

Xingran Chen

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Research Interests

My research explores the *information-theoretic 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 <i>Rutgers University</i> Advisor: Prof. Salim El Rouayheb	Jan. 2025 - present
Assistant Professor in Information and Communication Engineering <i>University of Electronic Science and Technology of China</i> Currently on academic leave since Jan. 2025 due to personal circumstances	Step. 2023 - present

Education

Ph.D. in Electrical and Systems Engineering <i>University of Pennsylvania</i> Advisor: Prof. Shirin Saeedi-Bidokhti	2018 - 2023
M.A. in Applied Mathematics and Computational Science <i>University of Pennsylvania</i> Thesis Advisor: Prof. Saswati Sarkar	2016 - 2018
M.S. in Operations Research <i>Central South University</i> (transfer to Upenn in 2016)	2015 - 2016
B.S. in Mathematics and Statistics <i>Central South University</i> (GPA: 4.0/4.0)	2011 - 2015

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 Grant No: 62401111 Title: Freshness-oriented decentralized random access theory and algorithms Funding Agency: National Natural Science Foundation of China Role: Solo PI	Jan. 2025 - Dec. 2027
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**, P. Parag, R. Bhagat, and S. El Rouayheb, Self-Creating Random Walks for Decentralized Learning under Pac-Man Attacks, *IEEE Journal on Selected Areas in Communications (JSAC)*, submitted.
 - [P2] **X. Chen**, P. Parag, R. Bhagat, Z. Liu, and S. El Rouayheb, Random Walk Learning and the Pac-Man Attack, *IEEE ISIT*, submitted.
 - [P3] **X. Chen**, N. NaderiAlizadeh, A. Ribeiro, and S. Saeedi Bidokhti, Decentralized learning strategies for estimation error minimization with graph neural networks, *IEEE Transactions on Signal Processing (TSP)*, submitted.
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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.
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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, WiOpt, 2026.

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] *Random Walk Learning and the Pac-Man Attack*, Joint Mathematics Meetings (JMM), Washington, D.C., UAS, 2026.
 - [T2] *Random Walk Learning and the Pac-Man Attack*, Rutgers University, New Brunswick, USA, 2025.
 - [T3] *Timely requesting for time-critical content users in decentralized F-RANs*, University of Pennsylvania, Philadelphia, USA, 2024.
 - [T4] *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]
 - [T5] *Benefits of coding on age of information in broadcast networks*, Southwest University, Chongqing, China, 2019.
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Conference Presentations

- [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	