

XIAO, Yunming

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RESEARCH INTERESTS

I am broadly interested in computer systems, networks, and security. My current research focuses on (i) security and privacy of Internet services and (ii) performance and reliability of cloud infrastructure.

EDUCATION

Ph.D. , Computer Science Northwestern University, Evanston, IL Thesis: <i>Revising System Premises For a Secure and Private Web</i> Advisor: Aleksandar Kuzmanovic	Sep 2019 - Jun 2024
B.Eng. , Computer Science Beijing University of Posts and Telecommunications, Beijing, China	Sep 2015 - Jun 2019

RESEARCH AND WORK EXPERIENCE

Chinese University of Hong Kong (CUHK), Shenzhen, China Assistant Professor, School of Data Science	Jul 2025 - Present
University of Michigan, Ann Arbor, MI Research Fellow, Advisor: <i>Prof. Ang Chen</i>	Jun 2024 - Jun 2025
Northwestern University, Evanston, IL Research Assistant, Advisor: <i>Prof. Aleksandar Kuzmanovic</i>	Sep 2019 - May 2024
Hewlett Packard Labs, Milpitas, CA Research Intern, Networking and Distributed Systems Lab, Host: <i>Dr. Puneet Sharma</i>	May - Aug 2022 (Full time) & Jan 2023 - Jan 2024 (Part-time)
Google, New York City, NY PhD Software Engineering Intern, Technical Systems & Infrastructure (TI)	Sep - Dec 2022
Nokia Bell Labs, Murray Hill, NJ (Remote) Networking Bell Labs Summer Intern, Host: <i>Dr. Matteo Varvello, Dr. T.V. Lakshman</i>	Jun - Aug 2021
Bytedance, Beijing, China Infrastructure R&D Intern	Mar - Jul 2019
Tsinghua University, Beijing, China Research Assistant, Host: <i>Prof. Wenfei Wu</i>	Mar 2018 - Mar 2019
King Abdullah University of Science and Technology, Jeddah, KSA Visiting Student, Host: <i>Prof. Marco Canini</i>	Jul - Oct 2018

AWARDS

- APNet Best Paper Award, 2025
NSF NeTS Early Career Workshop Travel Grant, 2025
EuroSys (CCF-A) Best Student Paper Award, 2024
Northwestern University PhD Terminal Year Fellowship, 2023
Travel Grant For ACM HotNets'23
HPE Best-in-Class Technical Competition Award, 2022
Distinguished Undergraduate Student in Beijing, 2019
Bronze Medal of the 31st Chinese Physics Olympiad, 2014

TEACHING EXPERIENCE

Lecturer, CUHK-Shenzhen

- CSC1001: Introduction to Computer Science: Programming Methodology – Fall 2025
- CSC3150: Operating System – Spring 2026

Teaching Assistant, Northwestern University

- COMP_SCI 397/497: Selected Topics in Computer Networks – Spring 2021, 2022, 2023, 2024
- COMP_SCI 340: Intro to Computer Networking – Winter 2022
- COMP_SCI 110: Intro to Computer Programming – Fall 2020

ADVISING AND MENTORING

Ph.D. Students, CUHK-Shenzhen

- Chengxuan Pei, 2025 - *Present*
- Cheng Li, 2025 - *Present*

Undergraduate Students, CUHK-Shenzhen

- Peichun Hua, 2025 - *Present*
- Yizhuo Li, 2025 - *Present*
- Baocheng Geng, 2025 - *Present*

Mentoring (Before joining CUHK-Shenzhen)

- Mushtari Sadia (PhD student @ UMich): co-authored [C14]
- Archit Bhatnagar (PhD student @ UMich): co-authored [C16]
- Jiaheng Lu (undergraduate @ UMich → PhD student @ UPenn): co-authored [C10]
- Suting Chen (undergraduate @ ShanghaiTech → PhD student @ Northwestern): co-authored [C12]
- Yibo Zhao (undergraduate @ ShanghaiTech → PhD student @ UMD): co-authored [C7]
- Yiwei Du (master student @ Rice University): co-authored [W2]
- Peizhi Liu (undergraduate → PhD student @ Northwestern) co-authored PDNS
- Ruijie Yu (master student @ Northwestern → software engineer @ Alibaba): co-authored PDNS
- Grayson Donnelly (undergraduate @ Northwestern): worked on extension of the Snatch project [C7]. He won the McCormick Summer Undergraduate Research Award in 2022.

PUBLICATIONS

(* Equal Contribution, † Corresponding Author)

Conference Publications

- [C17] **Y Xiao**, X Luo, Y Jiang, A Wang, H Chen, Z Zhou, H Yu, K Wang, Y Chen, C Miao: DDoS Detection at the Scale of One Hundred Tbps.
To appear in USENIX Symposium on Networked Systems Design and Implementation (*NSDI'26*).
(CCF-A, acceptance rate: 100/452=22.12%)
- [C16] Archit Bhatnagar, **Yunming Xiao**, Ang Chen, Amrita Roy Chowdhury:
Secure Vickrey Auctions for Online Advertising.
To appear in USENIX Symposium on Networked Systems Design and Implementation (*NSDI'26*).
(CCF-A, acceptance rate: 100/452=22.12%)
- [C15] C Miao, Z Yao, J Lv, J Wang, S Lin, X Zhang, **Y Xiao**, W Guo, J Bu, Y Wang, M Canini, G Xie:
Cost-effective and Reliable Global Internet Peering with Programmable Switches.
To appear in USENIX Symposium on Networked Systems Design and Implementation (*NSDI'26*).
(CCF-A, acceptance rate: 100/452=22.12%)

- [C14] Mushtari Sadia, Zhenning Yang, **Yunming Xiao**, Ang Chen, Amrita Roy Chowdhury: SQUiD: Synthesizing Relational Databases from Unstructured Text.
In Conference on Empirical Methods in Natural Language Processing (*EMNLP'25*), Oral.
(24 pages, CCF-B, acceptance rate: 1811/8174=22.16%)
- [C13] Yibo Huang, Yiming Qiu, **Yunming Xiao**, Archit Bhatnagar, Sylvia Ratnasamy, Ang Chen: Exposing RDMA NIC Resources for Software-Defined Scheduling.
In Asia-Pacific Workshop on Networking (*APNet'25*). (8 pages, acceptance rate: 34/133=25.6%)
Best Paper Award! (selection rate: 1/133=0.8%)
- [C12] Shihan Lin, Suting Chen, **Yunming Xiao**[†], Yanqi Gu, Aleksandar Kuzmanovic, Xiaowei Yang: PreAcher: Secure and Practical Password Pre-Authentication by Content Delivery Networks.
In USENIX Symposium on Networked Systems Design and Implementation (*NSDI'25*).
(21 pages, CCF-A, acceptance rate: 55/401=13.7%)
- [C11] Y Liu*, **Y Xiao***, X Zhang, W Dang, H Liu, X Li, Z He, J Wang, A Kuzmanovic, A Chen, C Miao: Unlocking ECMP Programmability for Precise Traffic Control.
In USENIX Symposium on Networked Systems Design and Implementation (*NSDI'25*).
(20 pages, CCF-A, acceptance rate: 55/401=13.7%)
- [C10] J Lu, **Y Xiao**, S Chakraborty, S Fu, Y Ji, A Chen, M Chowdhury, N Rao, S Ratnasamy, X Wang
OpenInfra: A Co-simulation Framework for the Infrastructure Nexus.
In Workshop on Hot Topics in System Infrastructure (*HotInfra'24*). (5 pages)
- [C9] C Miao*, Z Zhong*, **Y Xiao***, F Yang*, S Zhang*, C Lu, J Geng, Y Wang, X Zhou, Y Jiang, Z Bai, C Yang:
MegaTE: Extending WAN Traffic Engineering to Millions of Endpoints.
In Proceedings of ACM *SIGCOMM'24*. (14 pages, CCF-A, acceptance rate: 62/366=16.9%)
- [C8] **Y Xiao**, DZ Tootaghaj, A Dhakal, L Cao, P Sharma, A Kuzmanovic:
Conspirator: SmartNIC-Aided Control Plane for Distributed ML Workloads.
In Proceedings of USENIX Annual Technical Conference (*ATC'24*).
(19 pages, CCF-A, acceptance rate: 77/482=16.0%)
- [C7] **Yunming Xiao**, Yibo Zhao, Sen Lin, Aleksandar Kuzmanovic:
Snatch: Online Streaming Analytics at the Network Edge.
In Proceedings of the ACM European Conference on Computer Systems (*EuroSys'24*).
(21 pages, CCF-A, acceptance rate: 39/244=16.0%)
Best Student Paper Award! (selection rate: 1/244=0.4%)
- [C6] C Miao*, **Y Xiao***, M Canini, R Dai, S Zheng, J Wang, J Bu, A Kuzmanovic, Y Wang:
TENSOR: Lightweight BGP Non-Stop Routing.
In Proceedings of ACM *SIGCOMM'23*. (14 pages, CCF-A, acceptance rate: 73/325=22.5%)
- [C5] **Yunming Xiao**, Matteo Varvello:
FIAT: Frictionless Authentication of IoT Traffic.
In Proceedings of ACM Conference on Emerging Network Experiment and Technology (*CoNEXT'22*).
(15 pages, CCF-B, acceptance rate: 29/151=19.2%)
- [C4] **Yunming Xiao**, Sarit Markovich, Aleksandar Kuzmanovic:
Blockchain Mining: Optimal Resource Allocation.
In Proceedings of ACM Advances in Financial Technologies (*AFT'22*).
(14 pages, acceptance rate: 23/79=29.1%)

- [C3] **Yunming Xiao**, Matteo Varvello, Aleksandar Kuzmanovic:
Monetizing Spare Bandwidth: the Case of Distributed VPNs.
In Proceedings of the ACM on Measurement and Analysis of Computing Systems (*SIGMETRICS'22*).
(27 pages, CCF-B, acceptance rate: 13/122=10.7%)
- [C2] Marc Anthony Warrior, **Yunming Xiao**, Matteo Varvello, Aleksandar Kuzmanovic:
De-Kodi: Understanding the Kodi Ecosystem.
In Proceedings of The Web Conference 2020 (*WWW'20*).
(11 pages, CCF-A, acceptance rate: 357/1736=20.6%)
- [C1] **Yunming Xiao**, Haifeng Sun, Zirui Zhuang, Jingyu Wang, Qi Qi:
Common Knowledge Based Transfer Learning for Traffic Classification.
IEEE 43rd Conference on Local Computer Networks (*LCN'18*). (4 pages, CCF-C)

Journal Publications

- [J8] Z Yang, A Bhatnagar, Y Qiu, T Miao, PTJ Kon, **Y Xiao**, Y Huang, M Casado, A Chen:
Cloud Infrastructure Management in the Age of AI Agents.
ACM SIGOPS Operating Systems Review (OSR), 59(2), pp. 1-8. 2025.
- [J7] **Yunming Xiao**[†], Yanqi Gu, Yibo Zhao, Sen Lin, Aleksandar Kuzmanovic:
Enabling Anonymous Online Streaming Analytics at the Network Edge.
ACM Transactions on Computer Systems (TOCS). 43(4), pp. 1-39, 2025. (CCF-A)
- [J6] **Yunming Xiao**, Matteo Varvello, Marc Anthony Warrior, Aleksandar Kuzmanovic:
Decoding the Kodi Ecosystem.
ACM Transactions on the Web (*TWEB*), 17(1), pp.1-36. 2023. (CCF-B)
- [J5] P Wang, Z Wei, D Zhou, W Song, **Y Xiao**, G Sun, S Yu, Q Zhang:
A Survey on Federated Unlearning.
Chinese Journal of Computers, 47(2), pp. 396-422. 2023. (CCF-A)
- [J4] P Wang, Z Wei, H Qi, S Wan, **Y Xiao**, G Sun, Q Zhang:
Mitigating Poor Data Quality Impact with Federated Unlearning for Human-Centric Metaverse.
IEEE Journal on Selected Areas in Communications (*JSAC*), 42(4), pp. 832-849. 2023. (CCF-A)
- [J3] Aritra Dutta, El Houcine Bergou, **Yunming Xiao**, Marco Canini, Peter Richtárik:
Direct Nonlinear Acceleration.
EURO Journal on Computational Optimization, 10, 100047 (26 pages). 2022.
- [J2] P Wang, Y Zhao, MS Obaidat, Z Wei, H Qi, C Lin, **Y Xiao**, Q Zhang:
Blockchain-Enhanced Federated Learning Market with Social Internet of Things.
IEEE Journal on Selected Areas in Communications (*JSAC*), 40(12), pp. 3405-3421. 2022. (CCF-A)
- [J1] **Yunming Xiao**, Bin Wu:
Close spatial arrangement of mutants favors and disfavors fixation.
PLoS Computational Biology, 15(9), e1007212 (20 pages). 2019. (CCF-B)

PATENTS

- [P4] Diman Zad Tootaghaj, **Yunming Xiao**, Aditya Dhakal, Puneet Sharma:
Job Allocations to Fractions of Parallel Processing Units.
Filed on June 2024.
- [P3] Diman Zad Tootaghaj, **Yunming Xiao**, Aditya Dhakal, Puneet Sharma:
DMA Transfers of Job Data From an Adapter to Parallel Processing Unit Fractions.
Filed on June 2024.

- [P2] **Yunming Xiao**, Diman Zad Tootaghaj, Aditya Dhakal, Puneet Sharma:
Smart Network Interface Card Control Plane for Distributed Machine Learning Workloads.
US 18/460,043. March 2025.
- [P1] Diman Zad Tootaghaj, **Yunming Xiao**, Aditya Dhakal, Puneet Sharma:
Job Allocations To Graphics Processing Units With Tenant Isolation.
US 18/299,855. October 2024.

GRANTS

Co-lead the development of NSF grant CNS-2310927: “Privacy-Preserving and Censorship-Resistant Domain Name System” (\$750K, PI: Aleksandar Kuzmanovic, Co-PI: Xiao Wang).

Co-lead the development of NSF grant CNS-2226107: “Enabling Streaming Analytics at the Network Edge” (\$400K, PI: Aleksandar Kuzmanovic).

INVITED & CONFERENCE TALKS

- “Fine-Grained Traffic Scheduling: A Systemic Design from Local Server to WAN”
Nanjing University, Nanjing & Suzhou, China, November 2025.
- “Exposing RDMA NIC Resources for Software-Defined Scheduling”
APNet, Shanghai, China, August 2025.
- “Renovating CDN for Improved Security and Privacy”
Fudan University, Shanghai, China, August 2025.
- “Unlocking ECMP Programmability for Precise Traffic Control”
USENIX NSDI’25, Philadelphia, PA, April 2025.
- “Renovating Internet Services and Infrastructures to Empower End Users”
Hong Kong University of Science and Technology, Guangzhou, China (Remote), March 2025.
- Chinese University of Hong Kong, Shenzhen, China (Remote), February 2025.
- NYU Shanghai, Shanghai, China (Remote), February 2025.
- Singapore University of Technology and Design, Singapore (Remote), February 2025.
- UM-SJTU Joint Institute, Shanghai Jiao Tong University, Shanghai, China (Remote), December 2024.
- “Snatch: Online Streaming Analytics at the Network Edge”
Duke University, Remote, November 2024.
- ACM EuroSys, Athens, Greece (Remote), April 2024.
- “Conspirator: SmartNIC-Aided Control Plane for Distributed ML Workloads”
USENIX ATC’24, Santa Clara, CA, July 2024.
- Hewlett Packard Labs, Milpitas, CA (Remote), July 2024.
- “Renovating Internet Services: Towards a Secure, Private, and Reliable Web”
University of Texas at Arlington, March 2024.
- The University of Houston, February 2024.
- HKUST-GZ, Guangzhou, China (Remote), January 2024.
- Rice University, Houston, TX, November 2023.
- “TENSOR: Lightweight BGP Non-Stop Routing”
Illinois Institute of Technology, Chicago, IL, October 2023.
- ACM SIGCOMM’23, New York City, NY, September 2023.
- “FIAT: Frictionless Authentication of IoT Traffic”
ACM CoNEXT’22, Rome, Italy (Remote), December 2022.
- Nokia Bell Labs, Murray Hill, NJ, November 2022.
- “Monetizing Spare Bandwidth: The Case of Distributed VPNs”
ACM SIGMETRICS’22, Mumbai, India (Remote), June 2022.

SERVICE

Panels

NSF CISE CNS Program Panelist and Reviewer: 2025

Organizing Committee

Asia-Pacific Workshop on Networking (APNet), Publication Chair, 2026

Program Committee Member

ACM SIGCOMM (CCF-A): 2026

IEEE Symposium on Security and Privacy (Oakland, CCF-A): 2026

ACM Conference on Computer and Communications Security (CCS, CCF-A): 2025, 2026

ACM ASPLOS (CCF-A): 2026 (ERC)

ACM Internet Measurement Conference (IMC, CCF-B): 2026

The Conference on Machine Learning and Systems (MLSys): 2026 (ERC)

Privacy Enhancing Technologies Symposium (PETS/PoPETs): 2025, 2026

SIGOPS Asia-Pacific Workshop on Systems (APSys): 2025

Asia-Pacific Workshop on Networking (APNet): 2025

USENIX Security (CCF-A), Artifact Evaluation: 2025

ACM SIGCOMM (CCF-A), Artifact Evaluation: 2022, 2023

ACM Symposium on Operating Systems Principles (SOSP, CCF-A), Artifact Evaluation: 2023

Reviewer

USENIX Annual Technical Conference (ATC, CCF-A) 2025

ACM SIGCOMM Computer Communication Review (CCR)

IEEE Journal on Selected Areas in Communications (JSAC, CCF-A)

Journal of Systems Architecture (JSA, CCF-B)

IEEE Transactions on Sustainable Computing