

Email: xiaoy@uky.edu
Phone: +1 (859) 257-3101

Office: 233 James F. Hardyman Building, University of Kentucky
Web: <https://yang-sec.github.io/>

RESEARCH	Distributed System Security	
INTERESTS	Blockchain and Decentralized Systems Trusted and Privacy-preserving Computing Mobile Communications and Network Security Cyber-Physical Security	
PROFESSIONAL APPOINTMENT	Assistant Professor Department of Computer Science, University of Kentucky, KY, USA	08/2022 – Present
	Graduate Research Assistant Department of Electrical and Computer Engineering, Virginia Tech, VA, USA	08/2017 – 05/2022
	Research Intern Mathematics and Modeling Department, Schlumberger-Doll Research, MA, USA	05/2016 – 08/2016
EDUCATION	Virginia Polytechnic Institute and State University , VA, USA – Ph.D. in Computer Engineering Dissertation: <i>Blockchain and Distributed Consensus: From Security Analysis to Novel Applications</i> Advisor: Dr. Wenjing Lou	08/2017 – 05/2022
	University of Michigan , MI, USA – M.S. in Electrical Engineering-Systems	09/2015 – 04/2017
	Shanghai Jiao Tong University , Shanghai, China – B.S.E. in Information Engineering – (Secondary) B.Econ. in Finance	09/2010 – 06/2014
CONFERENCE PUBLICATIONS	<ol style="list-style-type: none">TriSAS: Toward Dependable Inter-SAS Coordination with Auditability S. Shi, Y. Xiao, C. Du, Y. Shi, C. Wang, R. Gazda, Y. T. Hou, E. Burger, L. DaSilva, W. Lou <i>ACM ASIA Conference on Computer and Communications Security (AsiaCCS)</i>, 2024.AAKA: An Anti-Tracking Cellular Authentication Scheme Leveraging Anonymous Credentials H. Yu, C. Du, Y. Xiao, A. Keromytis, C. Wang, R. Gazda, Y. T. Hou, W. Lou <i>Network and Distributed System Security Symposium (NDSS)</i>, 2024.Rethinking Single Sign-On: A Reliable and Privacy-Preserving Alternative with Verifiable Credentials A. D. Johnson, I. Alom, Y. Xiao <i>10th ACM Workshop on Moving Target Defense (MTD)</i>, 2023. (Collocated with CCS 2023)Bijack: Breaking Bitcoin Network with TCP Vulnerabilities S. Li, S. Shi, Y. Xiao, C. Zhang, Y. T. Hou, W. Lou <i>European Symposium on Research in Computer Security (ESORICS)</i>, 2023.UCBlocker: Unwanted Call Blocking Using Anonymous Authentication C. Du, H. Yu, Y. Xiao, Y. T. Hou, A. Keromytis, W. Lou <i>USENIX Security Symposium (Security)</i>, 2023.ARI: Attestation of Real-time Mission Execution Integrity J. Wang, Y. Wang, A. Li, Y. Xiao, R. Zhang, W. Lou, Y. Hou, N. Zhang	

USENIX Security Symposium (Security), 2023.

7. MS-PTP: Protecting Network Timing from Byzantine Attacks
S. Shi, **Y. Xiao**, C. Du, M. Shahriar, A. Li, N. Zhang, Y. Hou, W. Lou
ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec), 2023.
8. A Decentralized Truth Discovery Approach to the Blockchain Oracle Problem
Y. Xiao, N. Zhang, W. Lou, Y. T. Hou
IEEE International Conference on Computer Communications (INFOCOM), 2023.
9. Squeezing More Utility via Adaptive Clipping on Differentially 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.
10. Mobile Tracking in 5G and Beyond Networks: Problems, Challenges, and New Directions
C. Du, H. Yu, **Y. Xiao**, W. Lou, C. Wang, R. Gazda, Y. T. Hou
IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS), 2022.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.

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. CANShield: Deep Learning-Based Intrusion Detection Framework for Controller Area Networks at the Signal-Level
M. H. Shahriar, **Y. Xiao**, P. Moriano, W. Lou, Y. T. Hou
In IEEE Internet of Things Journal (IOT-J), 2023.
2. BD-SAS: Enabling Dynamic Spectrum Sharing in Low-trust Environment
Y. Xiao, S. Shi, W. Lou, C. Wang, X. Li, N. Zhang, Y. T. Hou, J. H. Reed
In IEEE Transactions on Cognitive Communications and Networking (TCCN), 2023.
3. SoftMix: A Secure Offchain-Supported Bitcoin-Compatible Mixing Protocol
H. Xie, S. Fei, Z. Yan, **Y. Xiao**
In IEEE Transactions on Dependable and Secure Computing (TDSC), 2022.

	<p>4. MANDA: On Adversarial Example Detection for Network Intrusion Detection System N. Wang, Y. Chen, Y. Xiao, Y. Hu, W. Lou, Y. T. Hou <i>In IEEE Transactions on Dependable and Secure Computing (TDSC)</i>, 2022.</p> <p>5. 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 <i>In IEEE Wireless Communications</i>, 2022.</p> <p>6. 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 <i>In IEEE Internet of Things Journal (IOT-J)</i>, 2021.</p> <p>7. A Survey of Distributed Consensus Protocols for Blockchain Networks Y. Xiao, N. Zhang, W. Lou, Y. T. Hou <i>In IEEE Communications Surveys & Tutorials (COMST)</i>, 2020.</p> <p>8. Offloading Decision in Edge Computing for Continuous Applications Under Uncertainty W. Chang, Y. Xiao, W. Lou, G. Shou <i>In IEEE Transactions on Wireless Communications (TWC)</i>, 2020.</p> <p>9. Performance Analysis of Random Access Network with Post-backoff C. Bu, Y. Xiao, T. Ye, P. Wu, X. Zhang, J. Wu <i>In Telecommunications Science</i>, 2016.</p>	
TALKS,	On Mobile Network Security	
INTERVIEWS,	– UK Now and LEX 18 interviews on the anti-tracking mobile network project	12/2023
POSTERS	– Fox 56 interview on mobile apps security for online sports betting	10/2023
	Blockchain, DApps, and Trustworthy Computing	
	– Seminar talk, <i>University of Kentucky Computer Science Keeping Current Seminars (KCS)</i>	3/2023
	Blockchain and Trusted Execution Environment: Security Properties, Synergies, and a Privacy Application	
	– Invited talk, <i>Delta 2022 Cybersecurity Conference, UTN Facultad Regional Delta, Argentina</i>	11/2022
	Session Key Distribution Made Practical for CAN and CAN-FD Message Authentication	
	– Invited talk, <i>Learning from Authoritative Security Experiment Results (LASER) Workshop</i>	12/2020
	A Layered View towards Blockchain: From Consensus Security to Smart Contract Application	
	– Invited talk, <i>CS Graduate Seminars</i> , 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, <i>6th Midwest Workshop on Control and Game Theory</i> , Ann Arbor, MI	04/2017
RESEARCH	US National Science Foundation	
GRANTS	– “Collaborative Research: SaTC: CORE: Medium: An Anti-tracking and Robocall-free Architecture for Next-G Mobile Networks,” NSF Award #2247561, 05/01/2023–04/30/2027, \$300,000 (PI)	
TEACHING	Instructor , University of Kentucky	
	– CS 585/685: Intermediate/Special Topics in Computer Science: Blockchain Technologies	Fall 2022
	– CS 371: Introduction to Computer Networking	Spring 2023
	– CS 572: Network Security	Fall 2023
	Guest Lecturer , Virginia Tech	

	– CS 5560: Fundamentals of Information Security - Cryptocurrency & Blockchain	Spring 2019
	Graduate Teaching Assistant , Virginia Tech	
	– ECE 2534: Microcontroller Programming and Interfacing	Fall 2017
ADVISING	PhD Students	
	– Yue Li	University of Kentucky, 08/2023 - Now
	– Ifteher Alom	University of Kentucky, 08/2023 - Now
	Master Students	
	– Yue Li	University of Kentucky, 12/2022 - 05/2023
	Undergrad Students	
	– Athan Johnson	University of Kentucky, 05/2023 - 09/2023
	PhD Advisory Committee	
	– Xu Tao	University of Kentucky, 04/2023 – Now
	– Yuhang Jiang	University of Kentucky, 03/2023 – Now
	Master Advisory Committee	
	– Jacob Sobota	University of Kentucky, 03/2023 – 04/2023
	– Franklin Stokan	University of Kentucky, 02/2023 – 04/2023
	– Samuel Armstrong	University of Kentucky, 10/2022 – 03/2023
ACADEMIC SERVICES	Conference Organization	
	– IEEE International Conference on Computer Communications (INFOCOM) 2023, 2024: Web Chair	
	– IEEE Conference on Communications and Network Security (CNS) 2020: Web Chair	
	Technical Program Committee	
	– IEEE International Conference on Computer Communications (INFOCOM)	2024
	– International Conference on Computer Communications and Networks (ICCCN)	2023
	– IEEE Military Communications Conference (MILCOM)	2023
	Panelist	
	– NSF Panelist	2023
	– NSF SaTC PI Meeting Undergraduate Track - Student Panelist	2019
	Journal Review	
	– IEEE/ACM Transactions on Networking (TON)	
	– IEEE Internet of Things Journal (IOT-J)	
	– IEEE Transactions on Dependable and Secure Computing (TDSC)	
	– IEEE Transactions on Information Forensics and Security (TIFS)	
	– IEEE Transactions on Communications (TCOM)	
	– International Journal of Intelligent Systems (INT2)	
	Conference Review	
	– EAI International Conference on Security and Privacy in Comm. Netw. (SecureComm)	2019
	– IEEE International Conference on Computer Communications (INFOCOM)	2021
	– IEEE International Conference on Sensing, Communication, and Networking (SECON)	2022
	– IEEE Symposium on Security and Privacy (Oakland)	2023
	– European Symposium on Research in Computer Security (ESORICS)	2023
UNIVERSITY SERVICES	Department of Computer Science, University of Kentucky	
	– Committee on Higher Degrees	09/2022 - Now

	– Faculty Member, Cybersecurity Certificate Program	04/2023 - Now
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	– IEEE Member, Communications Society, Computer Society	11/2017 – Present
MEMBERSHIPS	– ACM Professional Member	10/2020 – Present