Zhihe ZHAO

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ACADEMIC INTERESTS

Internet of Things, Edge Computing, Deep/Reinforcement Learning, Mobile/Edge Computing, Wireless Sensor Networks, Real-time Embedded System, Human-centered Computing, Computer Vision

EDUCATION BACKGROUND

Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou, China 9/2014 – 7/2019
B.E. in Computer Science and Technology, Dept. of Computer Science and Software engineering Major GPA: 3.75/4.0

The Chinese University of Hong Kong (CUHK), Hong Kong, Summer Research Program 6/2018 – 9/2018

AWARDS AND HONORS

National Scholarship, the only winner in engineering departments (a total of four winners in the whole University) 2018
XJTLU Academic Achievement Award, GPA: Ranked 2nd out of 50 students in the whole department 2017 - 2018
XJTLU Academic Excellent Award, GPA: Ranked 1st out of 50 students in the whole department 2016 – 2017

SELECTED PUBLICATIONS (AS FIRST AUTHOR)

- **Z. Zhao**, Y. Lin, G. Xing, L. Zhao, X. Liu, N. Ling, K. Huang, *AutoECRT: An Edge Computing System for Real-Time Resource-Aware Deep Neural Network*, The 25th Annual International Conference on Mobile Computing and Networking (MobiCom, 2019 | In Preparation)
- **Z. Zhao**, Z. Jiang, N. Ling, X. Shuai, X. Guo, *ECRT: An Edge Computing System for Real-Time Image-based Object Tracking*, The 16th ACM Conference on Embedded Networked Sensor Systems (SenSys, 2018), ShenZhen, China. DOI: 10.1145/3274783.3275199, November 2018
- **Z. Zhao**, J. Wang, C. Fu, D. Liu, B. Li, *Demo Abstract: Smart City: a Real-time Environmental Monitoring System on Green Roof*, The 3rd ACM/IEEE International Conference on Internet-of-Things Design and Implementation (IoTDI, 2018), Orlando, Florida. DOI: 10.1109/IoTDI.2018.00049, April 2018
- **Z. Zhao**, J. Wang, C. Fu, D. Liu, B. Li, *Design of a Smart Sensor Network System for Real-Time Air Quality Monitoring on Green Roof*, Journal of Sensors 2018 (Sensing and Data-Driven Control for Smart Building and Smart City Systems (SBSCS)), Hindawi, DOI: 10.1155/2018/1987931

INTERNATIONAL CONFERENCE PRESENTATION

The 16th ACM Conference on Embedded Networked Sensor Systems (SenSys 2018), ShenZhen, China 11/2018
- Took one-minute madness session to present my work towards hundreds of people including professors, Ph.D. students and experts from the IoT industry

The 3rd ACM/IEEE International Conference on Internet of Things Design and Implementation, Orlando, U.S.A 4/2018
- Gave a demonstration of our work in the wind tunnel project with on-site hardware equipment setup and presentation

RESEARCH EXPERIENCES

Research Assistant & Project Leader, AutoECRT (Edge Computing for Real-time Purpose), CUHK
Advisor: Prof. Guoliang Xing; Prof. Kaizhu Huang 9/2018 – Present
- Based on the work in ECRT, led a team of five including two MS students in CUHK to explore how to dynamically control the fine-grained actions such as the setting of partition point of a model and the topology of the cascaded DNN at runtime
- Wrote weekly reports and participated in weekly group meeting
- Proposed a Reinforcement Learning based method to replace the hand-crafted operations on DNN
- Designed a multi-task learning algorithm to jointly train the DNN with branches
- Be preparing paper submission for **MobiCom 2019**

Research Assistant, Edge Computing for Real-time Purpose, CUHK, Advisor: Prof. Guoliang Xing 6/2018 – 9/2018
- Designed an edge computing-based system named ECRT for visual objects detection/tracking based on the yolo-mini model; Built up the system using Raspberry Pi and NVIDIA TX2; A first-author demo abstract presented in **SenSys, 2018**
- Proposed a DNN model partition method to distribute the intensive computation between node devices and the edge server.
- Built a web dashboard to monitor the computation, power consumption on node devices based on Node.js.

Project Leader, Wind Tunnel Real-Time Data Monitoring System, XJTLU, Advisor: Prof. Dawei Liu 5/2017 – 5/2018

- Led a team of five to develop a real-time data monitoring system for modeling outdoor air quality based on a wind tunnel
- Designed the system architecture integrating mechanical actuators, electronic devices, wireless sensor networks, and cloud computing platform
- Spearheaded a team effort to develop a raw(sensor) data collection/transmission structure based on STM32 and ESP8266, a web GUI and a back-end framework based on Node.js, MQTT and MongoDB
- Research work led to a first-author demo abstract presented at **IoTDI, 2018** in Florida, US
- Published a first-author Journal paper in **Journal of Sensors, Hindawi**
- Significantly bolstered technical leadership, multi-tasking and interpersonal skills

INTERNSHIP EXPERIENCES

Co-founder, YouDu Smart Technology Co., Ltd., Suzhou, China (Took a gap year in 15-16) 10/2015-3/2017

- Established a start-up company which aimed to develop smart home devices with a venture capital financing of $1M
- Analyzed the market and pricing strategy by attending 10+ smart home expos and visiting relevant enterprises; compiled a suite of detailed technical reports for future reference
- Developed embedded hardware based on STM32, S3C2440, RT5350, Zigbee chips and ESP series

Embedded Software Engineer Intern, Rt-Thread Electronic Technology Co. Ltd., Shanghai, China 2/2017-6/2017

- Gained experience on design and implement of embedded system based on RTOS (Real Time Operating System)
- Helped with writing technical manual, focused on transplanting RT-Thread(RTOS) to STM32F4

TEACHING EXPERIENCES

Teaching Assistant, Innovation Lab, XJTLU 9/2015-7/2016

- Worked as an undergraduate student teaching assistant to offer weekly one-hour tutorial on MCU development and C/C++/Python programming
- Designed problem sheet and held a two-hour Q&A session to answer students' questions on a weekly basis

EXTRACURRICULAR EXPERIENCES

Co-Founder, XJTLU Innovation Laboratory, Suzhou, China 7/2015 - Present

- Proposed mission statement and strategic plan overarching the development of the lab; secured external resources concerning technical training; established a hierarchy of technical staff with 20+ core members and 50+ team members in total
- Promoted in-depth self-study among students on various technical subjects, e.g., mechanical system, embedded system, and electronics
- Reinforced the reputation of XJTLU's education in electrical engineering and computer science

Team Leader and Technical Supporter, "Freescale Cup" Intelligent Vehicle Competition, XJTLU 2016 & 2017

- Established the first team at XJTLU to attend the competition; Garnered the national 2nd prize
- Leveraged resources on/off-campus to provide technical support to the team
- Provided technical guidance to the team on micro-controller development as well as image processing algorithms such as Kalman Filter

Software Architect Programmer, HACK x FDU Hackathon, Fudan University 11/2017

- Developed with the team an intelligent music recommending system; ranked top 8 among 70 participating teams
- In responsible of a. Development of facial expression recognition based on CNN; 2) Development of detection of emotional and language tones in music (lyrics) based on IBM Watson™ Tone Analyer; 3) Development of music (lyrics) retrieval from NetEase w/ a Python web crawler

SKILLS AND HOBBIES

Software: C, C++, Java, Python, MATLAB, TensorFlow, Latex, MySQL, MongoDB, JavaScript
Hardware: CORTEX-M3(STM32), ARM9(S3C2440), WIFI(ESP8266), NVIDIA TX2, PCB design
Hobbies: Professional Saxophone Player, Amateur Piano Player

STANDARDIZED TESTS

GRE General: V: 152 / Q: 168 / AW: 3 / Total: 320 | **TOEFL:** L:23 / S:23 / R:27 / W:24 / Total: 97