Xingran Chen

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Research Interests

My research explores the *information theoretical foundations* and *algorithm design* for decentralized networked systems, with a focus on:
(1) networking and multi-agent systems;
(2) distributed information processing and decentralized learning;
(3) security, privacy, and robustness.

Academic Positions

Postdoctoral Researcher in Electrical and Computer Engineering — Jan. 2025 - present
Rutgers University
Advisor: Prof. Salim El Rouayheb

Assistant Professor in Information and Communication Engineering — Step. 2023 - present
University of Electronic Science and Technology of China
Currently on academic leave since Jan. 2025 due to personal circumstances

Education

Ph.D. in Electrical and Systems Engineering — 2018 - 2023
University of Pennsylvania
Advisor: Prof. Shirin Saeedi-Bidokhti

M.A. in Applied Mathematics and Computational Science — 2016 - 2018
University of Pennsylvania
Thesis Advisor: Prof. Saswati Sarkar

M.S. in Operations Research — 2015 - 2016
Central South University (transfer to Upenn in 2016)

B.S. in Mathematics and Statistics — 2011 - 2015
Central South University (GPA: 4.0/4.0)

Awards

IEEE Communications Society & Information Theory Society Joint Paper Award	2023
IEEE INFOCOM Student Conference Award	2021
IEEE ISIT Student Travel Grant	2019
The Dean's Fellowship (University of Pennsylvania)	2018
Ganster Engineering Fellowship (University of Pennsylvania)	2018

Research Grants

Young Scientists Fund of the NSFC — Jan. 2025 - Dec. 2027
Grant No: 62401111
Title: Freshness-oriented decentralized random access theory and algorithms
Funding Agency: National Natural Science Foundation of China
Role: Solo PI

Fundamental Research Funds for the Central Universities — Sep. 2024 - Aug. 2026

Grant No: ZYGX2024XJ001
Title: Research on Decentralized Random Access Protocols for Information Freshness
Funding Agency: Ministry of Education of China
Role: Solo PI

Publications

Preprints

[P1] **X. Chen**, Parimal Parag, Rohit Bhagat, Zonghong Liu, and Salim El Rouayheb, Random Walk Learning and the Pac-Man Attack, *under review*.

[P2] **X. Chen**, N. NaderiAlizadeh, A. Ribeiro, and S. Saeedi Bidokhti, Decentralized learning strategies for estimation error minimization with graph neural networks, *under review*.

Journal

[J1] **X. Chen**, K. Li, and K. Yang, Timely requesting for time-critical content users in decentralized F-RANs, *IEEE Transactions on Networking (ToN)*, 2025.

[J2] **X. Chen**, Y. Zhuang, and K. Yang, Age of computing: a metric of computation freshness in communication and computation cooperative networks, *IEEE Transactions on Mobile Computing (TMC)*, 2025.

[J3] H. Nikpey, J. Kim, **X. Chen**, S. Sarkar, and S. Saeedi Bidokhti, Group testing with correlation under edge-faulty graphs, *IEEE Transactions on Information Theory (TIT)*, 2024.

[J4] **X. Chen**, H. Nikpey, J. Kim, S. Sarkar, and S. Saeedi-Bidokhti, Containing a spread through sequential learning: to exploit or to explore?, *Transactions on Machine Learning Research (TMLR)*, 2023.

[J5] J. Kim, **X. Chen**, H. Nikpey, S. Saeedi-Bidokhti and S. Sarkar, Tracing and testing multiple generations of contacts to COVID-19 cases: cost-benefit tradeoffs, *Royal Society Open Science*, 2022.

[J6] **X. Chen**, K. Gatsis, H. Hassani and S. Saeedi-Bidokhti, Age of information in random access channels, *IEEE Transactions on Information Theory (TIT)*, 2022. [IEEE Communications Society & Information Theory Society Joint Paper Award]

[J7] **X. Chen**, S. Sarkar and M. H. Lotfi, The interplay of competition and cooperation among service providers (Part II), *IEEE Transactions on Network Science and Engineering (TNSE)*, 2020.

[J8] **X. Chen**, S. Sarkar and M. H. Lotfi, The interplay of competition and cooperation among service providers (Part I), *IEEE Transactions on Network Science and Engineering (TNSE)*, 2020.

[J9] **X. Chen**, Y. Liu, and Z.Wan, Optimal decision making for online and offline retailers under BOPS mode, *ANZIAM Journal*, 2016.

Conference

[C1] H. Nikpey, J. Kim, **X. Chen**, S. Sarkar, and S. Saeedi Bidokhti, Group testing with correlation via edge-faulty graphs, *IEEE ISIT*, 2022.

[C2] **X. Chen**, R. Liu, S. Wang, and S. Saeedi-Bidokhti, Timely broadcasting in erasure networks: age-rate tradeoffs, *IEEE ISIT*, 2021.

[C3] **X. Chen**, X. Liao, and S. Saeedi-Bidokhti, Real-time sampling and estimation on random access channels: age of information and beyond, *IEEE INFOCOM*, 2021. [IEEE INFOCOM Student Conference Award]

[C4] **X. Chen**, K. Gatsis, H. Hassani, and S. Saeedi-Bidokhti, Age of information in random access channels, *IEEE ISIT*, 2020.

[C5] **X. Chen** and S. Saeedi Bidokhti, Benefits of coding on age of information in broadcast networks, *IEEE ITW*, 2019.

[C6] M. Fereydounian, **X. Chen**, H. Hassani, and S. Saeedi Bidokhti, Non-asymptotic coded slotted ALOHA, *IEEE ISIT*, 2019. [IEEE ISIT Student Travel Grant]

Professional Service

Editorial Board Positions

Guest Editor, Entropy, Special Issue: Goal-Oriented Communication: Freshness, Semantics, and Beyond, 2025.

Guest Editor, China Communications, Blue Ocean Forum, 2024.

Conference Organizations

TPC Member, IEEE ICC: SAC Smart Grid Communications Track, 2024.

TPC Member, IEEE GLOBECOM Workshop: Information Freshness, Communications, Control, and Computing for Industrial IoT, 2020.

Technical Reviewers

IEEE Transactions on Information Theory (TIT),

IEEE/ACM Transactions on Networking (ToN)

IEEE Transactions on Mobile Computing (TMC)

IEEE Journal on Selected Areas in Communications (JSAC)

IEEE Transactions on Network Science and Engineering (TNSE)

IEEE Transactions on Communications (TCOM)

IEEE Transactions on Wireless Communications (TWC)

IEEE Transactions on Artificial Intelligence (TAI)

Journal of Computational and Applied Mathematics (JCAM)

IEEE Wireless Communications Letters (WCL)

IEEE Internet of Things Journal (IoT-J)

IEEE Open Journal of the Communications Society (OJCOMS)

Presentations

Invited Talks

[T1] *Timely requesting for time-critical content users in decentralized F-RANs*, University of Pennsylvania, Philadelphia, USA, 2024.

[T2] *Timely inferences for updating decisions in networked systems*, Central South University, Online (due to COVID-19), 2022. [Celebrating the 20th Anniversary of the School of Mathematics and Statistics]

[T3] *Benefits of coding on age of information in broadcast networks*, Southwest University, Chongqing, China, 2019.

Conference Talks

[T1] *Timely broadcasting in erasure networks: age-rate tradeoffs*, IEEE ISIT, Online (due to COVID-19), 2021.

[T2] *Real-time sampling and estimation on random access channels: age of information and beyond*, IEEE INFOCOM, Online (due to COVID-19), 2021.

[T3] *Age of information in random access channels*, IEEE ISIT, Online (due to COVID-19), 2020.

[T4] *Benefits of coding on age of information in broadcast networks*, IEEE ITW, Visby, Sweden, 2019.

[T5] *Non-asymptotic coded slotted ALOHA*, IEEE ISIT, Paris, France, 2019.

Teaching

Error Control Coding   Spring 2025

Teaching Assistant, undergraduate graduate course, Rutgers University

Stochastic Systems Analysis and Simulation Fall 2020
  Teaching Assistant, undergraduate graduate course, University of Pennsylvania

Information Theory Spring 2020
  Teaching Assistant, graduate course, University of Pennsylvania

Group

Current Students

Kang Yan 2024 - present
  Ph.D. student at University of Electronic Science and Technology of China
  Co-advised with Prof. Kun Yang

Yi Zhuang 2024 - present
  M.Phil. student at University of Electronic Science and Technology of China
  Co-advised with Prof. Kun Yang

Alumni

Kai Li 2022 - 2025
  M.Phil. at University of Electronic Science and Technology of China
  Co-advised with Prof. Kun Yang
  Next: Meituan (Industrial)

Bohao Yang 2021 - 2025
  Undergraduate at University of Electronic Science and Technology of China
  Excellent Talents program for undergraduates
  Next: M.S. student at Southeast University, China