

Jingrong Chen

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Education

- Sept. 2020 – **Duke University**, *Doctor of Philosophy*, Computer Science
Present ○ Advisor: **Prof. Danyang Zhuo**
- Sept. 2018 – **Hong Kong University of Science and Technology**, *Master of Philosophy (MPhil)*, Computer Science and Engineering
Aug. 2020 ○ Advisor: **Prof. Kai Chen**
- Sept. 2014 – **Fudan University**, *Bachelor of Science*, Honor Program, School of Computer Science
Jun. 2018 ○ Advisor: **Prof. Yang Chen**

Research Interests

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

Publications

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

- May 2023 – **Uber**, *Manager: Dr. Hongqiang Harry Liu*, Software Networking, Off-host service mesh
- Dec. 2023
- Migrated assisted load balancing (ALB) from Muttley to Envoy
 - Initiated the early design and PoC of off-host service mesh
- May 2022 – **Meta**, *Mentor: Dr. Liang Luo*, AI System SW/HW Codesign, Distributed training auto parallelism
- Aug. 2022
- Explored the design space of DHEN’s performance through automated search
 - Developed a codesign toolkit for open-source DHEN based on Alpa
- Feb. 2019 – **Clustar**, *Mentor: Dr. Shuihai Hu*, Startup company, RDMA virtualization in the cloud
- Aug. 2019
- 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 – **ByteDance**, *Supervisor: Dr. Chuanxiong Guo*, AI Lab, Machine learning system group
- Aug. 2018
- 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 – **Alibaba**, *Manager: Dr. Ming Zhang*, Network Automation, Network Audit
- Sept. 2017
- 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 Max-Compute (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

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.