Jingrong Chen

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Education

Sept. 2020 – May. 2025 **Duke University**, *Doctor of Philosophy*, Computer Science
- Advisor: **Prof. Danyang Zhuo**
- Dissertation: Flexible and Efficient Application-Networking Co-Design in Cloud Datacenters.

Sept. 2018 – Aug. 2020 **Hong Kong University of Science and Technology**, *Master of Philosophy* (*MPhil*), Computer Science and Engineering
- Advisor: **Prof. Kai Chen**

Sept. 2014 – Jun. 2018 **Fudan University**, *Bachelor of Science*, Honor Program, School of Computer Science
- Advisor: **Prof. Yang Chen**

Research Interests

- End-system networking
- Cloud networking
- RDMA and high-speed network
- Machine learning systems

Publications

[C10] Jianxing Qin, **Jingrong Chen**, Xinhao Kong, Yongji Wu, Tianjun Yuan, Liang Luo, Zhaodong Wang, Ying Zhang, Tingjun Chen, Alvin R. Lebeck, and Danyang Zhuo. Phantora: Maximizing Code Reuse in Simulation-based Machine Learning System Performance Estimation. In ***NSDI***, 2026

[C9] Xiangfeng Zhu, Yuyao Wang, Banruo Liu, Yongtong Wu, Nikola Bojanic, **Jingrong Chen**, Gilbert Louis Bernstein, Arvind Krishnamurthy, Sam Kumar, Ratul Mahajan, and Danyang Zhuo. High-level Programming for Application Networks. In ***NSDI***, 2025

[C8] Yongji Wu, Yechen Xu, **Jingrong Chen**, Zhaodong Wang, Ying Zhang, Matthew Lentz, and Danyang Zhuo. MCCS: A Service-based Approach to Collective Communication for Multi-Tenant Cloud. In ***SIGCOMM***, 2024

[C7] Hao Wang, Han Tian, **Jingrong Chen**, Xinchen Wan, Jiacheng Xia, Gaoxiong Zeng, Wei Bai, Junchen Jiang, Yong Wang, and Kai Chen. Towards Domain-Specific Network Transport for Distributed DNN Training. In ***NSDI***, 2024

[C6] Xiangfeng Zhu, Weixin Deng, Banruo Liu, **Jingrong Chen**, Yongji Wu, Thomas Anderson, Arvind Krishnamurthy, Ratul Mahajan, and Danyang Zhuo. Application Defined Networks. In *HotNets*, 2023

[C5] **Jingrong Chen***, Yongji Wu*, Shihan Lin, Yechen Xu, Xinhao Kong, Thomas Anderson, Matthew Lentz, Xiaowei Yang, and Danyang Zhuo. Remote Procedure Call as a Managed System Service. In ***NSDI***, 2023

[C4] Xinhao Kong, **Jingrong Chen**, Wei Bai, Yechen Xu, Mahmoud Elhaddad, Shachar Raindel, Jitendra Padhye, Alvin R. Lebeck, and Danyang Zhuo. Understanding RDMA Microarchitecture Resources for Performance Isolation. In ***NSDI***, 2023

[C3] **Jingrong Chen**, Hong Zhang, Wei Zhang, Liang Luo, Jeffrey Chase, Ion Stoica, and Danyang Zhuo. NetHint: White-Box Networking for Multi-Tenant Data Centers. In ***NSDI***, 2022

[C2] Hong Zhang, Yupeng Tang, Anurag Khandelwal, **Jingrong Chen**, and Ion Stoica. Caerus: TIMELY Task Scheduling for Serverless Analytics. In ***NSDI***, 2021

[C1] Hao Zhao, Qingyuan Gong, Yang Chen, **Jingrong Chen**, Yong Li, and Xiaoming Fu. This Place Is Swarming: Using a Mobile Social App to Study Human Traffic in Cities. In *PerCom Workshops*, 2018

Industry Experience

May 2025 – Present **Uber**, *Manager:* ***Dr. Shi Bai***, Host Network
- Mordernizing Uber's host network to improve reliability and velocity.
- One of the major contributors and the go-to person for data plane details for Kubernetes network model migration via Container Network Interface (CNI).
- Leading the effort to bring bandwidth isolation feature to stateless, stateful, and batch services.

May 2024 – Aug. 2024 **Uber**, *Manager:* ***Dr. Hongqiang Harry Liu***, Host Network, Network observability
- Delivered a PoC of network observability platform that collects and visualizes container- and service-level metrics on Uber's infra

May 2023 – Dec. 2023 **Uber**, *Manager:* ***Dr. Hongqiang Harry Liu***, Software Networking, Off-host service mesh
- Migrated assisted load balancing (ALB) from Muttley to Envoy
- Initiated the early design and PoC of off-host service mesh

May 2022 – Aug. 2022 **Meta**, *Mentor:* ***Dr. Liang Luo***, AI System SW/HW Codesign, Distributed training auto parallelism
- Explored the design space of DHEN's performance through automated search
- Developed a codesign toolkit for open-source DHEN based on Alpa

Feb. 2019 – Aug. 2019 **Clustar**, *Mentor:* ***Dr. Shuihai Hu***, Startup company, RDMA virtualization in the cloud
- Exploited Open vSwitch hardware offloading and a programmable data-plane in NIC for RDMA I/O virtualization
- Designed an explicit route controller that enabled network virtualization (VXLAN) with the multi-path scenario into consideration
- Designed an end-host based load balancer, which leveraged active probing to select the best path
- Implemented a prototype consisting of a brain and an agent which can provision VM and allocate bandwidth on the end-host

Mar. 2018 – Aug. 2018 **ByteDance**, *Supervisor:* ***Dr. Chuanxiong Guo***, AI Lab, Machine learning system group
- Redesigned and implemented the communication part of MXNet with IBVerbs and RDMA
- Conducted experiments to demonstrate the acceleration of MXNet over RDMA on various models (including CNNs and RNNs)
- Worked on how to simplify verbs programming

Jul. 2017 – Sept. 2017 **Alibaba**, *Manager:* ***Dr. Ming Zhang***, Network Automation, Network Audit
- Promoted the coverage and accuracy of servers uplink data in Alibaba's network information base (NIB) database.
- Transferred part of NIB data and the daily auditing jobs from a local relational database to MaxCompute (a big data platform, previously called ODPS)

Awards / Honors

2022 – 2023 USENIX NSDI Student Grant

2021 – 2022 Teaching Assistant Award

2021 – 2022 Research Initiation Project Award

2020 – 2022 Duke Computer Science PhD Fellowship

2018 – 2020 HKUST Postgraduate Scholarship

Dec. 2015 The 2015 ACM-ICPC Asia Shanghai Regional Contest – **Gold Medal**

Nov. 2015 The 2015 ACM-ICPC Asia Hefei Regional Contest – **Gold Medal**

Nov. 2014 The 2014 ACM-ICPC Asia Guangzhou Regional Contest – **Gold Medal**

Aug. 2013 The 2013 CCF National Olympiad in Informatics – **Bronze Medal**

Teaching Experience

2022 Spring Teaching Assistant of Duke CPS590.04 – Data Center Systems

2021 Fall Teaching Assistant of Duke CPS310 – Operating Systems

2019 Fall Teaching Assistant of HKUST COMP3511 – Operating Systems

Programming Skills at Pre-LLM Age

I am experienced with Rust, C++, C, Python, JavaScript, Haskell, Bash, systems programming, asynchronous networking programming, RDMA verbs programming, parallel computation, and debugging distributed systems.