

MD KAMRAN CHOWDHURY SHISHER

PostDoctoral Researcher, Purdue University

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Education

Ph.D. in Electrical Engineering

Auburn University, Auburn, AL

Aug 2018 – May 2024

CGPA: 4.00/4.00

Thesis Title: Timely Inference over Networks

Advisor: Yin Sun

M.S. in Electrical Engineering

Auburn University, Auburn, AL

Aug 2022

CGPA: 4.00/4.00

B.Sc. in Electrical and Electronics Engineering

Bangladesh University of Engineering and Technology

Feb 2013- Sep 2017

CGPA: 3.80/4.00

Research Interests

Communication Networks, Information Freshness, Machine Learning, Information Theory, Multi-armed Bandit, Reinforcement Learning, Federated Learning, Optimization and Decision Theory

Research Experience

PostDoctoral Researcher, ION Lab and EDGE Lab, Purdue University

May 2024-present

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

- Analyze and optimize communication networks for inference, learning, and control at wireless edge
- Mentoring a Ph.D. student on federated learning and concept drift research
- Contributing to the writing of research proposals

Research Assistant, Real-time Networking Lab, Auburn University

Fall 2018-May 2024

- Developed information theoretic tools to understand the impact of information freshness in remote inference/estimation
- Designed new network control policies for remote inference/estimation systems
- Designed new asymptotically optimal algorithms for restless multi-armed bandit
- Mentored three Undergrad, two Ph.D., and one High School students

Teaching Experience

Teaching at Purdue University

Fall 2024

- Delivered in-class lectures on **(1) Routing and Shortest Paths** and **(2) Transmission Control Protocol** for the course **ECE 547: Introduction to Computer Communication Networks**.

Teaching Assistant, Auburn University

1. ELEC-5970/6970: Applied Statistical and Machine Learning

Spring 2023, 2024

- Delivered in-class coding lectures on K-nearest neighbors algorithm, SVM, decision tree, XGBoost, neural network, image classification with transfer learning, text classification with LSTM.
- Designed assignments.

2. ELEC-7970: Reinforcement Learning

Spring 2020, 2021, 2022, Fall 2022

- Delivered in-class coding lectures on value iteration, policy iteration, temporal difference, SARSA, Q-learning, DQN, and REINFORCE algorithms.
- Designed assignments.

3. ELEC-2120: Signals and Systems

Fall 2022

- Conducted labs. Graded homework and lab reports.

Lecturer Department of Electrical and Electronic Engineering
Bangladesh Army University of Science and Technology

Nov 2017-June 2018

Publications

In Preparation:

1. **Md Kamran Chowdhury Shisher** and Yin Sun, “On the Monotonicity of Information Aging for AR(p) Models,” 2024.

Journal Papers:

- J1. Tasmeen Zaman Ornee, **Md Kamran Chowdhury Shisher**, Clement Kam, and Yin Sun, “Contextual Status Updating: How to Maximize Situational Awareness?,” under review at IEEE Journal on Selected Areas in Communications, 2024. Online: <https://tzo0017.github.io/TechnicalReport.pdf>
- J2. Cagri Ari, **Md Kamran Chowdhury Shisher**, Elif Uysal, and Yin Sun, “Goal-Oriented Communications for Real-time Inference with Two-Way Delay,” under review at IEEE Journal on Selected Areas in Communications, 2024. Online: <https://arxiv.org/abs/2410.08706>.
- 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.
- J4. **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.
- J5. 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:

- C1. **Md Kamran Chowdhury Shisher**, Vishrant Tripathi, Christopher G. Brinton, and Mung Chiang “AoI-based Scheduling of Correlated Sources for Timely Inference,” submitted, 2024. Online: <https://kamran0153.github.io/ICC2025TechReport.pdf>.
- C2. Cagri Ari, **Md Kamran Chowdhury Shisher**, Elif Uysal, and Yin Sun, “Goal-Oriented Communications for Remote Inference with Two-Way Delay,” *IEEE ISIT*, 2024.
- C3. **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.
- C5. **Md Kamran Chowdhury Shisher** and Yin Sun, “How Does Data Freshness Affect Real-time Supervised Learning?” *ACM MobiHoc*, 2022. [Acceptance Rate: 19.8%]
- C6. **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.
- C7. **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.

Talks

Timely Inference over Networks

- 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

Student Mentoring

Adam Piaseczny , Purdue University Graduate Student	May 2024-Present
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

Services

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

TPC member

- IEEE WCNC, 2021, 2022

Reviewer for Journal Manuscript Submissions

- IEEE Transactions on Networking, 2024
- IEEE Transactions on Mobile Computing, 2024
- 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
- 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

Awards and Honors

Research Profile , 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 2022
Dean's Award , BUET, Bangladesh	2017, 2016, 2015
Best Cadet , Rangpur Cadet College	2012
SSC Scholarship (Talent) , Government of Bangladesh	2010
Primary Scholarship (Talent) , Government of Bangladesh	2005

Professional Membership

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

Skills

Programming Language: Python, C, MATLAB, Object Oriented Programming
Mathematics: Optimization and Decision Theory, Markov Decision Process, Dynamic Programming, Probability, Information Theory, Multi-armed Bandit
Machine Learning: Supervised Learning, Deep Learning, Reinforcement Learning, Transfer Learning, CNN, RNN, Federated Learning
Machine Learning Tools: TensorFlow, Keras, Scikit-learn, Pandas, Numpy

References

Prof. 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

Prof. Christopher G. Brinton

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

Prof. I-Hong Hou

Professor of Electrical & Computer Engineering
Texas A&M University
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Prof. Bo Ji

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