Banruo Liu

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AVAILABILITY **May 18, 2026 - Aug 14, 2026**

RESEARCH INTERESTS **Machine learning systems**

EDUCATION

University of Illinois Urbana-Champaign Expected: 2029
Ph.D. in Computer Science Advisor: Prof. Fan Lai

Department of Computer Science and Technology, Tsinghua University Jul. 2024
BEng in Computer Science Advisor: Prof. Youyou Lu

PUBLICATION

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

Towards a Flexible and High-Fidelity Approach to Distributed DNN Training Emulation *APSys, 2024*
Banruo Liu, Mubarak Adetunji Ojewale, Yuhan Ding, Marco Canini

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

WORK EXPERIENCE

Google *May 2025 - Dec 2025*
Hybrid, Sunnyvale, CA
Student Researcher, Google System Research Group.

RESEARCH EXPERIENCE

Graduate Research Assistant, UIUC Aug. 2024 - Present
Advisor: Prof. Fan Lai
· Design and implement a SLO-aware query planner for large-scale cloud ML serving. It handles heter. hardware and multi-tenancy(diverse user input and requirments), achieving 3-10× goodput improvement compared with SOTA.
· Paper submission under review

Research Assistant at SANDS Lab, KAUST Dec. 2023 - Jul.2024
Advisor: Prof. Marco Canini
· Design a system that emulates distributed training on a single node by mocking collective communication from other nodes. It exploits symmetry to faithfuly predict training metric(i.e. iteration time) and answers what-if questions.
· Build a prototype that supports end-to-end two-node DP in PyTorch using NCCL as backend.

Research Assistant at SysLab, University of Washington Jan. 2023 - Dec. 2023
Advisors: Prof. Arvind Krishnamurthy, Prof. Ratul Mahajan
· Design and build a domain-specific-language and its compiler that automatically generates optimized run-time code for network functions used in microservices.

· This work is integrated with Kubernetes and Istio

Research Assistant at StorageLab, Tsinghua University Dec. 2021 - Dec. 2022

Advisor: Prof. Youyou Lu

· Design and implement a user space memory allocator optimized for persistent memory.

· Profile and compare the performance of different methods doing concurrent read/write in RDMA-based distributed object store.

HONORS & AWARDS

Chinese National Olympiad in Informatics(NOI) 2018, **bronze medal** *China, 2018*

Outstanding Graduates *Dept. of Computer Science, Tsinghua University, 2024*

SERVICE

Undergraduate Teaching Assistant for Operating Systems Course *Tsinghua University, 2022 Spring*