Zirui Zhao

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

EDUCATION

Xi'an Jiaotong University (XJTU)   Xi'an, China
Major in Automation (Honor Engineering Program, Qian Xuesen Class, top 120 out of 4000 students in XJTU)   *Expected in June 2020*
Major GPA: 3.96/4.3
Cumulative GPA: 3.89/4.3

National University of Sinpagore (NUS)   Singapore
Participated in "Tele-Robotic and Deep Learning" Program at 2018 Summer Workshop   *Jul 2018 - Aug 2018*

WORKING

Student Intern of Carnegie Mellon University (CMU)   Pittsburgh, PA, U.S.A.
Work in the Robotics Institute & Dept. Mechanical Engineering.   *Jul 2019 - Aug 2019*

SKILLS

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

RESEARCH EXPERIENCE

Active Risk-sensitive Inverse Reinforcement Learning in Lane Change Behaviors   Pittsburgh, PA, U.S.A.
Summer Intern in Safe AI Lab, CMU   *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   Xi'an, China
Research Intern in Institute of Artificial Intelligence and Robotics (IAIR), XJTU   *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   Xi'an, China
Research Intern in IAIR, XJTU   *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   Singapore
Student of 2018 Summer Workshop, School of Computing, NUS   *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 Candidiates 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