

Xingran Chen

🏠 24 Quarry Road, Waterville, ME

🌐 <http://xingranchen.com/>

✉ xingranc@ieee.org

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Research Fields

My research interests are in the intersection of Information Theory, Machine Learning, and Networks. I am particularly interested in the performance analysis, learning, and control of networked systems.

Academic Positions

University of Electronic Science and Technology of China (UESTC)

- School of Information and Communication Engineering

- Assistant Professor

2023-present

Education

University of Pennsylvania

Philadelphia, PA, USA

- Ph.D. in *Electrical and Systems Engineering*, 2018 - 2023.
- M.A. in *Applied Mathematics and Computational Science*, 2016 - 2018.

Central South University

- M.S. in *Operations Research*, 2015 - 2016 [Transfer to Upenn]
- B.S. in *Statistics*, 2011 - 2015.

Awards and Achievements

- 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 - 2023
- Ganster Engineering Fellowship (University of Pennsylvania) 2018

Research Grants

- **Young Scientists Fund of the NSFC** (Grant No. 62401111), "Freshness-oriented decentralized random access theory and algorithms"
 - National Natural Science Foundation of China
 - Role: Solo PI
 - Dates: 2025.01 - 2027.12
 - Amount: 300,000 RMB
- **Fundamental Research Funds for the Central Universities** (Grant No. ZYGX2024XJ001), "Research on Decentralized Random Access Protocols for Information Freshness"
 - Ministry of Education of China
 - Role: Solo PI
 - Dates: 2024.09 - 2026.08
 - Amount: 100,000 RMB
- **The State Key Laboratory Program** (Grant No. 2024JCYJ14), "Application of freshness-oriented random access strategies in video monitoring of smart factories"

- National Engineering Research Center of Sintering and Pelletizing Equipment System
- Role: PI
- Dates: 2024.08 - 2025.07
- Amount: 90,000 RMB

Publications

corresponding author: *, contributed equally: †

Preprints

- [P3] **X. Chen**, K. Li, and K. Yang*, "Timely requesting for time-critical content users in decentralized F-RANs", under review.
- [P2] **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)*, under revision.
- [P1] **X. Chen***, N. NaderiAlizadeh, A. Ribeiro, and S. Saeedi-Bidokhti, "Decentralized Learning Strategies for Minimum Estimation Error with Graph Neural Networks", under review.

Journal Articles

- [J7] H. Nikpey, J. Kim, **X. Chen**, S. Sarkar, S. Saeedi Bidokhti, "Group Testing with Correlation via Edge-Faulty Graphs", *IEEE Transactions on Information Theory (TIT)*, 2024.
- [J6] **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**, 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.
- [J4] **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]
- [J3] **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.
- [J2] **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.
- [J1] **X. Chen**, Y. Liu, and Z. Wan*, "Optimal Decision Making for Online and Offline Retailers under BPOS Mode", *ANZIAM Journal*, 2016.

Conference Papers

- [C6] H. Nikpey, J. Kim, **X. Chen**, S. Sarkar, S. Saeedi Bidokhti, "Group Testing with Correlation via Edge-Faulty Graphs", *IEEE International Symposium on Information Theory (ISIT)*, 2022.
- [C5] **X. Chen**, R. Liu[†], S. Wang[†], S. Saeedi-Bidokhti, "Timely Broadcasting in Erasure Networks: Age-Rate Tradeoffs", *IEEE International Symposium on Information Theory (ISIT)*, 2021.
- [C4] **X. Chen**, X. Liao and S. Saeedi-Bidokhti, "Real-time Sampling and Estimation on Random Access Channels: Age of Information and Beyond", *IEEE International Conference on Computer Communications (INFOCOM)*, 2021. [Student Conference Award]
- [C3] **X. Chen**, K. Gatsis, H. Hassani, and S. Saeedi-Bidokhti, "Age of Information in Random Access Channels", *IEEE International Symposium on Information Theory (ISIT)*, 2020.
- [C2] **X. Chen** and S. Saeedi-Bidokhti, "Benefits of Coding on Age of Information in Broadcast Networks", *IEEE Information Theory Workshop (ITW)*, 2019.
- [C1] M. Fereydounian, **X. Chen**, H. Hassani, and S. Saeedi-Bidokhti, "Non-asymptotic coded slotted ALOHA", *IEEE International Symposium on Information Theory (ISIT)*, 2019. [Student Travel Grant]

Technical Report.....

[TR2] X. Chen, K. Li, and K. Yang, "Supplementary Material for the Paper 'Timely requesting for time-critical content users in decentralized F-RANs' ", *arXiv*, 2024.

[TR1] X. Chen, S. Sarkar, and M. H. Lotfi, "Supplementary Material for the Paper 'The Interplay of Competition and Cooperation among Service Providers (Part I)' ", *arXiv*, 2020.

Professional Service

Editorial Board Positions.....

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

Conference Organizations.....

Technical Program Committee Member, IEEE ICC: SAC Smart Grid Communications Track, 2024.

Technical Program Committee Member, IEEE GLOBECOM Workshop: Information Freshness, Communications, Control, and Computing for Industrial IoT (GC Workshop - AoI3C), 2020.

Technical Reviewers.....

- IEEE Transactions on Information Theory (TIT)
- IEEE/ACM Transactions on Networking (ToN)
- 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 Mobile Computing (TMC)
- IEEE Transactions on Artificial Intelligence (TAI)
- Journal of Computational and Applied Mathematics (JCAM)
- Journal of Cleaner Production (JCLP)
- IEEE Wireless Communications Letters (WCL)
- IEEE Internet of Things Journal (IoT-J)
- IEEE Open Journal of the Communications Society (OJCOMS)
- China Communications
- IEEE Access

Invited Talks

- Timely requesting for time-critical content users in decentralized F-RANs, University of Pennsylvania, Philadelphia, USA, 2024.
- Timely inferences for updating decisions in networked systems, Central South University, Online, 2022. [**Celebrating the 20th Anniversary of the School of Mathematics and Statistics**]
- Benefits of coding on age of information in broadcast networks, Southwest University, Chongqing, China, 2019.

Group

Ph.D.....

- Kang Yan, 2024 - 2028. Co-advised with Dr. Kun Yang.

Master of Philosophy.....

- Kai Li, 2022 - 2025. Co-advised with Dr. Kun Yang.
- Yi Zhuang, 2024 - 2027. Co-advised with Dr. Kun Yang.

Excellent Talents Program of UESTC for Undergraduates.....

- Bohao Yang, 2021 - 2025.

Teaching

- **Stochastic Systems Analysis and Simulation**, teaching assistant, undergraduate graduate course, University of Pennsylvania, 2020 Fall.
- **Information Theory**, teaching assistant, graduate course, University of Pennsylvania, 2020 Spring.