

# MD KAMRAN CHOWDHURY SHISHER

Elmore Family School of Electrical and Computer Engineering

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## Education

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**Ph.D. in Electrical Engineering** Aug. 2018 – May 2024

Auburn University, Auburn, AL

Advisor: Prof. Yin Sun

**Thesis Title: Timely Inference over Networks**

**M.S. in Electrical Engineering** M.S. in Electrical Engineering Aug. 2022

Auburn University, Auburn, AL

**B.Sc. in Electrical and Electronic Engineering** Feb. 2013 – Sep. 2017

Bangladesh University of Engineering and Technology

## Research Interests

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Communication Networks, Goal-oriented and Semantic Communication, Multi-agent Control Systems, Machine Learning, Stochastic Optimization and Control

## Professional Appointments

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**Postdoctoral Researcher** May 2024 – Present

Department of Electrical and Computer Engineering, Purdue University

Advisors: Prof. Christopher G. Brinton and Prof. Mung Chiang

**Research Assistant** Aug. 2018 – May 2024

Department of Electrical and Computer Engineering, Auburn University

Advisor: Prof. Yin Sun

**Teaching Assistant** Jan. 2020 – May 2024

Auburn University

**Lecturer** Nov. 2017 – June 2018

Department of Electrical and Electronic Engineering

Bangladesh Army University of Science and Technology

## Awards and Honors (selected)

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**The IEEE ComSoc William R. Bennett Prize** Aug 2025

Research Profile featured in ACM SIGMETRICS Performance Evaluation Review Dec 2023

NSF Student Travel Grant, ACM MobiHoc Oct 2023

NSF Travel Grant, North American School of Information Theory June 2023

ACM SIGMOBILE Student Travel Grant, ACM MobiHoc Oct 2022

IEEE INFOCOM Student Conference Grant June 2022

NSF Student Conference Award, IEEE INFOCOM June 2021

Dean's Award, BUET, Bangladesh 2017, 2016, 2015

## Publications

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### Journal Papers: (Student Mentees Underlined)

- J7. **Md Kamran Chowdhury Shisher**, Adam Piaseczny, Yin Sun, and Christopher G. Brinton, "Computation and Communication Co-scheduling for Multi-Task Remote Inference," under review in IEEE/ACM Transactions on Networking.
- J6. Tasmeen Zaman Ornee, **Md Kamran Chowdhury Shisher**, Clement Kam, and Yin Sun, "Remote Safety Monitoring: Status Updating for Situational Awareness Maximization," under review in IEEE Transactions on Information Theory.
- J5. Cagri Ari, **Md Kamran Chowdhury Shisher**, Elif Uysal, and Yin Sun, "Goal-Oriented Communications for Real-time Inference with Two-Way Delay," under review in IEEE/ACM Transactions on Networking.
- J4. **Md Kamran Chowdhury Shisher**, Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang "AoI-based Scheduling of Correlated Sources for Timely Inference," IEEE Transactions on Networking, in press, 2025.
- J3. **Md Kamran Chowdhury Shisher**, Yin Sun, and I-Hong Hou, "Timely Communications for Remote Inference," IEEE/ACM Transactions on Networking, vol. 32, no. 5, pp. 3824-3839, 2024. [\[IEEE ComSoc William R. Bennett Prize \(2025\) Winner\]](#)
- J2. **Md Kamran Chowdhury Shisher**, Bo Ji, I-Hong Hou, and Yin Sun, "Learning and Communications Co-Design for Remote Inference Systems: Feature Length Selection and Transmission Scheduling," IEEE Journal on Selected Areas in Information Theory, vol. 4, pp. 524-538, 2023.
- J1. Kevin Yan, **Md Kamran Chowdhury Shisher**, and Yin Sun, "A Transfer Learning-Based Deep Convolutional Neural Network for Detection of Fusarium Wilt in Banana Crops," AgriEngineering, vol. 5, no. 4, pp. 2381-2394, 2023.

### Conference Papers: (Student Mentees Underlined)

- C11. Yinan Zou, **Md Kamran Chowdhury Shisher**, Vishrant Tripathi, and Christopher G. Brinton, "Distributed Online Convex Optimization with Interference Constraints: The Role of Gradient Freshness," submitted, 2025.
- C10. **Md Kamran Chowdhury Shisher**, Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang "Online Learning of Whittle Indices for Restless Bandits with Non-Stationary Transition Kernels," submitted, 2025.
- C9. Adam Piaseczny, **Md Kamran Chowdhury Shisher**, Shiqiang Wang, and Christopher G. Brinton "RCCDA: Adaptive Model Updates in the Presence of Concept Drift under a Constrained Resource Budget," NeurIPS, 2025. [\[Acceptance Rate: 24.52%\]](#)
- C8. **Md Kamran Chowdhury Shisher**, Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang "AoI-based Scheduling of Correlated Sources for Timely Inference," IEEE ICC, 2025.
- C7. **Md Kamran Chowdhury Shisher**, Adam Piaseczny, Yin Sun, and Christopher G. Brinton, "Computation and Communication Co-scheduling for Timely Multi-Task Inference at the Wireless Edge," IEEE INFOCOM, 2025. [\[Acceptance Rate: 18.6%\]](#)
- C6. Cagri Ari, **Md Kamran Chowdhury Shisher**, Elif Uysal, and Yin Sun, "Goal-Oriented Communications for Remote Inference with Two-Way Delay," IEEE ISIT, 2024.
- C5. **Md Kamran Chowdhury Shisher** and Yin Sun, "On the Monotonicity of Information Aging," IEEE INFOCOM ASoI Workshop, 2024.
- C4. Tasmeen Zaman Ornee, **Md Kamran Chowdhury Shisher**, Clement Kam, and Yin Sun, "Context-aware Status Updating: Wireless Scheduling for Maximizing Situational Awareness in Safety-critical Systems," IEEE MILCOM, 2023.
- C3. **Md Kamran Chowdhury Shisher** and Yin Sun, "How Does Data Freshness Affect Real-time Supervised Learning?" ACM MobiHoc, 2022. [\[Acceptance Rate: 19.8%\]](#)

- C2. **Md Kamran Chowdhury Shisher**, Heyang Qin, Lei Yang, Feng Yan, and Yin Sun, “The Age of Correlated Features in Supervised Learning based Forecasting,” IEEE INFOCOM AoI Workshop, 2021.
- C1. **Md. Kamran Chowdhury Shisher**, Tasmeen Zaman Ornee, and Md. Farhad Hossain, “QoS aware user association in massive MIMO enabled hetnets for DTU and NDTU traffic,” IEEE ICAEE, 2017.

## Research Experience

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- 1 **Postdoctoral Researcher** May 2024-Present  
Purdue University
  - Optimized **ML model training performance under concept drift** [C9].
  - Developed an **online resource allocation algorithm** for restless multi-armed bandits (RMABs) in unknown, non-stationary settings [C10].
  - Developed an Age of Information (AoI)-based **distributed convex optimization** algorithm under interference constraints [C11].
  - Developed **wireless scheduling algorithms for coupled or correlated sources** under interference constraints to minimize remote inference error [J6, C8].
  - Jointly optimized **communication scheduling and feature computation** to improve the performance of multi-task remote inference systems [J7, C7].
- 2 **Research Assistant** Aug. 2018-May 2024  
Auburn University
  - Introduced a novel research topic on **Remote Inference**. Established an **information-theoretic theory** to interpret **the impact of information freshness on inference error** [C2, C3, C5] by using a generalized conditional entropy and by introducing the concept of  $\epsilon$ -Markov chain and  $\epsilon$ -**data processing inequality**.
  - Optimized the performance of remote inference systems by designing **scheduling algorithms** for both the single-user, single channel and the multi-user, multi-channel systems [J2, J3, C6, C3]. We proposed a new “**selection-from-buffer**” scheduling model to optimize the remote inference systems. Paper [J3] based on this research received [IEEE ComSoc William R. Bennett Prize \(2025\)](#).

## Teaching Experience

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1. **Guest Lecturer** Fall 2024  
ECE 547: Introduction to Computer Communication Networks  
Purdue University
2. **Teaching Assistant** Spring 2023, 2024  
ELEC-5970/6970: Applied Statistical and Machine Learning  
Auburn University
3. **Teaching Assistant** Spring 2020, 2021, 2022, Fall 2022  
ELEC-7970: Reinforcement Learning  
Auburn University
4. **Teaching Assistant** Fall 2022  
ELEC-2120: Signals and Systems  
Auburn University
5. **Lecturer** Nov 2017-June 2018  
Bangladesh Army University of Science and Technology
  - Courses: Communication Theory, Digital Signal Processing, and Telecommunication Engineering
  - Labs: Communication Engineering, Digital Signal Processing

## Research Proposals

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**NSF VINES: Track 2:** NextG Smart Factory/Manufacturing, submitted Sep. 2025

- **Contributions:** Thrust. Smart Factory/Manufacturing Operational Status.
- **PIs:** H. Kwon (Wichita State U), S. Kim (Iowa State U), M. Zhang (Mississippi State U); Senior Personnel include C. Brinton (Purdue U) and others from Ericsson Research, Penn State, Arizona State U, and UT Arlington.

**NSF CPS: Medium:** Name-Based Design of Distributed Intelligence for Smarter Communities, submitted June 2025

- **Contributions:** Thrust. Fine-Grained Control: Updating Models under Heterogeneity and Dynamics
- **PIs:** E. Yeh (Northeastern U), C. Brinton (Purdue U), S. Sannigrahi (Tennessee Tech), H. Newman (Caltech).

**NSF PDaSP:** Privacy-Preserving Aggregation of Demand Flexibility for Sustainable Power Systems, submitted Sep. 2024

- **Contributions:** Thrust. Tackling Hierarchical and Heterogeneous Environments
- **PIs:** J. Qin (Purdue U), A. Hashemi (Purdue U), C. Brinton (Purdue U), K. Poolla (UC Berkeley).

## Student Mentoring

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<b>Yinan Zou</b> , Purdue University Graduate Student	Jan 2025-Present
<b>Adam Piaseczny</b> , Purdue University Graduate Student	May 2024-Present
<b>Sam Chamoun</b> , Auburn University Undergraduate Student	Aug. 2023-May 2024
<b>Zachary Gayford</b> , Auburn University Undergraduate Student	Jan 2024-May 2024
<b>Cason B. Vazquez</b> , Auburn University Undergraduate Student	Aug 2023-Dec 2023
<b>Justin Tran</b> , Auburn University Undergraduate Student	May 2021-May 2022
<b>Cagri Ari</b> , Middle East Technical University Graduate Student	Aug 2023-Present
<b>Mengxue Li</b> , Tuskegee University Graduate Student	Aug 2023-Present
<b>Kevin Yan</b> , Auburn High School Student	Aug 2022-Dec 2023

## Talks

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**Computation and Communication Co-scheduling for Timely Multi-Task Inference at the Wireless Edge**

- IEEE INFOCOM, London, UK May 2025

**Timely Inference over Networks**

- PhD Dissertation Defense April 2024
- Invited Talk at Purdue University, 2024 March 2024
- Invited Talk at Northwestern University, 2024 March 2024
- Invited Poster Presentation at ITA, 2024 Feb 2024
- Invited talk at Southeast Control Conference, 2024 Feb 2024
- Talk at Dept. of ECE, Auburn University Feb 2024

**Learning and Communications Co-design For Remote Inference: Feature Length Selection and Transmission Scheduling**

- Invited Talk at University of Maryland, College Park, MD Oct 2023
- Graduate Engineering Research Showcase, Auburn University Oct 2023

**Communications of Timely Information for Real-time Machine Learning and Networked Intelligence**

- North American School of Information Theory, Philadelphia, PA June 2023

## **How Does Data Freshness Affect Real-time Supervised Learning?**

- Information Theory Application Workshop, San Diego, CA Feb 2023
- Auburn University Research Symposium (Poster Presentation) March 2023
- ACM MobiHoc, Seoul, South Korea. Oct 2022
- College of Engineering Research Showcase at the U.S. Space and Rocket Center, Huntsville, AL (Poster Presentation) Aug 2022

## **The Age of Correlated Features in Supervised Learning based Forecasting**

- IEEE INFOCOM AOI Workshop, Vancouver, BC, Canada (virtual) May 2021

## **Services**

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### **Reviewer for Journal Manuscript Submissions**

- IEEE Transactions on Information Forensics & Security, 2025
- IEEE Transactions on Signal Processing, 2025
- IEEE Transactions on Communications, 2024, 2025
- IEEE Transactions on Networking, 2024, 2025
- IEEE Transactions on Mobile Computing, 2024, 2025
- IEEE Transactions on Network Science and Engineering, 2024
- IEEE Transactions on Green Communications and Networking, 2024
- IEEE Journal of Communications and Networks, 2020, 2023
- IEEE Journal on Selected Areas in Information Theory, 2023
- IEEE Open Journal of the Communications Society, 2023
- IEEE Transactions on Wireless Communications, 2022, 2024
- IEEE Journal on Selected Areas in Communication, 2020

### **Reviewer for Conference Manuscript Submissions**

- IEEE ITW, 2024
- IEEE WiOpt, 2024
- ACM MobiHoc ASol Workshop, 2024
- IEEE ISIT, 2022
- IEEE INFOCOM, 2020, 2022
- IEEE WCNC, 2021, 2022
- IEEE INFOCOM, 2020
- IEEE INFOCOM AoI Workshop, 2019, 2020

### **TPC member**

- IEEE WCNC, 2026
- IEEE WCNC, 2022
- IEEE WCNC, 2021

Session Chair in ASol and DTWin Workshops in IEEE INFOCOM	May, 2025
Maintainer of an online paper repository on Age of Information	Aug 2018-May 2024
Volunteer on E-Day, Auburn University, Auburn, AL	Feb 2020
Organizing Secretary, Bangladesh Student Organization, Auburn University	Aug 2022-Aug 2023
House Cultural Prefect, Rangpur Cadet College, Bangladesh	2012
Junior Prefect, Rangpur Cadet College, Bangladesh	2011

## **Professional Membership**

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IEEE Member  
IEEE Information Theory Society Member  
IEEE Communication Society Member  
ACM SIGMOBILE Member

## References

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### **Yin Sun**

Bryghte D. and Patricia M. Godbold Endowed Associate Professor  
Ginn Faculty Achievement Fellow Electrical & Computer Engineering, Auburn University  
Email: yzs0078@auburn.edu, Phone: +1 614 906 5038

### **Christopher G. Brinton**

Elmore Rising Star Associate Professor Electrical & Computer Engineering  
Purdue University  
Email: cgb@purdue.edu, Phone: +1 908 723 3710

### **Mung Chiang**

Purdue University President  
Roscoe H. George Distinguished Professor of Electrical and Computer Engineering, Purdue University  
Email: chiang@purdue.edu, tlc3764@purdue.edu Phone: +1 765-494-5346

### **I-Hong Hou**

Professor of Electrical & Computer Engineering, Texas A&M University  
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### **Bo Ji**

Associate Professor of Computer Science  
College of Engineering Faculty Fellow, Virginia Tech  
Email: boji@vt.edu, Phone: +1 540 231-0331