# ZIRUI ZHAO

Xi'an Jiaotong University, Sci. Hall, Rm-207
# 28 Xianning West Road, Xi'an, Shaanxi, P. R. China, 710049
Tel: (+86)159-2995-3178 ◇ Email: ryan_zzr@outlook.com ◇ Web: ryanzhao.org ◇ GitHub: 1989Ryan

## EDUCATION

**National University of Singapore, Singapore** *August 2020 - August 2024*
PhD student, Computer Science.
Department of Computer Science, School of Computing.

**Xi'an Jiaotong University, Xi'an, P.R. China** *August 2016 - June 2020*
Bachelor of Engineering in Automation (Honors Qian Xue Sen Program)
Honors Qian Xue Sen College & Faculty of Electronic and Information Engineering

**National University of Singapore, Singapore** *July 2018 - August 2018*
Visiting student, Computer Science / Tele-robotics.
2018 Summer Workshop, School of Computing.

## WORK EXPERIENCE

**Carnegie Mellon University, Pittsburgh, U.S.A.** July 2019 - August 2019

· Summer Intern @ Safe AI Lab, The Robotics Institute & Dept. Mechanical Engineering

**Xi'an Jiaotong University, Xi'an, P.R. China** September 2017 - Present

· Research Assistant @ Cognitive Architecture Group, Institute of Artificial Intelligence and Robotics

## INTERESTS & SKILLS

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|---|---|
| **Interests** | Reinforcement Learning, Cognitive Robotics, Robot Perception, Human-Robot Interaction, Control Theory. |
| **Language** | Python, C++, MATLAB, LaTeX. |
| **Application Tools** | TensorFlow, PyTorch, Keras, Scikit-Learn, Numpy, Jupyter, OpenCV, ROS. |
| **Software** | Carla, GitLab, GitHub. |

## PUBLICATION

**Z. Zhao**, Y. Mao, Y. Ding, P. Ren and N. Zheng, "Visual-Based Semantic SLAM with Landmarks for Large-Scale Outdoor Environment," 2019 2nd China Symposium on Cognitive Computing and Hybrid Intelligence (CCHI), Xian, China, 2019, pp. 149-154.

R. Chen, W. Wang, **Z. Zhao**, D. Zhao, Active Learning for Risk-Sensitive Inverse Reinforcement Learning, Preprint, arXiv, 2019.

## RESEARCH

**Active Risk-sensitive Inverse Reinforcement Learning** July 2019 - August 2019
*Safe AI Lab* *Carnegie Mellon University, Pittsburgh, U.S.A.*

· Active demonstration querying for faster human risk envelope approximation via disturbance planning.
· Experimental verification in single-step and multi-step setting with simulated car-following task in Carla.

**Visual Semantic SLAM for Outdoor Environments** November 2018 - June 2019
*Cognitive Architecture Group* *Xi'an Jiaotong University, Xi'an, P.R. China*

- Accomplished visual semantic SLAM based on PSPNet101 and ORB SLAM.
- The SLAM has implemented with GPS Fusion and topological semantic mapping.

## PROJECTS

**Multi-Robot Cooperative Navigation** Aug 2018 - Dec 2018
*Xi'an Jiaotong University* *Xi'an, P.R. China*

- This project established a multi-robot navigation and exploration system, which consist of UAVs and UGVs.
- Video Demo

**Tele-robotics & Deep Learning** Jul 2018 - Aug 2018
*National University of Singapore* *Singapore*

- 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.

**Adversarial Attack of Deep Neural Network** Aug 2018
*JD AI Research* *Beijing, P.R. China*

- Finished the task of Target Black-box attack on deep neural network by using Naive Evolutionary Algorithm.

## AWARDS & TITLES

**Siyuan Merit Scholarship** by Xi'an Jiaotong University, 2017 & 2018 & 2019

**Excellent Student** by Xi'an Jiaotong University, 2017 & 2018 & 2019

**Second Prize of 1989 Mechanical Alumni Scholarship** by Xi'an Jiaotong University, 2018

## PRIZES

**2018 National University Student Innovation Program:** Finished Autonomous Logistic UAV and Multi-agents system and got first prize (National Prize).

**2018 DAC System Design Contest:** Assistant for image processing, model optimization and got rank of 4/21 in GPU platform

**2017 China Undergraduate Mathematical Contest in Modelling:** First Place of Shaanxi Province

**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