WENQI JIANG

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RESEARCH INTERESTS

My research is centered around improving and replacing the state-of-the-art software-based systems by emerging heterogeneous hardware. To be more specific, I am exploring how reconfigurable hardware (FPGAs) can be applied and deployed in data centers efficiently. Such research ranges from application-specific designs such as recommendation systems and information retrieval systems to infrastructure development such as distributed frameworks and virtualization on the cloud.

EDUCATION

ETH Zurich, Switzerland *2021~Now*
PhD in Computer Science
Affiliated with the Systems Group
Concentration in FPGAs for Data Centers
Advisor: Prof. Gustavo Alonso

Columbia University, USA *2018~2020*
Master in Electrical Engineering
Concentration in Data-Driven Analysis and Computation
Advisor: Prof. Luca Carloni
Overall GPA: 4.0/4.0

Huazhong University of Science and Technology, China *2014~2018*
Bachelor in Automation
Concentration in Pattern Recognition
Overall GPA: 3.7/4.0

PROFESSIONAL APPOINTMENTS

Alibaba Cloud Sep. 2019 ~ Dec. 2019
Database Development Intern *Shenzhen, China*

I was responsible to develop the high-availability module for ADB-V, a vector similarity search engine (also known as vector database) developed by Alibaba.

Visiting Experience

ETH Zurich Feb 2020 ~ Aug. 2020
Visiting Student, Advisor: Gustavo Alonso *Zurich, Switzerland*

I published the paper *MicroRec: Efficient Recommendation Inference by Hardware and Data Structure Solutions* on MLSys 2021 as the first author. The paper presents an FPGA accelerator for recommender system especially about solving the memory bottleneck existed in CPU-based engines.

University of Strathclyde July 2017 ~ Aug. 2017
Visiting Student, Advisor: Xiu T. Yan *Glasgow, UK*

I developed a program for automatically marking the path of agricultural robot and designed a route planning system in order to minimize consuming power of the agricultural robot.

Beijing Institute of Technology Jan. 2017 ~ Feb. 2017
Visiting Student, Advisor: Derong Chen *Beijing, China*

I designed a system to extract and recognize human gestures from videos by applying the Hidden Markov Model.

Publications

[1] **Wenqi Jiang***, Zhenhao He*, Shuai Zhang, Kai Zeng, Liang Feng, Jiansong Zhang, Tongxuan Liu, Yong Li, Jingren Zhou, Ce Zhang, Gustavo Alonso, "FleetRec: Large-Scale Recommendation Inference on Hybrid GPU-FPGA Clusters." *Under Submission*.

[2] Shuai Zhang, Yi Tay, **Wenqi Jiang**, Da-cheng Juan, Ce Zhang, "Switch Spaces: Learning Product Spaces with Sparse Gating." *Under Submission*.

[3] **Wenqi Jiang**, Zhenhao He, Shuai Zhang, Thomas B. Preußer, Kai Zeng, Liang Feng, Jiansong Zhang, Tongxuan Liu, Yong Li, Jingren Zhou, Ce Zhang, Gustavo Alonso, "MicroRec: Efficient Recommendation Inference by Hardware and Data Structure Solutions." *Proceedings of the 4th Conference on Machine Learning and Systems (**MLSys 2021**), online, April 5-9, 2021*.

[4] Shaoxiong Ji*, **Wenqi Jiang***, Anwar Walid, Xue Li, "Dynamic Sampling and Selective Masking for Communication-Efficient Federated Learning." *arXiv preprint, 2020*.

Awards and Honors

Outstanding Gradutate, HUST	2018
Scholarship for Excellent Academic Performance	2015

Talks

MicroRec: Efficient Recommendation Inference by Hardware and Data Structure Solutions

ETH Zurich June 2020

Research Mentoring

Yu Zhu, ETH Zurich, co-mentored with Zhenhao He — Fall 2020

We worked on building an FPGA cluster for accelerating recommender systems.

Languages

English: fluent

Mandarin (Chinese): native

German: beginner

Skills

Programming Languages: C/C++, Python, OCaml, System Verilog, Matlab, x86 Assembly

Platforms & Frameworks: Vivado HLS, CUDA, OpenCL, OpenCV, TensorFlow, PyTorch, Keras, Spark Streaming, Apache Beam, MySQL, PostgreSQL