YUNMING XIAO

2233 Tech Drive
Seely Mudd, Room 3-416
Evanston, IL 60208

✉ yunming.xiao@u.northwestern.edu
+1 (773)-273-0957
yunmingxiao.github.io

RESEARCH INTEREST

Design, measurement, and implementation of datacenter networking systems and protocols, and networking systems which has strong performance and provides security and privacy guarantees.

EDUCATION

Ph.D., Computer Science — Sep 2019 - *Present*
Northwestern University, Evanston, IL
GPA: 4.0/4.0, Advisor: *Prof. Aleksandar Kuzmanovic*

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

RESEARCH EXPERIENCE

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

RING: One DVPN Tools to Rule Them All

- Performed the first systematic measurement study of the decentralized VPNs focusing on the major players
- Developed a dVPN manager which simplifies the usability of dVPNs and provides security guarantees

De-Kodi and SafeKodi: Understanding 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 media coverage and is used by over 16k distinct users

Understanding Proof-of-Work Mining Pools

- Explore major proof-of-work mining pools to understand their hashrate allocation policies towards different crypto-currencies with a focus on the BTC family
- Proposed a method to indirectly verify the publicly-reported hashrate by actively joining the mining pools

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

RLPlacer: A Deployment Model for Distributed Rate Limiting

- Proposed a heuristic algorithm for distributed rate limiting in the data center
- Designed and implemented the prototype of rate limiter on programmable switches with P4 language

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

Direct Nonlinear Acceleration

- Proposed an algorithm to accelerate fixed point iterations based on vector extrapolation techniques, which can be applied to speed up the neural network training in cluster systems
- Performed measurement on large scale cluster exploring the waste of the computing resources

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

Transfer Learning on Traffic Classification

- Proposed a traffic classification algorithm that enables multitask traffic classification and performs well on transfer learning and one-shot learning scenarios

Study on Clustering in Evolutionary Game Theory

- Solved the fixation probability and fixation time of "death-birth" game model on a ring with a polynomial algorithm, and revealed the non-trivial role of clustering in mutant fixation

WORK EXPERIENCE

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

- Implemented an efficient dependency solver for Cronjob and FaaS systems of Bytedance Cloud
- Implemented an alarm system with Message Queue and Kafka for Cronjob and FaaS systems
- Integrated the Cronjob and FaaS systems with the internal logging system and service billing system

PUBLICATIONS

Conference Publications

[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)*, pp. 1171-1181.

[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, pp. 311-314.

Journal Publications

[2] Haifeng Sun, **Yunming Xiao**, Jing Wang, Jingyu Wang, Qi Qi, Jiaoxin Liao, Xiulei Liu:
Common Knowledge Based and One-Shot Learning Enabled Multi-Task Traffic Classification.
IEEE Access 7, 39485-39495. 2019.

[1] **Yunming Xiao**, Bin Wu:
Close spatial arrangement of mutants favors and disfavors fixation.
PLoS Computational Biology 15(9): e1007212. 2019. / arXiv: 1811.08718.

Un-refereed & Working Papers

[3] **Yunming Xiao**, Marc Anthony Warrior, Matteo Varvello, Aleksandar Kuzmanovic:
SafeKodi: A Research Tool at the Rescue of Kodi.
On submission to The Web Conference (WWW'21).

[2] **Yunming Xiao**, Sarit Markovich, Aleksandar Kuzmanovic:
Understanding Proof-of-Work Mining Pools
On submission to Financial Cryptography and Data Security (FC'21).

[1] Aritra Dutta, El Houcine Bergou, **Yunming Xiao**, Marco Canini, Peter Richtárik:
Direct Nonlinear Acceleration.
arXiv: 1905.11692. On submission to IEEE Transactions on Signal Processing.

SKILLS

Programming: C/C++, Python, Golang, Java, Shell, SQL, HTML, P4, Assembly, LaTeX
Tools: Docker, Kubernetes, Tstat, Mininet, POX, PostgreSQL, QT, Git, PyTorch