Chong Yu, Ph.D.

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RESEARCH INTERESTS

Distributed computing, machine learning, cybersecurity and privacy, with a broad range of applications including data analytics, edge-based artificial intelligence, and Internet of Things.

PROFESSIONAL EXPERIENCE

- **Assistant Professor** August 2023 — Present
  Department of Computer Science
  University of Cincinnati, USA

- **Alternate Point of Contact** March 2024 — Present
  Center of Academic Excellence in Cyber Operations
  University of Cincinnati, USA

EDUCATION

- **Ph.D., Electrical and Computer Engineering** 2019 — 2023
  University of Nebraska-Lincoln, Lincoln, USA
  Supervisor: Professor Kuan Zhang
  Thesis: Efficient and Secure Hybrid Federated Learning

- **Ph.D., Computer Science — Specialization: Computer System Structure** 2017 — 2022
  Northeastern University, Shenyang, China
  Supervisor: Professor Hai Zhao
  Thesis: Research on Information Infrastructure for Semi-Physical Simulation in the Internet of Battlefield Things

- **Master of Science, Communication and Information System** 2015 — 2017
  Northeastern University, Shenyang, China
  Supervisor: Professor Hai Zhao

- **Bachelor of Science, Communication Engineering** 2011 — 2015
  Northeastern University, Shenyang, China

HONORS and AWARDS

- Co-recipient of Best Paper Award, 2024 SEDE 2024
- Co-recipient of Best Paper Award, 2024 IEEE SEAI 2024
- 2022 IEEE Wireless Communications and Networking Conference (WCNC) Student Travel Grants 2022
- UNL International Nutritional Fellowship 2022
- National Scholarship, Ministry of Education of the People's Republic of China 2017
- Outstanding Student of Northeastern University, Northeastern University 2016
- Chancellor Scholarship, Northeastern University 2015

SUMMARY OF SCHOLARLY WORKS

- Total Scholarly Works: 14 journals and 12 conferences
- Total Google Scholar Citations: 171
- h-index: 8

PUBLICATIONS

Peer-reviewed Journal Publications

[J1] **C. Yu**, Z. Meng, W. Zhang, L. Lei, J. Ni, K. Zhang, and H. Zhao, "Secure and Efficient Federated Learning Against Model Poisoning Attacks in Horizontal and Vertical Data Partitioning," *IEEE Transactions on Neural Networks and Learning Systems*, 2024. DOI: 10.1109/TNNLS.2024.3486028 (IF: 10.2)

[J2] **C. Yu**, S. Shen, S. Wang, K. Zhang, and H. Zhao, "Communication-Efficient Hybrid Federated Learning for E-health with Horizontal and Vertical Data Partitioning," *IEEE Transactions on Neural Networks and Learning Systems*, 2024. DOI: 10.1109/TNNLS.2024.3383748 (IF: 10.2)

[J3] D. Chen, Z. Liao, R. Chen, H. Wang, **C. Yu**, K. Zhang, N. Zhang, and X. Shen, "Privacy-Preserving Anomaly Detection of Encrypted Smart Contract for Blockchain-Based Data Trading", *IEEE Transactions on Dependable and Secure Computing*, 2024. DOI: 10.1109/TDSC.2024.3353827 (IF: 7.0)

[J4] H. Wang, K. Fan, **C. Yu**, K. Zhang, F. Li, H. Li, Y. Yang, and H. Zhu, "LSPSS: Constructing Lightweight and Secure Scheme for Private Data Storage and Sharing in Aerial Computing," *IEEE Transactions on Services Computing*, 2023. DOI: 10.1109/TSC.2023.3333347 (IF: 5.5)

[J5] **C. Yu**, S. Shen, H. Yang, K. Zhang and H. Zhao, "Leveraging Energy, Latency and Robustness for Routing Path Selection in Internet of Battlefield Things," *IEEE Internet of Things Journal*, vol.9, no.14, pp.12601-12613, 2022. (IF: 10.6)

[J6] S. Shen, **C. Yu**, K. Zhang, J. Ni, and S. Ci, "Adaptive Artificial Intelligence for Resource-Constrained Connected Vehicles in Cybertwin-Driven 6G Network," *IEEE Internet of Things Journal*, vol.8, no.22, pp.16269-16278, 2021. (IF: 10.6)

[J7] S. Shen, **C. Yu**, K. Zhang, J. Ni, and S. Ci, "Adaptive and Dynamic Security in AI-Empowered 6G: From an Energy Efficiency Perspective," *IEEE Communications Standards Magazine*, vol.5, no.3, pp.80-88, 2021.

[J8] **C. Yu**, S. Si, H. Zhao, J. Zhu, S. Shao, and J. Liu, "Network Evolution Algorithm of Unmanned Aerial Vehicle Flocking Based on Two-hop Common Neighbors," *Journal of Software*, vol.31, no.11, pp.3559-3570, 2020. (Chinese Science and Technology Journals Recommended by China Computer Federation (CCF): A)

[J9] **C. Yu**, H. Zhao, S. Si, J. Zhu, "Vehicle Following Control Model of Platoon Considering Communication Delay," *Control and Decision*, vol.34, no.2, pp.377-382, 2019.

[J10] S. Si, B. Wang, X. Liu, **C. Yu**, C. Ding, and H. Zhao, "Brain Network Modeling based on Mutual Information and Graph Theory for Predicting the Connection Mechanism in the Progression of Alzheimer's Disease," *Entropy*, vol.21, no.3, pp.300-318, 2019. (IF: 2.1)

[J11] **C. Yu**, S. Si, H. Guo, and H. Zhao, "Modeling and Performance of the IEEE 802.11p Broadcasting for Intra-Platoon Communication," *Sensors*, vol.18, no.9, pp.2971-2986, 2018. (IF: 3.4)

[J12] S. Si, J. Wang, **C. Yu**, and H. Zhao, "Energy-Efficient and Fault-Tolerant Evolution Models based on Link Prediction for Large-Scale Wireless Sensor Networks," *IEEE Access*, vol.6, pp.73341-73356, 2018. (IF: 3.9)

[J13] **C. Yu**, H. Zhao, S. Si, and H. Peng, "Complex Networks Analysis Method of VANET Mobility Model," *Acta Electronica Sinica*, vol.45, no.6, pp.1449-1455, 2017. (Chinese Science and Technology Journals Recommended by CCF: A)

[J14] H. Zhao, **C. Yu**, S. SI, H. Peng, "Contrast Analysis of Analytical Solution and Numerical Solution to the VANET Mobility Model," *Journal of Northeastern University (Natural Science)*, vol.37, no.8, pp.1084-1088, 2016.

Peer-reviewed Conference Papers

(UC students are marked with †)

[C1] P. Phung, A. Varghese, B. Wang†, Y. Zhao, and **C. Yu**, "JSMBox - A Runtime Monitoring Framework for Analyzing and Classifying Malicious JavaScript," in *Proc. of SEDE 2024*, San Diego, USA, Oct. 2024, pp.100-122.

[C2] J. Cui†, Y. Zhao, **C. Yu**, J. Huang, Y. Wu†, and Y. Zhao, "Code Comprehension: Review and Large Language Models Exploration," in *Proc. of IEEE SEAI 2024*, Xiamen, China, June 2024, pp.183-187.

[C3] Z. Meng, W. Zhang, S. Shen, **C. Yu**, and K. Zhang, "Secure Interaction-based Feature Selection for Vertical Federated Learning," in *Proc. of IEEE ICC'24*, Denver, USA, June 2024, pp.4608-4613.

[C4] W. Zhang, **C. Yu**, Z. Meng, S. Shen, and K. Zhang, "Explore Patterns to Detect Sybil Attack during Federated Learning in Mobile Digital Twin Network," in *Proc. of IEEE ICC'24*, Denver, USA, June 2024, pp.3969-3974.

[C5] S. Perry, Y. Jiang, F. Zhong, and **C. Yu**, "Detecting Poisoning Attacks with DynaDetect," in *International Symposium on Intelligent Computing and Networking*, San Juan, Puerto Rico, USA, March 2024, pp.241-255.

[C6] Z. Meng, **C. Yu**, and Q. Yi. "Privacy-preserving Task Allocation and Decentralized Dispute Protocol in Mobile Crowdsourcing," in *Proc. of IEEE ICC'23*, Rome, Italy, June 2023, pp.1579-1584.

[C7] **C. Yu**, S. Shen, S. Wang, K. Zhang, and H. Zhao. "Efficient Multi-Layer Stochastic Gradient Descent Algorithm for Federated Learning in E-health," in *Proc. of IEEE ICC'22*, Seoul, South Korea, May 2022, pp.1263-1268.

[C8] S. Shen, **C. Yu**, K. Zhang, and S. Ci. "Collaborative Edge Caching with Personalized Modeling of Content Popularity over Indoor Mobile Social Networks," in *Proc. of IEEE ICC'22*, Seoul, South Korea, May 2022, pp.4114-4119.

[C9] **C. Yu**, S. Shen, K. Zhang, H. Zhao, and Y. Shi. "Energy-Aware Device Scheduling for Joint Federated Learning in Edge-assisted Internet of Agriculture Things," in *Proc. of IEEE WCNC'22*, Austin, USA, Apr. 2022, pp.1140-1145.

[C10] W. Yao, K. Zhang, **C. Yu**, and H. Zhao. "Exploiting Ensemble Learning for Edge-assisted Anomaly Detection Scheme in e-healthcare System," in *Proc. of IEEE Globecom'21*, Madrid, Spain, Dec. 2021, pp.1-7.

[C11] S. Shen, **C. Yu**, K. Zhang, X. Chen, H. Chen, and S. Ci. "Communication-Efficient Federated Learning for Connected Vehicles with Constrained Resources," in *Proc. of IEEE IWCMC*, Harbin, China, Jun. 2021, pp.1636-1641.

[C12] S. Shen, **C. Yu**, K. Zhang, and S. Ci. "Exploiting Feature Interactions for Malicious Website Detection with Overhead-accuracy Tradeoff," in *Proc. of IEEE ICC'21*, Montreal, Canada, Jun. 2021, pp.1-7.

Publications Submitted/in Preparation

(UC students are marked with †)

[1] S. Yang†, **C. Yu**, Y. Zhao. "Machine Learning Assisted Influential Spreaders Identification in Social Networks," in preparation.

[2] A. Alshappip†, **C. Yu**. "Privacy-Preserving Data Fusion for Multi-Modality Models in Federated Learning," in preparation.

INVITED TALKS

- Title: Hybrid Federated Learning for E-Health with Horizontal and Vertical Data Partitioning — October 25, 2024
  Event: 2024 Symposium on Intelligent Systems and Secure Communications
  Host Organization/Institution: Electrical & Computer Engineering, University of Nebraska – Lincoln

- Title: Artificial Intelligence & Machine Learning — July 15, 2024
  Event: IEEE NAECON 2024
  Host Organization/Institution: 2024 IEEE NAECON Committee

RESEARCH PRESENTATIONS

- Title: Efficient Multi-Layer Stochastic Gradient Descent Algorithm for Federated Learning in E-health — May 2022
  Event: Proc. of IEEE ICC'22
  Host Organization/Institution: 2022 IEEE ICC Committee

- Title: Energy-Aware Device Scheduling for Joint Federated Learning in Edge-assisted Internet of Agriculture Things — April 2022
  Event: Proc. of IEEE WCNC'22
  Host Organization/Institution: 2022 IEEE WCNC Committee

- Title: Modeling & Performance Analysis of IEEE 802.11p Bradcasting for Intra-platoon Communications — October 2019
  Event: 13th Central Area Networking and Security Workshop
  Host Organization/Institution: Lowa State University

RESEARCH SUPPORT

- Title: New Faculty Startup Funding — August 2023 — August 2026
  PI: Chong Yu
  Sponsor: University of Cincinnati

PROJECT PARTICIPATION

My contributions include proposal drafting, milestone scheduling and activity planning.

[P1] **An Intelligent Unmanned Aerial Application System for Site-Specific Weed Management**
Funded by the Department of Agriculture and National Institute of Food and Agriculture (NIFA) at $113,500 per year, from July 2021 to June 2024
PI: Dr. Kuan Zhang

[P2] **CPS:Medium: CPS-Enabled Variable Rate Technology**
Funded by National Science Foundation (NSF) Cyber Physical System (CPS) program and NIFA at $234,000 per year, from April 2021 to March 2024
PI: Dr. Kuan Zhang
Sponsoring Institution: National Institute of Food and Agriculture

PROFESSIONAL AND UNIVERSITY SERVICES

SCIENTIFIC COMMUNITY

Technical Program Committee Member

- IEEE International Conference on Ubiquitous Intelligence and Computing (UIC) 2024
- IEEE International Conferences on High Performance Computing and Communications (HPCC) 2024
- IEEE International Conference on Communication (ICC) 2023, 2024
- IEEE/CIC International Conference on Communications in China (ICCC) 2024
- IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA) 2023
- International Conference on Wireless Communications and Signal Processing (WCSP) 2019, 2023, 2024
- IEEE Vehicular Technology Conference (VTC) 2023, 2024
- IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom) 2022, 2024
- International Conference on Ubiquitous Security (UbiSec) 2021, 2022, 2023, 2024

Session Chair

- Session: SAC-eHealth-1, IEEE ICC May 2022
- Session: ST3 Wireless 1, International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob) October 2021

Reviewer of Journals and Conferences
(Have reviewd over 100 papers)

- Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- IEEE Transactions on Network and Service Management
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Computational Social Systems
- Peer-to-Peer Networking and Applications (Springer)
- IEEE Journal on Selected Areas in Communications
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Services Computing
- IEEE Wireless Communications Magazine
- IEEE Internet of Things Journal
- IET Wireless Sensor Systems
- IEEE Communications Letters
- IEEE Sensors Journal
- Computer Networks
- IEEE Access
- PLOS ONE
- IEEE ICC 2023, 2024
- IEEE ICCC 2023, 2024
- IEEE VTC-Fall 2023
- IEEE ISPA 2023
- IEEE BDCloud 2023
- IEEE TrustCom 2022, 2024
- IEEE UIC, 2024
- IEEE HPCC, 2024
- WCSP 2019, 2023, 2024
- STWiMob 2021
- UbiSec 2021, 2022, 2023, 2024

Professional Society Services

- Advisor for the Plunk Foundation February 2024 — Present
  The Plunk Foundation is a nonprofit organization dedicated to advancing digital privacy for women, children, veterans, and underserved communities. Since February 2024, I have served as an advisor, contributing my expertise in cybersecurity and privacy protection to create a world where everyone can live and thrive with digital privacy and safety.

INTERNAL SERVICES

College Level

- Faculty Judge for CEAS EXPO 2024. April 2024
  Our Senior Capstone Projects were displayed at the CEAS EXPO, where I served as a judge, evaluating and scoring the projects.

Department Level

- Faculty Search Committee Member for Computer Science (Req ID: 94227). Spring 2024
  I was responsible for contacting candidates, coordinating with faculty members to arrange interviews, and scheduling both online and onsite interviews.
- Alternate Point of Contact for Center of Academic Excellence in Cyber Operations (CAE-CO) 2024
  and CAE-CO Program Committee Chair.
  The committee has collected and prepared materials for the Program of Study (PoS) Validation and CAE Designation Application. We have successfully passed the PoS Validation.
- Curriculum Committee Member for Computer Science AI Track. 2024
  The committee is working on designing the curriculum, creating courses, and preparing syllabi.

Dissertation Committee Member

- Lucas Jividen - M.S. Computer Science (Advisor: Dr. Jun Bai). Fall 2024 — present
- Wenjiao Liu - Ph.D. Computer Science (Advisor: Dr. Anca Ralescu). Fall 2024 — present
- Sarfaraz Ahmed Mohammed - Ph.D. Computer Science (Advisor: Dr. Anca Ralescu). Fall 2024
- Lakshmi Poojitha Madhamsetty - M.S. Computer Science (Advisor: Dr. Raj Bhatnagar). Fall 2023

TEACHING AND MENTORING EXPERIENCES

Teaching Experiences

- CS2028C "Data Structures", – Instructor Fall 2024
  Department of Computer Science, University of Cincinnati
  Undergraduate Level
  Number of Students: 117
- CS2028C "Data Structures", – Instructor Fall 2023
  Department of Computer Science, University of Cincinnati
  Undergraduate Level
  Number of Students: 110
- ECEN 488/888 "Wireless Security", – Teaching Assistant Spring 2023
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate & Graduate Level
- ECEN 194-003 "System Programming", – Teaching Assistant Spring 2023
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate Level
- ECEN 484/884 "Network Security", – Guest Lecturer Fall 2022
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate & Graduate Level
- ECEN 352 "Electronic Circuits II", – Teaching Assistant Fall 2022
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate Level
- Certificate of International Teaching Assistant (ITA) Training Program August 2022
  Office of Graduate Studies, University of Nebraska-Lincoln

Mentoring Experience

Ph.D. Students in Progress

- **Shukun Yang** August 2024 — present
  Ph.D. in Computer Science, University of Cincinnati
- **Wei Wang** (Co-advised with Dr. Jun Bai) August 2024 — present
  Ph.D. in Computer Science, University of Cincinnati
- **Adel Alshappip** August 2023 — present
  Ph.D. in Computer Science, University of Cincinnati

M.S. Students Graduated

- **Yoshitha Challagulla** (Non-thesis) September 2023 — November, 2023
  Masters of Engineering in Computer Science, University of Cincinnati

M.S. Students in Progress

- **Bryan Cora** August 2023 — present
  Masters in Computer Science, University of Cincinnati