

# Zhijun Xue

[zhijun0319@163.com](mailto:zhijun0319@163.com) | (+86)15198960565 | Web: <https://www.xzj0319.top/>

## EDUCATION

### Huazhong University of Science & Technology - *School of Electronic Information and Communications*

- Bachelor of Engineering in Electronic and Information *Expected June. 2020*
- Cumulative GPA: **3.75/4.0** Major GPA: **3.86/4.0**

### Imperial College London – *Hamlyn Centre for Robotic Surgery*

- Summer Research Program: Machine Learning, Robotics and Sensor Networks *Jul. 2018 – Aug. 2018*
- GPA: **4.0/4.0**

### Standard Tests:

- TOFEL: **105**(Listening 30) GRE: V: 159 Q: 169

## PUBLICATION

Amir Moeini, **Zhijun Xue**, Alan F. Lynch, Qing Zhao ‘**Disturbance Observer-Based Integral Backstepping Controller for Multirotor UAVs**’. Submitted to **IFAC 2020** Conference (Currently under review)

Code: [https://github.com/ANCL/UAV\\_IBS](https://github.com/ANCL/UAV_IBS)

## RESEARCH EXPERIENCE

### Image-Based visual Servoing of Unmanned Aerial Vehicle

University of Alberta

*Undergraduate researcher at ANCL Lab*

*July 2019 – Oct. 2019*

**Field:** Robotics; Drone; Computer Vision

**Mentor:** Prof. Alan F. Lynch

**Demo:** <https://www.youtube.com/watch?v=Nkaf59vUjKM>

- Conducted line detection on Nvidia Jetson TX 2 platform and used MAVLink protocol to communicate between onboard hardware
- Implemented Integral Backstepping Controller on open source *PX4* Firmware and modified *PX4* to support Vicon data for in-door navigation
- Conducted *Software in the Loop (SITL)* quadrotor simulation on jMAVSim and Gazebo platform
- Designed Gazebo-based course project for the Graduate-level course "Nonlinear Control"

### Text Semantic Understanding in Image and Video for Network Information Security

Wuhan

*Research assistant at Vision & Learning Representation Group*

*Oct. 2018 – present*

**Field:** Scene text detection & recognition; OCR; Computer vision

**Mentor:** Prof. *Xiang Bai*, Prof. *Wenyu Liu*

- Designed algorithm for generating large scale Chinese Character synthetic text images dataset (80k images)
- Implemented PyTorch-based Scene text detection & recognition toolbox for the lab
- Devised an end-to-end, segmentation-based method to solve scene text detection bottleneck with respect to curved and arbitrary oriented text
- Proposed a Multi-Attention CNN network for Handwritten Chinese character recognition, network can adaptively integrate information from different regions to do final prediction
- Tested network on ICDAR2013 dataset, achieved 97.66% accuracy, outperforming all single-network methods.

### Intelligent voice-control Assisting Robot (*Code at Github*)

Imperial College London

*Visiting student at Hamlyn Centre for Robotic Surgery*

*July 2018 – Aug. 2018*

**Field:** Object detection & tracking; Speech recognition; Human computer interaction; Robotics

**Mentor:** Prof. Guang-zhong Yang

- Chief programmer. Integrated speech recognition, image recognition and grabbing algorithms into single robotic arm
- Utilized misjudgment feedback mechanism to improve robotic arm grasping accuracy by reinforcement learning
- Team Leader. Led 6 teammates won the “First Runner-up” prize in final competition

## PATENT

### End-to-End identification method for scene text of arbitrary shape

- Application No.: 201810294058X
- Date of Receiving Certificate: 2018-09-18

## SELECTED PROJECTS

### Distributed Spider System

Sep. 2018 – Dec. 2018

- **Project Introduction:** A high-level distributed crawling framework used to crawl pages and extract structured data from websites. It provides simple and fast yet flexible way to achieve data acquisition objective.
- **Data Collection:** Build a distributed spider system using Selenium+Celery+Redis to crawl information from Weibo, Zhihu, which are the 2 biggest social media in China.
- **Data Analysis:** Analyze the main opinion of netizens for public events using traditional natural language processing methods, such as TF-IDF, LDA, LSI, etc.

### Whole Slide Tissue Image classifier with CNN Network

May 2019 – July. 2019

- **Project Introduction:** Cross-Platform desktop computer program with user friendly GUI interface, which aims to help radiologists to make decisions.
- **Model:** Devised one-stage patch-based CNN network to classify tumor tissues which achieved AUC = 0.9324

*(More projects can be found on my Personal Website)*

## ACADEMIC AWARDS

- **2019: Outstanding Undergraduate Scholarship for Overseas Exchange**, awarded by CSC (*China Scholarship Council*)
- **2019: VLR team achieved 4 championships** in ICDAR2019 competitions. See our results of competition *ReCTS*
- **2018、2019: Science Progress Scholarship**, awarded by *School of EIC*
- **2017: Self-improvement scholarship**, awarded by *School of EIC*

## CAMPUS SERVICE

### Students Union – Team Leader of Coding For Fun Club

Apr. 2017 – Apr. 2019

- Organized Hackthon; Conducted Coding & Deep Learning undergraduate seminar
- Co-hosted Innovative Software Programming Contest “Seed-Cup” with *Beibei.com* and Qiming College of Huazhong University of Science & Technology
- Built *EIC BBS forum*; Maintained student union website

### BINGYAN Studio – Back-end developer

Oct. 2017 – Mar. 2019

- Co-developed and maintained WeChat mini apps “Helping HUST”, “Link-HUST” for students’ convenience. Apps are used by thousands of students in school

## VOLUNTEERING

Volunteered at Red Cross China Yunnan Branch Disaster Relief and Preparedness Centre

**Time:** January, 2018 ~ February, 2018; January, 2019 ~ February, 2019

**Role:** Helped to draft Fund Prospectus for Red Cross’s non-profit foundation

## SKILLS

- **Proficient in Python, C/C++, PyTorch, MATLAB, SQL, skilled in ROS, Java, Arduino, Verilog**
- **Software** Xilinx Vivado, Gazebo, SolidWorks, LaTeX, JetBrains, Vim, Microsoft Office