Binyao Jiang

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Education

University of Illinois at Urbana-Champaign (UIUC), Champaign, IL **[09/2019 – 05/2021]**
Master of Science in Computer Science

Shanghai Jiao Tong University (SJTU), Shanghai, China **[09/2015 – 06/2019]**
Bachelor of Science in Computer Science

- Overall GPA: 3.85/4.0 Major GPA: 3.97/4.0 Rank: 4/142
- Zhiyuan Honor Degree; National Scholarship (2016, 2017); Academic Excellence Scholarship Type A (2016).

Work Experience

Internship at Microsoft: Linux FPGA High Performance Driver **[07/2018 – 01/2019]**

- Designed and implemented ring-buffer communication interface with high throughput and low latency, including features of kernel bypass and interrupt support in user space. Achieved **25Mpps** throughput with a small batch size.
- Integrated into **RocksDB** and **FIO** (Flexible I/O tester) to show system's performance under different workloads.
- Integrated into revised **Caffe** where JPEG decoding is offloaded to FPGA. Training with one NVIDIA P100 GPU, approximately **7 CPU cores** could be saved.
- Published in **ACM ICPP** 2019. Won **Award of Excellence** in Microsoft Research Asia Internship Program.

Research Assistant at SJTU Intelligent IoT Lab: QR Codes Batch Reading APP **[05/2018 – 07/2018]**

- Presented a lightweight IFFT based QR code detection algorithm to identify each code in a batch QR codes image.
- Accelerated with parallel computing framework **RenderScript** which makes detection **14x** faster by fully utilizing CPU's and GPU's multiple cores.
- Proposed an effective QR code tracking mechanism in preview mode, where decoding accuracy can converge to nearly **100%** and processing time can converge to **50%** of the origin.
- Implemented all the mentioned features to an Android APP which is capable of reading 1-160 Version 1-H QR codes in batch with mostly **~95%** accuracy in **100-400ms**.
- Published as the first author in **IEEE INFOCOM** 2019. Won Best Mobile App Award in **ACM MobiCom** 2018.

Projects

Raspberry Pi Based System Development **[03/2018 – 06/2018]**

- Created a smart music player using Raspberry Pi to monitor user's emotion and gesture changes with a camera and then play different kinds of music based on his emotion or pause/replay/skip songs based on his gesture.
- Classified user's emotion and gesture using **Face++ API** by encoding camera data into Base64 format, uploading encoded data to API server and parse received **JSON** message to obtain results.
- Developed Raspberry Pi as a WeChat (social networking software) Official Account server which replies to user's input with relevant news and commodities crawled by **Beautiful Soup** in Python.

Spam Messages Visualization System **[03/2018 – 06/2018]**

- Designed a full-stack system to visualize time-space distribution of spam messages.
- Developed UI based on **D3.js**, **jQuery** and **Baidu Map API**, and server side based on **Tornado**.
- Generated pseudo base-station (source of spam messages) movement trajectories based on spam messages relevance and time-space locality. Fitted each trajectory to make it go along streets.

Interactive Video Object Selection **[09/2017 – 12/2017]**

- Built a software that can continuously track and segment user selected object in video.
- Utilized **Fully Convolutional Network** as basic model, and extended its input by adding a user's selection mask.
- Combined optical flows and contour maps of moving objects into Fully Convolutional Network model.
- Implemented GUI (**PyQt5**) to process user's input and display video segmentation results.

Technical Skills

- **Programming Languages:** C/C++ (primary language), Python, Java, Matlab, HTML/CSS/JavaScript, Verilog.
- **Tools:** Linux, Android SDK, Git, RenderScript, SQL, Bash, OpenCV, Caffe, Latex, Markdown.