

# Mengwen He

Research Student/Assistant

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*"possunt quia posse videntur" - Virgil*

## Research Topics

- 2014–Present 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

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

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## 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](https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1070_MS.pdf)  
Video [https://github.com/alexanderhmw/Papers/blob/master/ICRA16\\_1070\\_VI\\_i.mp4](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](https://github.com/alexanderhmw/Papers/blob/master/ICRA16_1084_MS.pdf)  
Video [https://github.com/alexanderhmw/Papers/blob/master/ICRA16\\_1084\\_VI\\_i.mp4](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](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](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](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*

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## 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](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

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## Awards

- 2014.06 Excellent Prize for Master Thesis, Peking University
- 2013.11 Guanghai 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.

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## 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

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## Skills

Language	<b>Mandarin</b>	<i>Native proficiency</i>
	<b>English</b>	<i>Professional working proficiency</i>
	<b>Français</b>	<i>Limited working proficiency</i>
	<b>Japanese</b>	<i>Beginner</i>
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	

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## Hobbies

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