Junbo Zhang

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Education

Tsinghua University (THU), Beijing, China 08/2015 – 07/2019 (Expected)

Undergraduate Student, Electronic Engineering (EE)

- GPA: 3.67 Rank: 39 / 216 (6 / 248 in the second year)

Publications

- J. Wang, **J. Zhang**, R. Saha, H. Jin, S. Kumar. Pushing the Range Limits of Commercial Passive RFIDs. NSDI '19.

Research Experience

Future Internet & **Communication Lab** | Advisor: Prof. Yong Li **Tsinghua University**

Machine Learning Based IoT Device Recognition 11/2018 – Present

- Developing a system that analyzes traffic features and uses machine learning techniques to classify different types of IoT devices.

Institute of Trustworthy Network and System | Advisor: Prof. Zheng Yang **Tsinghua University**

Human Gesture and Pose Recognition System 09/2018 – 12/2018

- Participated in the development of a wireless sensing system that can recognize human gestures and poses regardless of environments and human orientations; engaged in experiments and greatly accelerated non-linear programming solvers.

Wi-Tech Lab | Advisor: Prof. Swarun Kumar **Carnegie Mellon University**

Long-Range RFID System 08/2018 – 09/2018

- Contributed to a system for passive RFIDs, which uses distributed MIMO to search tags in blind situations and improve detection range and throughput; engaged in experiments and paper writing, fully in charge of simulation and tag response detection.

Wi-Fi Based Sensing System for UAVs 07/2018 – 08/2018

- Engaged in developing a drone sensing system that uses 5 GHz Wi-Fi signals to detect, locate LOS and NLOS obstacles and further classify their types of material; in charge of hardware implementation, data collection and part of paper writing.

3D Image Simulation and Recognition Lab | Advisor: Prof. Huimin Ma **Tsinghua University**

Eye Tracking System 09/2017 – 12/2017

- Contributed to an eye tracking system with cameras and infrared light sources, which analyzes gaze direction based on facial images; improved pupil location and corneal reflection removal algorithms, increased robustness and accuracy.

Selected Course Projects

Adaptive Voice Enhancement 10/2018 – 11/2018

- Designed real-time voice enhancement programs running on DSP chips that uses LMS algorithm and FIR filters to remove noise components in the input signal; collaborated with two teammates in course *Systems Design Based on Digital Signal Processors*.

Sina Weibo Hot Topic Analysis 05/2018 – 06/2018

- Analyzed followers under certain hot topics on Sina Weibo and visualized characteristics such as geographical distribution, activity level and clique formation; collaborated with a teammate in course *Computer Network Technology and Experiment*.

Medical Image Classification 03/2018 – 05/2018

- Analyzed the characteristics of 14 common thoracic diseases based on their frontal X-ray images, and developed a PyTorch model that can accurately classify them; collaborated with two teammates in course *Media and Cognition*.

Cross-modality Metric Learning Model 10/2017 – 12/2017

- Developed a PyTorch model, based on both CNN and RNN, which can match auditory and visual features extracted from 30 different video clips; collaborated with a teammate in course *Introduction to Auditory-visual Information System.*

32-bit MIPS Processor 07/2017 – 08/2017

- Developed two 32-bit MIPS processors, a single-cycle one and another with five pipelines, which can do basic arithmetic operations and handle risks; collaborated with two teammates in course *Fundamental Experiment of Digital Logic and Processor*.

Skills

- Programming: C/C++, MATLAB, Python, SQL, Verilog, Assembly Language, LaTeX
- *Fluent* in English : TOEFL iBT 113/120 (Speaking 28/30), GRE 331/340 (Verbal 161, Quantative 170, AW 4.0)

Honors and Awards

- School Scholarship of 2017 for improvement in studies and grades