Md Kamran Chowdhury Shisher

PostDoctoral Researcher, Purdue University
West Lafayette, IN 47906
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Education

Ph.D. in Electrical Engineering **Aug. 2018 – May 2024**
Auburn University, Auburn, AL *CGPA: 4.00/4.00*
Thesis Title: Timely Inference over Networks
Advisor: Yin Sun

M.S. in Electrical Engineering **Aug. 2022**
Auburn University, Auburn, AL *CGPA: 4.00/4.00*

B.Sc. in Electrical and Electronic Engineering **Feb. 2013 - Sep. 2017**
Bangladesh University of Engineering and Technology *CGPA: 3.80/4.00*

Research Interests

Communication Networks, Goal-oriented and Semantic Communication, Machine Learning, Optimization, and Multi-agent Robotics

Professional Appointments

Postdoctoral Researcher May 2024 – Present
Department of Electrical and Computer Engineering
Purdue University
Supervisors: Prof. Christopher G. Brinton and Prof. Mung Chiang

Research Assistant Aug. 2018 – April 2024
Department of Electrical and Computer Engineering
Auburn University
Supervisor: Prof. Yin Sun

Teaching Assistant Jan. 2020 – May 2024
Auburn University

Lecturer Nov. 2017 – June 2018
Bangladesh Army University of Science and Technology
Department of Electrical and Electronics Engineering

Awards and Honors (selected)

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

Journal Papers: (Student Mentees Underlined)

J1. **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, 2025.

J2. **Md Kamran Chowdhury Shisher,** Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang "AoI-based Scheduling of Correlated Sources for Timely Inference," under review in IEEE/ACM Transactions on Networking, 2025.

J3. 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, 2025.

J4. 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, 2025.

J5. **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]**

J6. **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.

J7. 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)

C1. 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.

C2. **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.

C3. 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%]**

C4. **Md Kamran Chowdhury Shisher,** Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang "AoI-based Scheduling of Correlated Sources for Timely Inference," IEEE ICC, 2025.

C5. **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.

C7. **Md Kamran Chowdhury Shisher** and Yin Sun, "On the Monotonicity of Information Aging," IEEE INFOCOM ASoI Workshop, 2024.

C8. 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.

C9. **Md Kamran Chowdhury Shisher** and Yin Sun, "How Does Data Freshness Affect Real-time Supervised Learning?" ACM MobiHoc, 2022. **[Acceptance Rate: 19.8%]**

C10. **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.

C11. **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

1 **Postdoctoral Researcher** May 2024-Present
Purdue University
∘ **Designed an online machine learning model update policy** that optimizes training dynamics under **concept drift** environments while satisfying resource constraints [C3].
∘ **Developed an online resource allocation algorithm** for restless multi-armed bandits (RMABs) in unknown, non-stationary settings [C2]. Specifically, an online algorithm is designed to learn Whittle Indices for unknown, non-stationary environments.
∘ **Developed an Age of Information (AoI)-based distributed convex optimization** algorithm under interference constraints [C1]. In this work, multiple agents of a distributed system are considered to share their current information to a central server and the server sends back the updated learning parameter
∘ **Developed wireless scheduling algorithms for coupled or correlated sources** under interference constraints to **minimize remote inference error** [J2, C4]. This scheduling problem for correlated sources is a restless bandit problem with a non-separable penalty function.
∘ **Optimized the performance of multi-task remote inference systems** by solving a **communication and computation co-design** problem [J1, C5]. This co-design problem involves **resource allocation with multiple resource constraints**, formally known as Weakly Coupled MDP.

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** [C7, C9, C10] by using a generalized conditional entropy and by introducing the concept of ϵ-Markov chain and **ϵ-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 [J5, J6, C6, C9]. Proposed a new **"selection-from-buffer"** scheduling model to optimize the remote inference systems. Paper based on this research received IEEE ComSoc William R. Bennett Prize (2025).

Teaching Experience

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

Proposal Writing Experience

∘ Contributed to the writing of the following Grant Proposals:

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

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

Talks

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

Session Chair in ASoI and DTWin Workshops in IEEE INFOCOM — May, 2025

Maintainer of an **online paper repository on Age of Information** — Aug 2018-May 2024

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 ASoI 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

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

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

References

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Bryghte D. and Patricia M. Godbold Endowed Associate Professor
Ginn Faculty Achievement Fellow Electrical & Computer Engineering, Auburn University
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