Zhijun Xue

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EDUCATION

Huazhong University of Science & Technology (HUST) – *School of Electronic Information and Communications*

- Bachelor of Engineering in Electronic and Information — *Sept. 2016 – June. 2020*
- Cumulative GPA: **3.74/4.0** Major GPA: **3.92/4.0**

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:

- **TOEFL**: **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 Control for UAVs".** Accepted by the ICUAS 2020 Conference

Link to the paper: *ICUAS.pdf* **Code**: *https://github.com/ANCL/UAV_DOBIBS*

WORK EXPERIENCE

Microsoft – Azure Infrastructure Team Suzhou, China

Incoming Cloud Infrastructure Engineer Intern *Feb. 2021 (Expected)*

eBay-StubHub – Platform Team Shanghai, China

Software Engineer Intern *Sept. 2020 – present*

- Designed and Implemented payment fraud check backend infrastructure with **TVM** IR, and utilized **Kafka**, Apache Airflow to realize real-time decision making and online model update
- Implemented 2FA authentication system infrastructure, and utilized **Concourse** and **GCP** CI/CD techniques for automatic deployment and unit testing
- Refactored the website Shopping Cart module using **React & Redux**, with better UI design and more intuitive filtering options

Intel – Data Science Group Dalian, China

Software Engineer Intern *May. 2020 – Sept. 2020*

- Implemented a large-scale lot & wafer issue-tracking system using **Angular** and **Django** to boost engineer work efficiency; Utilized ECharts and D3 library for lot and wafer data visualization, auto PPT generation
- Developed **Redis-based** caching service to optimize data fetching efficiency by 50% with easy-to-use API for all team apps
- Devised streaming pipelines to extract 1,000,000+ wafer data and store into **Hadoop** Distributed file system in Parquet format
- Identify opportunities to develop automate system/tool/script with innovative solutions to meet process engineers' needs

RESEARCH EXPERIENCE

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

*Undergraduate researcher at **ANCL Lab*** *July 2019 – Nov.2019*

Field: Computer System; Drone; SLAM

Mentor: Prof. Alan F. Lynch

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

- Implemented vision-based autopilot system on Nvidia Jetson TX 2 platform for quadrotor visual servoing, and used MAVLink protocol to communicate between onboard hardware
- Implemented disturbance observer-based integral Backstepping Controller on open source PX4 Firmware using C++, 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

Text Semantic Understanding in Image and Video for Network Information Security HUST, 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, achieved 97.66% accuracy on ICDAR2013 dataset, outperforming all single-network methods. (*MCANet.pdf*)

Intelligent voice-control Assisting Robot (***Code at Github***) Imperial College London

Visiting student researcher 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. User can control the robot with oral instructions to fetch them food or drink
- 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

SELECTED PROJECTS

Scene-Text Label Assistant *Dec. 2019 – Feb. 2020*

Technology Stack: C++, CMake, QT, OpenCV, PyTorch

- **Project Introduction**: A cross-platform desktop application developed in C++ with **QT** framework. Applied EAST neural network as application's backend which achieved 87% precision rate, user can use the app to label their own images efficiently
- Adopted **CMake** as application's built system, which can be compiled and run on Linux, Windows and MacOS

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

- **Project Introduction**: Distributed crawling system to achieve data acquisition and data analysis objectives in one-stop. Each spider worker can make multi-threaded requests to the main URL pool and save parsed contents to the local storage
- **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)

(***More projects can be found on my Personal Website:*** *https://www.xzj0319.top/*)

ACADEMIC AWARDS

- **2020: Outstanding Graduate**, awarded by HUST
- **2019**: **Outstanding Individual Award for Innovative Entrepreneurship**, awarded by HUST
- **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. 2018 – June 2019*

- Built *EIC BBS forum* using **WebSocket** for instant interactions and real-time notifications among student community
- Developed *Public room reservation system* with **responsive design** and utilized **Node.JS** as its backend (Total **2000**+ Users)
- Organized Hackthon; Conducted Coding & Deep Learning undergraduate seminars (Total **500+** participants)

SKILLS

Languages: C/C++, Python, JavaScript, TypeScript, Kotlin, Java, GO, SQL, HTML, CSS, Bash

Libraries: Angular, React, NodeJS, Django, RESTful, PyTorch, Tensorflow, QT, CMake

Tools: TVM, Hadoop, Redis, MongoDB, Docker, Kubernetes, Git, GCP, Jenkins