Qianlong Sang

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Research Interests

My current research interests focus on leveraging task scheduling and frequency scaling on mobile heterogeneous CPU to meet user performance requirements and achieve power savings. Additionally, I am engaged in some performance profiling work. My future research will shift from traditional application to machine learning tasks.

Education

Wuhan University, Computer Science and Technology — Ph.D.->M.S.[1] *2022.9 - now*

Wuhan University, Cyber Science and Engineering — B.S. *2018.9 - 2022.6*

Under Submission

[1] **Qianlong Sang,** Jinqi Yan, Rui Xie, Chuang Hu, Kun Suo, Dazhao Chen, "QoE-Aware Power Management Via Scheduling and Governing Co-Optimization on Mobile Devices."

Journal Publications

[1] XinQuan Cai, **Qianlong Sang,** Chuang Hu, Yili Gong, Kun Suo, Xiaobo Zhou, "Incendio: Priority-based Scheduling for Alleviating Cold Start in Serverless Computing." *IEEE Transactions on Computers* (***TC '24***)

[2] Huanghuang Liang, **Qianlong Sang,** Chuang Hu, Yili Gong, Dazhao Cheng, Xiaobo Zhou, Yu Wang, "TAPU: A Transmission-Analytics Processing Unit for Accelerating Multifunctions in IoT Gateways." *IEEE Internet of Things Journal* (***IOTJ '23***)

[3] Chuang Hu, Rui Lu, **Qianlong Sang,** Huanghuang Liang, Dan Wang, Dazhao Cheng, Jin Zhang, Qing Li, Junkun Peng, "An Edge-Side Real-Time Video Analytics System With Dual Computing Resource Control." *IEEE Transactions on Computers* (***TC '23***)

[4] Huanghuang Liang, **Qianlong Sang,** Chuang Hu, Dazhao Cheng, Xiaobo Zhou, Dan Wang, Wei Bao, Yu Wang, "DNN Surgery: Accelerating DNN Inference on the Edge Through Layer Partitioning." *IEEE Transactions on Cloud Computing* (***TCC '23***)

Consulting Project

Technology Lead. Ongoing. DVFS Energy Consumption Modeling and Algorithm Technology Cooperation. *2024.04 - 2024.12*

Supported by Huawei Technologies Co., Ltd.

- Responsible for improving the accuracy of load statistics in the system.
- Responsible for enhancing the algorithms for frequency scaling in the system.

Technology Lead. Ongoing. Thread Identification in the Diverse Rendering Pipelines of Mobile Devices. *2024.05 - 2025.04*

Supported by OPPO.

- Responsible for analyzing diverse rendering pipeline processes at the upper levels.
- Responsible for instrumenting interfaces that reflect dependency relationships across different layers of the system.

Technology Lead. Finished. Scheduling and DVFS Technology for Mobile Devices Performance and Power Consumption Awareness. *2021.12 - 2022.11*

Supported by OPPO.

- Responsible for utilizing reinforcement learning algorithms for frequency scaling to make smarter decisions.
- Responsible for achieving performance goals and reducing power consumption through joint scheduling and frequency scaling.

[1] I am considering pursuing a master's degree instead of a Ph.D. for some personal reasons.

Project

WHURISCV codefuturedalao/oscpu-framework *2021.07 - 2021.10*

A five stages riscv64-I CPU for ysyx in 2021

- Responsible for all the work for the CPU.

WHUMIPS codefuturedalao/WHUMIPS *2020.5 - 2020.8*

A five stages mips CPU with cache for NSCSCC in 2020

- Responsible for all the work for the CPU.

Internship

OPPO Research Intern *2022.2 - 2022.5*

- Performance Analysis
- Power Optimization

Teaching

Teaching Assistant:

Data Structure	*2023*
Operating System	*2021*
YSYX Project of Beijing Institute of Open Source Chip	*2021*

Awards

Second-Class Scholarship for Outstanding Students, Wuhan University, 2021	*2021*
Third Prize, NSCSCC Team Competition, 2020	*2020*