment**
Authors Yiming Liu, **Mengwen He**, Huijing Zhao, Hongbin Zha
Publisher *Joint Workshop on Machine Perception and Robotics (MPR), 2010*

Projects

2015.06 **DPM Training Samples Collection and Annotation Software Development**
Work Use RobotSDK for fast top-down modular development
GitHub `https://github.com/RobotSDK/RobotSDK/tree/RobotSDK_4.0/Src/Samples/Projects/HMW_Project/DPMSampleAnnotator`

2015.05 **Challenge for Tsukuba Challenge 2015 in Nagoya University**
Work Use RobotSDK to develop navigation, obstacle detection, planning and control
Note 2 of 8 teams finished the challenge and we are the fastest winner
Website `http://www.suzlab.nuem.nagoya-u.ac.jp/~tazaki/tsuchacha/`

2015.04–2015.05 **RobotSDK 4.0 Upgrade**

Work Kernel Update
GitHub `https://github.com/RobotSDK`

2014.11–2014.12 **ROS-nized CalibrationToolkit for Autonomous Vehicle in Autoware**
Work Software design and development

2014.07–2014.11 **Tsukuba Challenge 2014, Tsukuba, Japan**
Work Software system consultant of Peking University Team
Note Robot's software system is based on RobotSDK 3.0

2013.08–2014.09 **RobotSDK Development**
Work Creator and development group leader
Copyright SN: 2014SR160286
Note Provides a top-down modular framework for software system development

2013.10–Canceled **National Robots Competition 2014, Harbin, China**
Work Software system development
Note Robot's software system is based on RobotSDK 2.2

2013.06–2014.08 **On-line Sensor Calibration Using Road Structural Features**
Work Calibration method design
Note PKU-TCRDL Joint Project

2013.05–2013.11 **Tsukuba Challenge 2013, Tsukuba, Japan**
Work Software system development
Note Robot's software system is based on RobotSDK 1.0

2011.09–2011.10 **National Intelligent Vehicle Future Challenge, Inner Mongolia, China**
Work Referee

2010.08–2011.04 **Interactive Object Extraction with Multi-modal Urban Sensing Data**
Work Software development for object extraction from camera and LiDAR data
Note Peking University and Navinfo Co. Ltd. Joint Project

Awards

2014.06 Excellent Prize for Master Thesis, Peking University

2013.11 Guanghua Scholarship of Peking University

2011.06 Excellent Prize for Bachelor Thesis, Peking University

2009.11 Merit Student of Peking University

2006.08 Gold medal in National Biology Olympic Competition.

Experience

April 2015 **Introduction to ROS (Graduate Course) [90 min]**
Work Teaching, Nagoya University

Fall 2012 **Introduction to Intelligent Robots (Undergraduate Course)**

Work Teaching Assistant, Peking University

Skills

Language

Mandarin	*Native proficiency*
English	*Professional working proficiency*
Français	*Limited working proficiency*
Japanese	*Beginner*

Programming C/C++, Java, Qt, Matlab, SQL, Latex
OpenGL, OpenCV, OpenNI, PCL, Eigen, CUDA, PhysX, NLOPT...
Linux, ROS, Windows

Sensors LiDAR: SICK, Hokuyo, Velodyne, IBEO
Camera: Point Grey, Ladybug, Bumblebee
GPS/IMU, encoder, CANBUS

Hobbies

Piano, Classical music, Swimming, Basketball, Football, Chess...