Zirui Zhao

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

Education

Xi'an Jiaotong University — Xi'an, China
Major in Automation (Honor Engineering Program, Qian Xuesen Class, top 120 out of 4000 students in XJTU) — *Expected June 2020*
Major GPA: 3.90/4.0
Cumulative GPA: 3.81/4.0

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

Research Interests

I am interested in Robotics and Visual Computing, especially in robotic visual navigation and semantic SLAM. For more details of my previous research projects please visit my personal website.

Skills

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

Research Experience

Multi-Robot Coordinate Navigation, Exploration and Semantic SLAM — Xi'an, China
Research Intern in IAIR, XJTU — *Apr 2018 - Present*

- **Faculty Advisor**: Pengju Ren, Associate Professor in IAIR, XJTU
- **Project Description**: This project is looking forward to establishing a reliable, low-power-consuming and intelligent multi-robot visual navigation and exploration system, which consist of UAVs and UGVs, to established map with semantic information.
- **Completed work**:
  - Accomplished visual ORB SLAM in ground robot vehicle and UAV.
  - Enforced acceleration of inference of SqueezeDet for target detection in UAV.
  - Established TEB algorithm for path planning in ground robot vehicle.
  - Currently focusing on Semantic SLAM
- **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**: This project is a summer session in NUS which aimed to combined the deep learning methodology with robots. We built an autonomous blind-guide robot.
- **Completed work**:
  - Conducted the team to build an autonomous blind-guide robot with Arduino and Raspberry Pi
  - Actualized the computer vision task by inception model and Azure service for obstacle classification

Machine Learning & Computer Vision Open Experiment Program — Xi'an, China
Research Intern in IAIR, XJTU — *Sep 2017 - Apr 2018*

- **Faculty Advisor**: Pengju Ren, Associate Professor in IAIR, XJTU
- **Project Description**: This project is aimed to provide chance of research to undergraduates and I was selected from candidates to focus on visual detection in UAV.
- **Completed work**:
  - Accomplished some basic classification tasks based on the dataset of MNIST and CIFAR-10 using ResNet 50
  - Joined the contest of DAC and was responsible for image processing & CNN model optimization

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

- **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