

## Ruixiang Du

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<http://rdu.im>

### EDUCATION

Worcester Polytechnic Institute (WPI), Worcester, MA

**Doctor of Philosophy in Robotics Engineering**, GPA: 3.89 08/2013-Present

**Master of Science in Robotics Engineering**, GPA: 3.83/4 06/ 2013

North China Electric Power University (NCEPU), China

**Bachelor of Engineering in Automation**, GPA: 87.9/100 07/2011

### TECHNICAL SKILLS

**Software:** Matlab, Eclipse, Git, Microsoft Office/Visio/Project

**Programming:** C/C++, Robot Operating System (ROS), OpenCV, PCL, wxWidgets, Qt, familiar with software development in Linux

**Microcontroller:** Freescale S12/S12X, AVR, STM32F, ARM7

### RESEARCH EXPERIENCE

#### Research Assistant, Worcester Polytechnic Institute

- Robotics and Intelligent Vehicles Research Laboratory, Professor Taskin Padir , 10/2014-Present

### TEACHING EXPERIENCE

#### Teaching Assistant, Worcester Polytechnic Institute

- ECE2010 Introduction to ECE, Professor William Michalson, 2014 Fall A term
- ECE549/RBE502 Robot Control, Professor Taskin Padir, 2014 Spring
- ECE3503 Power Electronics, Professor Alexander E. Emanuel, 2013 Fall B term
- ECE2010 Introduction to ECE, Professor James P. O'Rourke, 2013 Fall A term

### PROJECTS

#### DARPA Robotics Challenge (DRC) Finals: Team WPI-CMU, WPI 08/2014-Present

- Worked on drill task to control the Boston Dynamics Atlas Robot to drill a hole on the wall
- Working on a whole-body manipulation controller to enable the robot to perform varies of tasks as well as keep balance

#### Robotic System for Use of Fall Risk Assessment in Home Environment, WPI 07/2013-05/2014

- Worked out a web-based robotic framework for home fall risk assessment
- Implemented a web interface for Turtlebot2 platform to make the system accessible from a webpage
- Studied the autonomous localization and navigation of mobile robots in home environment

#### DARPA Robotics Challenge (DRC) Trials: Team WRECS, WPI 09/2013-12/2013

- Worked on door task in the aspects of manipulation and door detection with point clouds
- Developed a user interface for the operation of Atlas Robot in door task of DRC Trials
- Tested different strategies to finish task on both the real robot and robot in Gazebo simulation

#### Intelligent Portable Aerial Surveillance System – IPASS, WPI 12/2012-06/2013

- Developed the dynamics model of the aircraft and simulated its control in Matlab
- Worked on image stitching with OpenCV to get panoramas from 3 cameras on the aircraft

#### Autonomous Flight Control of a Quadrotor, WPI 02/2012-11/2012

- Studied the kinematics and dynamics model of the aircraft
- Simulated the attitude and position control of the quadrotor with PD control law in Matlab
- Implemented the position control algorithms on the Hummingbird quadrotor from AscTec

**3D Visualization and Representation of a Simulated Surgery Robot, WPI 02/2012-08/2012**

- Developed the kinematics for the MRI Neurosurgery Robot
- Implemented the 3D visualization and representation of the robot with Java and VTK library
- Tested and embedded the program into the software system of the MRI Neurosurgery Robot

**Undergraduate Graduation Project: Quadrotor Flight Attitude Control, 10/2010-06/2011**

- Wrote drivers with C for S12XEP100 MCU, including ATD, TIMER, PIT, SCI, SPI, IIC modules
- Designed and implemented the flight attitude control algorithm for the quadrotor
- Developed a software for sensor output monitoring with C#

**National Undergraduate Innovative Project: Model Car Path Identification and Trajectory Tracking Algorithm Research, 10/2009-06/2010**

- Designed and implemented the control algorithm for model car with S12XS128
- Developed a monitoring software for the status of the car with LabVIEW

**HONORS**

Received Outstanding Graduate Award of Hebei Province, NCEPU, China, 2011

Awarded academic scholarship each year, NCEPU, 2007-2010

Earned the 2nd and 3rd prize in the 5<sup>th</sup> and 4<sup>th</sup> Freescale Cup Intelligent Car Racing Contest, 2009-2010

**ACTIVITIES**

Member, Rho Beta Epsilon robotics honors fraternity, WPI, 02/2013-Present

Head of Technology Committee, NCEPU Network Management Association, NCEPU, 09/2009-09/2010

Vice-president, Science Association of the Department of Automation, NCEPU, 09/2009-09/2010