Yi Liu

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Research Interests

Storage/Database systems, Disaggregated memory, Distributed systems, AI infrastructure, Cloud computing.

Education

Sep. 2020 - Present	**University of California Santa Cruz (UCSC)** Ph.D. in Computer Science Engineering Advisor: Dr. Chen Qian
Aug. 2016 - July 2020	**University of Science and Technology of China (USTC)** B.E. in Electronic Information Engineering

Honors & Awards

2025	SMASH paper selected by the ***Communications of ACM*** **as Research Highlight** in the Oct. 2025 issue (the only research highlight in that issue).
2025	Vortex is awarded as **Best Poster Award** in ICNP 2025.
2024	Student Travel Grant, IEEE ICNP
2023	Student Travel Grant, USENIX NSDI, ACM SIGMETRICS, ACM/IEEE SEC
2017, 2018	Excellent College Student Award of USTC

Experience

June 2025 - Sep. 2025	**Baidu Inc.** AI Networks R& D Contributed to developing LLM Attention–FFN disaggregation for LLM serving with the SGLang framework. Gained experience with popular LLM models (e.g., DeepSeek-R2) deployment and collective communication mechanisms.
June 2023 - Sep. 2023	**Amazon Web Services Inc.** Software Engineering Intern

Journal, Conference, and Workshop Publications

Among my publication venues, Communications of ACM is the most prestigious ACM journal; SIGMETRICS is a top conference on system performance; ICNP is a top conference on network protocols; VLDB is a top conference on database systems; IEEE Cloud is one of the most important conferences on cloud computing; SEC is the most important conference on edge computing; and QCE is the top conference on practical quantum computing.

Comm. of the ACM 2025	**Yi Liu**, Shouqian Shi, Minghao Xie, Heiner Litz, Chen Qian. Smash: Flexible, Fast, and Resource-efficient Placement and Lookup of Distributed Storage. *SMASH paper (SIGMETRICS/POMACS 2023) selected by the CACM editors to re-publish as* ***Research Highlight in Communications of ACM*** *Oct. 2025.* **Communications of ACM is the most prestigious ACM journal with an impact factor 22.7. Our paper is among the ~ 10 research highlights selected by CACM every year from all areas of computer science and engineering.** Quote from the CACM editor's perspective: "*Storage is only useful when one can find where their data is, and Smash presents a new approach for making the data lookup efficient*."

VLDB 2025	**Yi Liu**, Minghao Xie, Shouqian Shi, Yuanchao Xu, Heiner Litz, Chen Qian. Outback: Fast and Communication-efficient Index for Key-Value Store on Disaggregated Memory. *International Conference on Very Large Data Bases, London, United Kingdom, September 1-5, 2025.*
HotStorage 2025	**Yi Liu**, Fei Fang, Chen Qian. Efficient Vector Search on Disaggregated Memory with d-HNSW. *Proceedings of the ACM Workshop on Hot Topics in Storage and File Systems, Boston, MA, July 10-11, 2025.*
ToN 2025	**Yi Liu**, Shouqian Shi, Ruilin Zhou, Yuhang Gan, Chen Qian. Parrot Hashing: Fast and Low-memory Table Lookups for Network Applications with One CRC-8. *IEEE Transactions on Networking.*
SIGMETRICS 2023	**Yi Liu**, Shouqian Shi, Minghao Xie, Heiner Litz, Chen Qian. Smash: Flexible, Fast, and Resource-efficient Placement and Lookup of Distributed Storage. *Proceedings of the ACM on Measurement and Analysis of Computing Systems, Orlando, Florida, June 19-22, 2023. (Accepted rate: 13/130≈10% at Winter round)*
ICNP 2024	**Yi Liu**, Shouqian Shi, Ruilin Zhou, Yuhang Gan, Chen Qian. Scalable, Fast, and Low-memory Table Lookups for Network Applications with one CRC-8. *IEEE International Conference on Network Protocols, Charleroi, Belgium, October 28-31, 2024. (Accepted rate: 50/205≈24%)*
IEEE CLOUD 2024	**Yi Liu**, Ruilin Zhou, Yuhang Gan, Chen Qian. SpotKV: Improving Read Throughput of KVS by I/O-aware Cache and Adaptive Cuckoo Filters. *IEEE International Conference on Cloud Computing, Shenzhen, China, July 7-13, 2024. (Accepted rate: 37/190≈19.4%)*
ACM/IEEE SEC 2023	**Yi Liu**, Minmei Wang, Shouqian Shi, Yang Wang, Chen Qian. EdgeCut: Fast and Low-overhead Access of User-associated Contents from Edge Servers. *ACM/IEEE Symposium on Edge Computing, Wilmington, Delaware, Dec. 6-9, 2023. (Accepted rate: 18/71≈25.3%)*
ACM 202?	**Yi Liu***, Fei Fang*, and Chen Qian. Paper about High Performance Disaggregated Memory Systems, under **revision** at a top ACM conference (details not disclosed due to anonymous submission)
USENIX 202?	Fei Fang, Yifan Hua, Shengze Wang, **Yi Liu**, Chen Qian, and Xiaoxue Zhang. Paper about Large Language Model Serving, under **revision** at a top USENIX conference (details not disclosed due to anonymous submission)
NSDI Poster 2025	Minghao Xie, Ruilin Zhou, **Yi Liu**, Chen Qian, Heiner Litz. LESS: An LLM Ephemeral Storage System. *USENIX Symposium on Networked Systems Design and Implementation, Philadelphia, PA, April 28-30, 2025.*
ICNP Poster 2025	Shengze Wang, **Yi Liu**, Chen Qian. Vortex: Efficient Decentralized Vector Overlay for Similarity Search and Delivery. *IEEE International Conference on Network Protocols, Seoul, South Korea, September 22-25, 2025.* ***Best Poster Award***
ICNP 2025	Shengze Wang,**Yi Liu**, Xiaoxue Zhang, Liting Hu, Chen Qian. A Distributed Learned Hash Table. *IEEE International Conference on Network Protocols, Seoul, South Korea, September 22-25, 2025. (Accepted rate: 60/238≈25.2%)*
ICDCS 2025	Ruilin Zhou, Yuhang Gan, **Yi Liu**, Chen Qian. CloudQC: A Network-aware Framework for Multi-tenant Distributed Quantum Computing. *International Conference on Distributed Computing Systems, Glasgow, Scotland, July 20-23, 2025.*
ICNP 2024	Yifan Hua, Jinlong Pang, Xiaoxue Zhang, **Yi Liu**, Xiaofeng Shi, Bao Wang, Yang Liu, Chen Qian. Towards Practical Overlay Networks for Decentralized Federated Learning. *IEEE International Conference on Network Protocols, Charleroi, Belgium, October 28-31, 2024. (Accepted rate: 50/205≈24.3%)*
ICNP Poster 2024	Shengze Wang, **Yi Liu**, Xiaoxue Zhang, Liting Hu, Chen Qian. Distributed Learned Hash Table. *IEEE International Conference on Network Protocols, Charleroi, Belgium, October 28-31, 2024.*

QCNC 2024	Ruilin Zhou, Yuhang Gan, **Yi Liu**, Katia Obraczka, Chen Qian. Towards QoS-aware Quantum Networks. *International Conference on Quantum Communications, Networking, and Computing, Kanazawa, Japan, July 1-3, 2024.*
SIGCOMM N2Women 2023	Minmei Wang, Zaoxing Liu, **Yi Liu**, Shouqian Shi, Chen Qian. Towards Consolidated Algorithms for Co-located Network Functions on Programmable Data Planes. *ACM SIGCOMM Workshop on Networking Networking Women Professional Development, New York, USA, Sep. 10-14, 2023.*
SIGCOMM QuNet 2023	Ruilin Zhou, Yuhang Gan, **Yi Liu**. Towards Flow Scheduling in a Quantum Data Center. *ACM SIGCOMM Workshop on Quantum Networks and Distributed Quantum Computing, New York, USA, Sep. 10-14, 2023.*
QCE 2023	Yuhang Gan, Xiaoxue Zhang, Ruilin Zhou, **Yi Liu**, Chen Qian. A Routing Framework for Quantum Entanglements with Heterogeneous Duration. *IEEE International Conference on Quantum Computing and Engineering, Bellevue, Washington, September 17-22, 2023.*
IoT Journal 2022	Ge Wang, Shouqian Shi, Huazhe Wang, **Yi Liu**, Chen Qian, Cong Zhao, Wei Xi, Han Ding, Zhiping Jiang, Jizhong Zhao. Concurrent Rate-adaptive Reading with Passive RFIDs. *IEEE Internet of Things Journal 10, no. 1 (2022): 499-511.*

Participated Grant Proposal Writing

2024-2027	NeTS: SMALL: Develop Core Techniques and Applications of Learned and Disaggregated In-Network Lookups. $600,000. *National Science Foundation*
2024-2027	Collaborative Research: NeTS: Small: Resource-efficient Consolidated Data Plane for Network Functions. $300,000. *National Science Foundation*

Research Talks/Seminars

2025	**Building High-performance Disaggregated Database Systems in Cloud Infrastructure.** University of Iowa, Iowa City, IA Clemson University, Clemson, SC Fudan University, Shanghai, China
2024	**Scalable, Fast, and Low-memory Lookups for Network Applications with one CRC-8.** IEEE International Conference on Network Protocols, Charleroi, Belgium, October, 2024 **Towards Practical Overlay Networks for Decentralized Federated Learning.** IEEE International Conference on Network Protocols, Charleroi, Belgium, October, 2024
2024	**High Throughput and One-Round-Trip RDMA for Disaggregated Memory Systems.** IAB meetings of NSF-IUCRC Center for Research on Storage Systems in 2024 Spring/2023 Fall, Santa Cruz, CA
2023	**Smash: Flexible, Fast, and Resource-efficient Placement and Lookup of Distributed Storage** at SIGMETRICS 2023, Orlando, FL at IAB meetings by CRSS in 2021 Fall/2022 Spring/2023 Spring, Santa Cruz, CA
2023	**EdgeCut: Fast and Low-overhead Access of User-associated Contents from Edge Servers.** at ACM/IEEE SEC 2023, Wilmington, DE

Academic Service

Conference Committee	ICPADS 2025 Publicity Chair CoNEXT 2025 Shadow TPC FAST 2025 Artifact Evaluation Committee
Journal Reviewer	IEEE/ACM Transactions on Networking (ToN) 2024 IEEE Transactions on Dependable and Secure Computing (TDSC) 2023 ACM Transactions on Sensor Networks (TOSN) 2023 IEEE Network Magzine 2024 Journal of Supercomputing 2024

Teaching Experience

Teaching Assistants	CSE 120 Computer Networks, UCSC, 2023 Spring. CSE 80N Intro to Networking, UCSC, 2022 Fall, 2025 Fall. CSE 107 Probability and Statistics, UCSC, 2022 Winter. CSE 16 Applied Discrete Mathematics, UCSC, 2021 Spring/Fall. Linear Electronic Circuits, USTC, Fall 2018.

References

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