Zhijun Xue

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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**, M.A.Rafique, Alan F. Lynch, Qing Zhao **'Disturbance Observer-Based Integral Backstepping Controller for Multirotor UAVs'.** Submitted to **IFAC 2020** Conference (Currently under review)

URL to the paper: *IFAC.pdf* **Code**: *https://github.com/ANCL/UAV_DOBIBS*

RESEARCH EXPERIENCE

Image-Based visual Servoing of Unmanned Aerial Vehicle University of Alberta

*Undergraduate researcher at **ANCL Lab*** *July 2019 – present*

Field: Robotics; Drone; Computer Vision; SLAM

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 disturbance observer-based integral Backstepping Controller on open source PX4 Firmware and modified PX4 to support Vicon data for UAV 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 modular design Scene Text Detection & Recognition Framework for the ***MCLab, HUST***
- Proposed an end-to-end, segmentation-based method to solve scene text detection bottleneck with respect to curved and arbitrary oriented text
- Introduced a Multi-Attention CNN network for Handwritten Chinese character recognition, which can adaptively integrate information from different regions to do final prediction (*MCANet.pdf*)
- 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: Robotics; Object detection & tracking; Speech recognition; Human computer interaction

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

PROFESSIONAL EXPERIENCE

BINGYAN Studio – Back-end Developer & Product Manager *Oct. 2017 – Mar. 2019*

- Co-developed and maintained WeChat mini apps "Helping HUST", "Love-Electives" for students' convenience. (Apps are used by **5000+** students in school)
- Co-hosted *Internet Salon* with well-known enterprises (PPLive, Tencent) to promote entrepreneurship education
- Co-operated "iKnowHust" WeChat Official Accounts (Total **10000+** followers)

SELECTED PROJECTS

Distributed Spider System *Sep. 2018 – Dec. 2018*

- **Project Introduction**: A fast yet flexible distributed crawling system to achieve data acquisition and data analysis objectives in one-stop.
- **Data Collection**: Utilized Selenium+Celery+Redis as technology stack to distributed crawl information from Weibo, Zhihu, which are the 2 biggest social media in China.
- **Data Analysis**: Analyze main trends of netizen opinions and changes in public sentiment as time flows with deep learning approaches (e.g. TextLSTM)

Whole Slide Tissue Image Classifier with CNN Network *May 2019 – July. 2019*

- **Project Introduction**: Cross-Platform desktop computer program with user friendly GUI interface, aiming to help radiologists to make right 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:*** *https://www.xzj0319.top/*)

ACADEMIC AWARDS

- **2019: Outstanding Undergraduate Scholarship for Overseas Exchange**, awarded by CSC (*China Scholarship Council*)
- **2019:** Achieved **4 Championships** in ICDAR2019 competitions with VLR team. *Results*
- **2018 & 2019: Science Progress Scholarship,** awarded by *School of EIC*
- **2017: Self-improvement scholarship**, awarded by *School of EIC*

CAMPUS SERVICE

Student Union – Chairman of Association for Science & Technology *Apr. 2017 – Apr. 2019*

- Organized Hackthon; Conducted Coding & Deep Learning undergraduate seminars (Total **500+** participants)
- 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

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, PyTorch, Java, C/C++, PX4, SQL, MATLAB, R, LaTeX**
- **Skilled in ROS, Arduino, Verilog**
- **Software** Xilinix Vivado, Gazebo, SolidWorks, JetBrains, Vim, Microsoft Office