Yang Xiao

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Professional Experience

Assistant Professor 08/2022 – Present
Department of Computer Science, University of Kentucky

Graduate Research Assistant 08/2017 – 05/2022
Department of Electrical and Computer Engineering, Virginia Tech

Research Intern 05/2016 – 08/2016
Mathematics and Modeling Department, Schlumberger-Doll Research

Research Interests

Distributed System Security
Blockchain and Decentralized Systems
Trusted and Privacy-preserving Computing
Mobile Communications and Network Security
Cyber-Physical Security

Education

Virginia Polytechnic Institute and State University 08/2017 – 05/2022
- Ph.D. in Computer Engineering
  Dissertation: *Blockchain and Distributed Consensus: From Security Analysis to Novel Applications*
  Advisor: Dr. Wenjing Lou

University of Michigan 09/2015 – 04/2017
- M.S. in Electrical Engineering-Systems

Shanghai Jiao Tong University 09/2010 – 06/2014
- B.S.E. in Information Engineering
- (Secondary) B.Econ. in Finance

Book Chapters

1. Distributed Consensus Protocols and Algorithms
   Y. Xiao, N. Zhang, J. Li, W. Lou, Y. T. Hou
   Blockchain for Distributed Systems Security, Wiley & Sons, 2019

Journal Publications

1. MANDA: On Adversarial Example Detection for Network Intrusion Detection System
   N. Wang, Y. Chen, **Y. Xiao**, Y. Hu, W. Lou, Y. T. Hou
   *Accepted by IEEE Transactions on Dependable and Secure Computing (**TDSC**).*
2. Decentralized Spectrum Access System: Vision, Challenges, and a Blockchain Solution
   Y. Xiao, S. Shi, W. Lou, C. Wang, X. Li, N. Zhang, Y. T. Hou, J. H. Reed
   In IEEE Wireless Communications, 2022.
3. Challenges and New Directions in Securing Spectrum Access Systems
   S. Shi, **Y. Xiao**, W. Lou, C. Wang, X. Li, Y. T. Hou, J. H. Reed
   *In IEEE Internet of Things Journal (**IOT-J**), 2021.*
4. A Survey of Distributed Consensus Protocols for Blockchain Networks
   Y. Xiao, N. Zhang, W. Lou, Y. T. Hou
   *In IEEE Communications Surveys & Tutorials (**COMST**), 2020.*
5. Offloading Decision in Edge Computing for Continuous Applications Under Uncertainty

W. Chang, **Y. Xiao**, W. Lou, G. Shou
*In IEEE Transactions on Wireless Communications (**TWC**), 2020.*

6. Performance Analysis of Random Access Network with Post-backoff
C. Bu, **Y. Xiao**, T. Ye, P. Wu, X. Zhang, J. Wu
In Telecommunications Science, 2016.

Conference Publications

1. Squeezing More Utility via Adaptive Clipping on Deferentially Private Gradients in Federated Meta-Learning
N. Wang, **Y. Xiao**, Y. Chen, N. Zhang, W. Lou, Y. T. Hou
*Annual Computer Security Applications Conference (**ACSAC**), 2022. (AR=24.1%)*

2. CANShield: Signal-based Intrusion Detection for Controller Area Networks
M. H. Shahriar, **Y. Xiao**, P. Moriano, W. Lou, Y. T. Hou
*Embedded Security in Cars (**escar**) USA conference, 2022.*

3. FLARE: Defending Federated Learning against Model Poisoning Attacks via Latent Space Representations
N. Wang, **Y. Xiao**, Y. Chen, Y. Hu, W. Lou, Y. T. Hou
*ACM ASIA Conference on Computer and Communications Security (**AsiaCCS**), 2022. (AR=18.4%)*

4. Session Key Distribution Made Practical for CAN and CAN-FD Message Authentication
Y. Xiao, S. Shi, N. Zhang, W. Lou, Y. T. Hou
*Annual Computer Security Applications Conference (**ACSAC**), 2020. (AR=23.2%)*

5. PrivacyGuard: Enforcing Private Data Usage Control with Blockchain and Off-chain Contract Execution
Y. Xiao, N. Zhang, J. Li, W. Lou, Y. T. Hou
*European Symposium on Research in Computer Security (**ESORICS**), 2020. (AR=19.7%)*

6. Modeling the Impact of Network Connectivity on Consensus Security of Proof-of-Work Blockchain
Y. Xiao, N. Zhang, W. Lou, Y. T. Hou
*IEEE International Conference on Computer Communications (**INFOCOM**), 2020. (AR=19.8%)*

Teaching Experience

Instructor, University of Kentucky
- CS585/685: Intermediate/Special Topics in Computer Science: Blockchain Technologies — Fall 2022

Guest Lecturer, Virginia Tech
- CS5560: Fundamentals of Information Security - Cryptocurrency & Blockchain — Spring 2019

Graduate Teaching Assistant, Virginia Tech
- ECE2534: Microcontroller Programming and Interfacing — Fall 2017

Undergraduate Tutor, SJTU
- CS358: Data Structure — Fall 2014

Academic Services

Journal and Conference Review
- IEEE International Conference on Computer Communications (INFOCOM) — 2021
- IEEE International Conference on Sensing, Communication, and Networking (SECON) — 2022
- IEEE/ACM Transactions on Networking (TON) — 2020, 2021, 2022
- IEEE Internet of Things Journal (IOT-J) — 2020, 2021, 2022
- International Journal of Intelligent Systems (INT2) — 2021
- IEEE Transactions on Dependable and Secure Computing (TDSC) — 2019, 2020, 2022
- Digital Communications and Networks (DCAN) — 2019, 2020
- EAI International Conference on Security and Privacy in Comm. Netw. (SecureComm) — 2019
- Future Generation Computer Systems (FGCS) — 2018, 2019

Program Committee

– International Conference on Computer Communictions and Networks (ICCCN) 2023

Panelist

2019 Secure and Trustworthy CyberSpace (SaTC) PI Meeting Undergraduate Track, NSF 10/2019

– Panel: What to Expect from Grad School

Conference Organization

IEEE International Conference on Computer Communications (INFOCOM)

– Web Co-chair, INFOCOM 2023, New York area 06/2022 – 05/2023

IEEE Conference on Communications and Network Security (CNS)

– Web Chair, CNS 2020, virtual 09/2019 – 07/2020

– Student Volunteer, CNS 2019, Washington DC 06/2019

Talks, Posters

Session Key Distribution Made Practical for CAN and CAN-FD Message Authentication

– Invited talk, *Learning from Authoritative Security Experiment Results (LASER) Workshop* 12/2020

A Layered View towards Blockchain: From Consensus Security to Smart Contract Application

– Invited talk, *CS Graduate Seminars*, Virginia Tech 11/2020

Enforcing Private Data Usage Control with Blockchain and Attested Off-chain Contract Execution

– Poster, 2019 SaTC PI Meeting, NSF, Alexandria, VA 04/2019

A Graph Random-Walk Based Sampling Algorithm for Load Balancing in Cloud Systems

– Poster, *6th Midwest Workshop on Control and Game Theory*, Ann Arbor, MI 04/2017

Awards

INFOCOM 2020 Student Travel Grant 2020

– Awarded by the INFOCOM 2020 organizing committee

BitShares Graduate Fellowship 2019

– Awarded by Virginia Tech CS Department, funded by BitShares Inc.

Completion of the Elite Engineer Cultivation Program in Information Engineering 2014

– Certified by Shanghai Jiao Tong University

First Prize in the 28th National Physics Contest of College Students (Shanghai Division) 2011

– Awarded by Shanghai Physics Society

Professional Memberships

– IEEE Member, Communications Society, Computer Society 11/2017 – Present

– ACM Professional Member 10/2020 – Present

Coding Skills

C/C++, Python, MATLAB, HTML, C#