Yunming Xiao

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RESEARCH INTEREST

I am broadly interested in computer networks and distributed systems. In particular, my current work focuses on improving the performance as well as enhancing the security and privacy aspects of the Internet and various network systems.

EDUCATION

Ph.D. Candidate, Computer Science   Sep 2019 - *Present*
Northwestern University, Evanston, IL
Advisor: *Prof. Aleksandar Kuzmanovic*

B.Eng., Computer Science   Sep 2015 - Jun 2019
Beijing University of Posts and Telecommunications, Beijing, China
GPA: 3.7/4.0 (87/100), Graduated With Honors

RESEARCH AND WORK EXPERIENCE

Northwestern University, Evanston, IL   Sep 2019 - *Present*
Research Assistant, Advisor: *Prof. Aleksandar Kuzmanovic*

- *Snatch: Streaming Analytics at the Network Edge*
  • Proposed and developed Snatch, a system that accelerates online streaming analytics by breaking the current arrangement and leveraging semantic cookies and in-network computation

- *Monetizing Spare Bandwidth: the Case of Distributed VPNs*
  • Performed the first systematic measurement study of the decentralized VPNs ecosystem focusing on the major players shedding lights on the performance, privacy and security issues
  • Developed a convenient DVPN manager system (RING) which provides security and privacy guarantees, as well as automatic bandwidth and price control which optimize the income of DVPN node providers

- *Decoding the Kodi Ecosystem*
  • Worked on De-Kodi, a system capable of crawling large cross-sections of Kodi's decentralized ecosystem
  • Developed SafeKodi system which leverages the help of Kodi users to explore the Kodi ecosystem in the wild and, in return, offers information about potentially malicious add-ons to Kodi users.
  • SafeKodi has received multiple media coverage and is used by over 20k distinct users

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

Google, New York City, NY   Sep - Dec 2022
Software Engineering Intern, Technical Systems & Infrastructure (TI)

Hewlett Packard Labs, Milpitas, CA   May - Aug 2022
Research Associate Intern, Networking and Distributed Systems Lab, Host: *Dr. Puneet Sharma*
- *Winner of the Best-in-Class Technical Competition Award (2nd Place)*

Nokia Bell Labs, Murray Hill, NJ (Remote)   Jun - Aug 2021
Networking Bell Labs Summer Intern, Host: *Dr. Matteo Varvello, Dr. T.V. Lakshman*

Bytedance, Beijing, China   Mar - Jul 2019
Infrastructure R&D Intern

Tsinghua University, Beijing, China   Mar 2018 - Mar 2019
Research Assistant, Host: *Prof. Wenfei Wu*

King Abudullah University of Science and Technology, Jeddah, KSA   Jul - Oct 2018
Visiting Student, Host: *Prof. Marco Canini*

Beijing University of Posts and Telecommunications, Beijing, China   Jul 2017 - Feb 2018
Research Assistant, Host: *Prof. Bin Wu, Prof. Jingyu Wang*

PUBLICATIONS

Conference Publications

■ [5]   **Yunming Xiao**, Matteo Varvello:
FIAT: Frictionless Authentication of IoT Traffic.
In Proceedings of ACM *CoNEXT'22*.

■ [4]   **Yunming Xiao**, Sarit Markovich, Aleksandar Kuzmanovic:
Blockchain Mining: Optimal Resource Allocation.
In Proceedings of ACM Advances in Financial Technologies (*AFT'22*).

■ [3]   **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*).

■ [2]   Marc Anthony Warrior, **Yunming Xiao**, Matteo Varvello, Aleksandar Kuzmanovic:
De-Kodi: Understanding the Kodi Ecosystem.
In Proceedings of The Web Conference 2020 *(WWW'20)*.

■ [1]   **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)*, short paper.

Journal Publications

■ [4]   **Yunming Xiao**, Matteo Varvello, Marc Anthony Warrior, Aleksandar Kuzmanovic:
Decoding the Kodi Ecosystem.
ACM Transactions on the Web *(TWEB)*. 2022.

■ [3]   Aritra Dutta, El Houcine Bergou, **Yunming Xiao**, Marco Canini, Peter Richtárik:
Direct Nonlinear Acceleration.
EURO Journal on Computational Optimization. 2022.

■ [2]   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)*. 2022.

■ [1]   **Yunming Xiao**, Bin Wu:
Close spatial arrangement of mutants favors and disfavors fixation.
PLoS Computational Biology, 15(9), e1007212. 2019.

Refereed Posters

■ [2]   **Yunming Xiao**, Matteo Varvello:
FIAT: Frictionless Authentication of IoT Traffic.
In Proceedings of ACM *CoNEXT'21*.

■ [1]   **Yunming Xiao**, Matteo Varvello, Aleksandar Kuzmanovic:
A First Look Into Distributed VPNs.
In the 21st ACM Internet Measurement Conference *(IMC'21)*.

Un-refereed & Working Papers
(* Equal Contribution)

■ [3]   C Miao*, **Y Xiao***, R Dai, S Zheng, J Wang, J Bu, A Kuzmanovic, Y Wang:
Omitted for double-blind review.
On Submission.

■ [2]   **Yunming Xiao**, Chenkai Weng, Matteo Varvello, Aleksandar Kuzmanovic:
Omitted for double-blind review.
On Submission.

■ [1]   **Yunming Xiao**, Yibo Zhao, Sen Lin, Aleksandar Kuzmanovic:
Omitted for double-blind review.
On Submission.

PATENTS

[2]   **Yunming Xiao**, Diman Zad Tootaghaj, Aditya Dhakal, Puneet Sharma:
Conspirator: A SmartNIC Aided Control Plane for Distributed Machine Learning Workloads.
On Submission.

[1]   Diman Zad Tootaghaj, **Yunming Xiao**, Aditya Dhakal, Puneet Sharma:
A bin packing-based GPU job scheduling for tenant isolation.
On Submission.

GRANTS

Helped with the proposal for NSF grant CNS-2226107: "Enabling Streaming Analytics at the Network Edge" ($400K, PI: Prof. Aleksandar Kuzmanovic).

INVITED & CONFERENCE TALKS

CoNEXT 2022, "FIAT: Frictionless Authentication of IoT Traffic", Rome, Italy (Remote), December 2022.
Nokia Bell Labs, "FIAT: Frictionless Authentication of IoT Traffic", Murray Hill, NJ, November 2022.
SIGMETRICS 2022, "Monetizing Spare Bandwidth: The Case of Distributed VPNs", Mumbai, India (Remote), June 2022.

SERVICES

Program Committee member, ACM SIGCOMM 2022 Artifact Evaluation
Reviewer, ACM SIGCOMM Computer Communication Review (CCR)
Reviewer, IEEE Journal on Selected Areas in Communications (JSAC)
Reviewer, Journal of Systems Architecture (JSA)