ZIRUI ZHAO | Curriculum Vitae

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EDUCATION

Xi'an Jiaotong University **Xi'an, China**
School of Electronic and Information Engineering *Sep. 2016 - Present*

- Major in Automation (Honors Engineering Program, Qian Xuesen Class); Major Average Score: 93.15 (GPA: 3.94/4.3)
- Won the admission to Qian Xuesen Class (the honor undergraduate program in XJTU, top 120 out of 4000 students in XJTU).
- Cumulative Average Score: 90.39 (GPA: 3.89/4.3)

National University of Singapore **Singapore**
2018 Summer Workshop, School of Computing. *Jul. 2018 – Aug. 2018*

- Participated in the IoT and security "Tele-Robotics & Deep Learning" project.

ACADEMIC RESEARCH

For more details of my research projects, please visit my personal website: https://1989Ryan.github.io

1. **Machine learning & Computer Vision Open Experiment Program | IAIR, XJTU** *Sep. 2017 – Apr. 2018*
   Faculty Advisor: Pengju Ren, Associate Professor at IAIR, the School of Electronic and Information Engineering, XJTU.
   Completed Work:
   - Accomplished some basic classification tasks based on the dataset of MNIST and CIFAR-10 using ResNet50.
   - Joined the contest of Design Automation Conference in 2018 as an assistant and responsible for preprocessing the dataset and some basic tasks for inference acceleration of CNN using TensorRT.

   Project Description: This project was aimed to provide chance of research for undergraduate who are willing to participate in machine learning and computer vision. After 2 months' training, group leader selected 5 candidates for further research project and I choose to focus on machine learning in UAV detection.
   ***Index**: Artificial Intelligence, Machine Learning, Computer Vision, Detection and Tracking.*

2. **Multi-agent Coordinate Navigation in robots, Exploration and Structured Semantic Information Establishment | IAIR, XJTU** *Apr. 2018 – Present*
   Faculty Advisor: Pengju Ren, Associate Professor at IAIR, the School of Electronic and Information Engineering, XJTU.
   Completed work:
   - Accomplished visual SLAM in ground robot vehicle and UAV.
   - Enforced acceleration of inference of SqueezeDet for target detection in UAV.
   - Established the TEB algorithm for path planning in ground robot vehicle.

   Project Description: This project is looking forward to establishing a reliable, low-power-consuming and intelligent multi-robot navigation and exploration system which consist of UAVs and UGVs. We try to implement multiple visual information for multi-agent coordinate navigation in unknown area.
   Demo Video(YouTube): https://youtu.be/wSB4hyW9rWc
   ***Index**: Multi-Robot System, SLAM, Navigation, Path Planning, Robotic Vision, Cognition*

3. **Tele-Robotic and Deep Learning Project | SoC Summer Workshop 2018, NUS** *Jul. 2018 - Aug. 2018*
   Faculty Advisor: Soo Yuen Jien, Professor at Department of Computer Science, School of Computing, NUS.
   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 detection.

Project Description: This project was one of the summer session in School of Computing, National University of Singapore. We tried to combined the Deep Learning Methodology with Tele-Robotics. Our baseline model was remote control and target image detection using our robot. Our advanced model was building an autonomous blind-guide robot.

***Index**: Deep Learning, Robotic Control, Embedded System, Computer Vision.*

4. **2018 Global College Technical Summer Training Camp | JD AI Research** *Aug. 2018*

Supervisor: Dongdong Chen, Researcher at Department of Machine Learning, JD AI Research.

Completed Work:

- Utilized the MI-FSGN algorithm for black-box untargeted attack on deep neural network.
- Established the Naive Mutation algorithm for targeted attack on deep neural network.

Project Description: This project was aimed to find a good adversarial attack method to evaluate the vulnerability of convolutional neural network. This project is a half-blackbox attack with targeted attack and un-targeted attack tasks.

***Index**: Machine Learning, Adversarial Attack, Computer Vision, Convolutional Neural Network.*

SCHOLARSHIPS AND HONORABLE TITLES

- **Siyuan Merit Scholarship** in 2017 & 2018 (Awarded to the top 30% of 119 students in Qian Xuesen Class, XJTU)
- **Excellent Student** in 2017 & 2018 (Awarded to the top 20% of 119 students in Qian Xuesen Class, XJTU)
- **Second Prize of "1989 Mechanical Alumni Scholarship for Qian Class"** in 2018 (Awarded to 4 candidates out of 119 students in Qian Xuesen Class, XJTU)

COMPETITIONS AND AWARDS

1. **Chinese Mathematical Modeling contest** *May. 2017 – Sep. 2017*
   - Got the **First Prize** of Shaanxi Province.
2. **2018 DAC System Design Contest** *Dec. 2017 – Jun. 2018*
   - Assistant for image processing, model optimization and got **rank of 4/21 in GPU Platform.**
3. **Big Data and Artificial Intelligence Contest** (Hold by XJTU and Baidu) *Jun. 2018 – Jul. 2018*
   - Finished the image classification task and got **rank of 39 / 300.**
4. **2018 Global College Technical Summer Training Camp** (Hold by JD AI Research) *Aug. 2018*
   - Finished the task of Targeted black-box attack on deep neural networks with **second place**.

MISCELLANEOUS

1. **Language:** English, Chinese (Native).
2. **Skills:** PR(Basic), AE(Basic), Excel(Skilled), PPT(Skilled), Latex(Basic).
3. **Interests:** Music (Singing), Badminton.