

# Zirui Zhao

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No.28 Xianning West Road, Xi'an, China.

## EDUCATION

### Xi'an Jiaotong University (XJTU)

Major in Automation (Honor Engineering Program, Qian Xuesen Class, top 120 out of 4000 students in XJTU)

Major GPA: 3.96/4.3

Cumulative GPA: 3.89/4.3

Xi'an, China

Expected in June 2020

### National University of Singapore (NUS)

Participated in "Tele-Robotic and Deep Learning" Program at 2018 Summer Workshop

Singapore

Jul 2018 - Aug 2018

## WORKING

### Student Intern of Carnegie Mellon University (CMU)

Work in the Robotics Institute & Dept. Mechanical Engineering.

Pittsburgh, PA, U.S.A.

Jul 2019 - Aug 2019

## SKILLS

- **Languages:** Python, C++
- **Libraries:** TensorFlow, PyTorch, Keras, Scikit-Learn, Numpy, Jupyter, OpenCV, ROS

**Technologies:** GitHub

## RESEARCH EXPERIENCE

### Active Risk-sensitive Inverse Reinforcement Learning in Lane Change Behaviors

Summer Intern in [Safe AI Lab](#), CMU

Pittsburgh, PA, U.S.A.

Jul 2019 - Present

- **Faculty Advisor:** Ding Zhao, Assistant Professor in Department of Mechanical Engineering & The Robotics Institute, CMU
- **Project Description:** This project is aimed to enable autonomous vehicles knowing the risk situations in dynamic environments by using Inverse Reinforcement Learning.

### Visual-based Semantic SLAM with Landmarks for large-scale outdoor environments

Research Intern in Institute of Artificial Intelligence and Robotics (IAIR), XJTU

Xi'an, China

Nov 2018 - Present

- **Faculty Advisor:** [Pengju Ren](#), Associate Professor in IAIR, Xi'an Jiaotong University
- **Project Description:** This project built a visual semantic SLAM system with GPS fusion and landmarks association.
- **Completed work:**
  - Accomplished visual semantic SLAM based on PSPNet101 and ORB SLAM, with GPS Fusion and topological semantic mapping.
  - Developed a new dataset for KITTI sequences, containing the GPS information and labels of landmarks

### Multi-Robot Cooperative Navigation

Research Intern in IAIR, XJTU

Xi'an, China

Apr 2018 - Mar 2019

- **Faculty Advisor:** [Pengju Ren](#), Associate Professor in IAIR, XJTU
- **Project Description:** This project established a multi-robot navigation and exploration system, which consist of UAVs and UGVs.
- **Completed work:**
  - Accomplished road segmentation and map establishment in UAV.
  - Enforced cooperative navigation system of UAV and UGV based on lidar and camera.
- **Demo Video:** [Cooperative Navigation System of UAV and UGV](#)

### Tele-Robotics & Deep Learning

Student of 2018 Summer Workshop, School of Computing, NUS

Singapore

Jul 2018 - Aug 2018

- **Faculty Advisor:** Soo Yuen Jien, Professor in School of Computing, NUS
- **Project Description:** We built an autonomous blind-guide robot by using Raspberry Pi and Arduino. We have also actualized the computer vision task py inception model and Azure service for obstacle classification.

## SCHOLARSHIPS & HONORABLE TITLES

- Siyuan Merit Scholarship in 2017 & 2018 (Top 30% in Qian Class)
- Excellent Student in 2017 & 2018 (Top 20% in Qian Class)
- Second Prize of 1989 Mechanical Alumni Scholarship for Qian Class (4 Candidates out of 119 students in Qian Class)

## CONTESTS & AWARDS

- **2018 National University Student Innovation Program:** Finished Autonomous Logistic UAV and Multi-agents system and got first prize (National Prize).
- **2017 China Undergraduate Mathematical Contest in Modelling:** First Place of Shaanxi Province
- **2018 DAC System Design Contest:** Assistant for image processing, model optimization and got rank of 4/21 in GPU platform
- **2018 Big Data and Artificial Intelligence Contest:** Implemented Deep Convolutional Network SE-ResNet 152 to achieve 98 % accuracy in the contest dataset and got rank of 39/300
- **2018 Global College Technical Summer Training Camp of JD AI research:** Finished the task of Target Black-box attack on deep neural network with second place