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 networks* (*NextG*) 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†, 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

[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

Conference Organizations

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

Reviewers

○ **EEE 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 Open Journal of the Communications Society (OJCOMS)
- IEEE Internet of Things Journal (IoT-J)
- **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]
  - Age of Information Workshop [2020]
- **Non-IEEE Conreferences**
  - The Joint Optimization Conferences (JOC) [2017]

Invited Talks

- 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

- **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.