

# Xingran Chen

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## Research Fields

My research interests are in the intersection of **Information Theory**, **Machine Learning**, and **Networks**. My primary goal is to develop novel and fundamental techniques from the intersection to solve various problems in *next-generation (NextG) networks* and *the Internet of Things (IoT)*.

## Academic Positions

### University of Electronic Science and Technology of China (UESTC)

- School of Information and Communication Engineering

- Lecturer (Assistant Professor)

2023-present

## Education

### University of Pennsylvania

Philadelphia, PA, USA

- Ph.D. in *Electrical and Systems Engineering*, 2018 - 2023. [Advisor: Prof. Shirin Saeedi Bidokhti, GPA: 3.98/4.0]

- M.A. in *Applied Mathematics and Computational Science*, 2016 - 2018. [GPA: 4.0/4.0]

### Central South University

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

- B.S. in *Statistics*, 2011 - 2015. [GPA: 90.41/100]

## 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
- National Scholarship of China (Graduate Student, Top 0.2% in China) 2016
- First Prize of the 12th Graduate Students' Mathematical Modeling Contest in China 2015
- Student Representative at the 2015 Graduation Ceremony of Central South University 2015
- Outstanding Graduates of Hu'nan Province (Top 3% in Hu'nan Province) 2015
- National Scholarship of China (Undergraduate Student, Top 0.2% in China) 2014

## Publications

corresponding author: \*, contributed equally: †

### Preprints

[P3] 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)*, submitted.

[P2] **X. Chen\***, R. Liu, and S. Saeedi-Bidokhti, "Timely Broadcasting Mechanisms in Erasure Networks: Age-Rate Tradeoffs", *IEEE Transactions on Wireless Communications (TWC)*, submitted.

[P1] **X. Chen\***, X. Liao and S. Saeedi-Bidokhti, "Beyond AoI: Real-time Sampling and Estimation on Reliable and Unreliable Random Access Channels", *IEEE/ACM Transactions on Networking (TON)*, submitted.

## Journal Articles.....

- [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<sup>†</sup>, S. Wang<sup>†</sup>, 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.....

- [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

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### Conference Organizations.....

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

### Reviewers.....

#### o IEEE Journals

- 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 Wireless Communications Letters (WCL)
- IEEE Internet of Things Journal (IoT-J)
- IEEE Open Journal of the Communications Society (OJCOMS)
- IEEE Access
- **Non-IEEE Journals**
  - Journal of Computational and Applied Mathematics (JCAM)
  - Journal of Cleaner Production (JCLP)
  - ANZIAM Journal
  - Journal of Industrial and Management Optimization (JIMO)
  - Mathematical Population Studies – An International Journal of Mathematical Demography
  - Social Science Quarterly
- **IEEE Conferences**
  - IEEE International Symposium on Information Theory (ISIT) [2022, 2020]
  - IEEE International Conference on Communications (ICC) [2021]
  - IEEE Information Theory Workshop (ITW) [2022]
  - IEEE Global Communications Conference (GLOBECOM) [2022]
  - IEEE GLOBECOM Workshop [2020]
  - IEEE International Conference on Wireless Communications and Signal Processing (WCSP) [2023]
  - IEEE INFOCOM Age of Information Workshop [2020]
- **Non-IEEE Conferences**
  - The Joint Optimization Conferences (JOC) [2017]

## Invited Talks

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- 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.

## Teaching

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- **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.