SIQI LIU

Waterloo, ON, Canada

RESEARCH INTERESTS

SmartNICs, programmable network infrastructure, and network performance modelling and optimization; network architecture and security.

EDUCATION

University of Waterloo Expected Aug. 2027
Ph.D. in Computer Science. Advisor: Raouf Boutaba

University of California, Los Angeles Jun. 2023
M.S. in Computer Science. Advisor: Lixia Zhang

University of California, Los Angeles Mar. 2022
B.S. in Computer Science and B.S. in Applied Mathematics. **Overall GPA: 3.94/4.00**

PUBLICATIONS

- **Siqi Liu**, Mina Tahmasbi Arashloo, Raouf Boutaba. "The Hidden Cost of Heterogeneity: Navigating Internal Contention in SoC SmartNICs." Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS), vol. 10, no. 3. To appear, Dec. 2026.
- **Siqi Liu**, Lixia Zhang. "Mnemosyne: Distributed Application Logging over Named Data Networking." 10th ACM Conference on Information-Centric Networking (ACM ICN). Oct. 2023.
- Tianyuan Yu, Hongcheng Xie, **Siqi Liu**, Xinyu Ma, Varun Patil, Xiaohua Jia, Lixia Zhang. "CLedger: A Secure Distributed Certificate Ledger via Named Data." IEEE International Conference on Communications. May 2023.
- Tianyuan Yu, Hongcheng Xie, **Siqi Liu**, Xinyu Ma, Xiaohua Jia, Lixia Zhang. "CertRevoke: a Certificate Revocation Framework for Named Data Networking." 9th ACM Conference on Information-Centric Networking (ACM ICN). Sep. 2022.
- Saurab Dulal, Nasir Ali, Adam Robert Thieme, Tianyuan Yu, **Siqi Liu**, Suravi Regmi, Lixia Zhang, Lan Wang. "Building a Secure mHealth Data Sharing Infrastructure over NDN." 9th ACM Conference on Information-Centric Networking (ACM ICN). Sep. 2022.
- Zhiyi Zhang, **Siqi Liu**, Randy King, Lixia Zhang. "Supporting Multiparty Signing over Named Data Networking." 8th ACM Conference on Information-Centric Networking (ACM ICN). Sep. 2021.
- **Siqi Liu**, Philipp Moll, Lixia Zhang. "Mnemosyne: An Immutable Distributed Logging Framework over Named Data Networking." 8th ACM Conference on Information-Centric Networking (ACM ICN). Sep. 2021.
- **Siqi Liu**, Varun Patil, Tianyuan Yu, Alexander Afanasyev, Frank Alex Feltus, Susmit Shannigrahi, and Lixia Zhang. "Designing Hydra with Centralized versus Decentralized Control: A Comparative Study." ACM CoNEXT Interdisciplinary Workshop on (de)Centralization in the Internet. Dec. 2021.
- Haiyang Wang, Guangyu Zhou, **Siqi Liu**, Jyun-yu Jiang, and Wei Wang. "Drug-Target Interaction Prediction with Graph Attention Networks." arXiv preprint. Jul. 2021. https://arxiv.org/abs/2107.06099

RESEARCH EXPERIENCE

UW Network Research Group Sep. 2023 – Present
Graduate Research Student — Advisor: Prof. Raouf Boutaba *Waterloo, ON*

- Survey the state of SmartNIC technology in both industry and academia.
- Investigate modelling approaches for understanding and predicting the performance of SmartNIC-based services.
- Systematize an empirical methodology for measuring SmartNIC service performance.

UCLA Internet Research Lab May 2020 – Jun. 2023
Undergraduate Researcher — Advisor: Prof. Lixia Zhang *Los Angeles, CA*

- Collaborated on network-security projects involving Named Data Networking (**NDN**).
- Refined the design and implementation of a DAG-based permissioned distributed ledger over NDN with Byzantine fault tolerance.
- Led the design and implementation of an adaptation of the distributed ledger for event logging in NDN-based systems and supported its application for certificate management and revocation.
- Spearheaded the design and implementation of a multiparty-signing framework for NDN Data objects, including the signing protocol, trust schema, supporting library, and tools.
- Contributed to the design of an attribute-based encryption model for privacy-preserving mobile health data management over NDN.
- Assisted with revisions to the protocol and implementation of an automated certificate authority for NDN.

UCLA Scalable Analytics Institute Mar. 2019 – Apr. 2020
Undergraduate Researcher — Advisor: Prof. Wei Wang *Los Angeles, CA*

- Investigated temporal-relation extraction from clinical text using Bidirectional Encoder Representations from Transformers (**BERT**).
- Applied a graph attention network (**GAT**) to drug–target interaction prediction, outperforming the state-of-the-art baseline in F1 score.
- Built data-processing and feature-extraction pipelines and implemented models for experimental evaluation.

PROFESSIONAL EXPERIENCE

Intel Corporation Apr. 2022 – Dec. 2022
Software Engineer Graduate Intern *Santa Clara, CA*

- Collaborated with senior architects to develop a system for network congestion control and transport optimization on future Intel Infrastructure Processing Units (**IPUs**).
- Simulated and evaluated the design of a programmable ASIC congestion control module with the network simulation team.
- Contributed to pathfinding efforts for innovative transport solutions in data-center networks.
- Optimized network performance using workloads and evaluation criteria commonly employed by cloud service providers (**CSPs**).

OUTREACH

ACM SIGCOMM Aug. 2026

- Organizing Student, "Programming SmartNICs: From Packet Processing to Programmable Transport" tutorial.

AWARDS

Go-Bell Scholarship Sep. 2023

- Scholarship for PhD students at the University of Waterloo.

Summa Cum Laude Mar. 2022

- UCLA Engineering School award for students with top 5% GPA.

Magna Cum Laude Mar. 2022

- UCLA College award for students with top 10% GPA.