

# MD KAMRAN CHOWDHURY SHISHER

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## Education

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### Auburn University

*Ph.D., Electrical and Computer Engineering*

Auburn, AL, Aug. 2018 – Present

CGPA: 4.00/4.00

### Auburn University

*M.S., Electrical and Computer Engineering*

Auburn, AL, Aug. 2018 – Aug. 2022

CGPA: 4.00/4.00

### Bangladesh University of Engineering and Technology

*B.Sc., Electrical and Electronics Engineering*

Dhaka, Bangladesh, Feb. 2013 – Sep. 2017

3.80/4.00

## Research Interests

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Communication Networks

Semantic Communications

Information Freshness

Information Theory

Reinforcement Learning

Optimization and Decision Theory

## Work EXPERIENCE

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### Research Assistant, Real-time Networking Lab, Auburn University

Fall 2018-present

- Developed a novel information-theoretic tool to interpret the importance of information freshness on the performance of real-time applications, such as remote inference and remote estimation.
- Proposed a new information updating model called “selection-from-buffer” model. Designed optimal scheduling policies for remote inference systems.
- A longer feature can provide better learning performance, but it often requires more communication resources. Studied a co-design problem that jointly optimizes length of feature sequences and transmission scheduling for remote inference systems.

### Teaching Assistant, ELEC-5970: Applied Statistical and Machine Learning, Auburn University

Spring 2023

- Designed and conducted lab lectures on K-nearest neighbors algorithm, SVM, decision tree, XGBoost, neural network, image classification with transfer learning, text classification with LSTM.

### Teaching Assistant, ELEC-7970: Reinforcement Learning, Auburn University

Spring 2020-2022, Fall 2022

- Designed and conducted lab lectures on value iteration, policy iteration, temporal difference, SARSA, Q-learning, DQN, and REINFORCE algorithms.

## PUBLICATIONS

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- **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*, 2023.
- 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 QuAVoI Workshop*, 2023.
- **Md Kamran Chowdhury Shisher** and Yin Sun, “How Does Data Freshness Affect Real-time Supervised Learning?” *ACM MobiHoc*, 2022. [Acceptance Rate: 19.8%]

- **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.
- **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.

## Under Review

- Cagri Ari, **Md Kamran Chowdhury Shisher**, Elif Uysal, and Yin Sun, “Goal-Oriented Communications for Remote Inference with Two-Way Delay”, submitted to *IEEE ICC, 2024*.  
Technical report: <https://webhome.auburn.edu/~yzs0078/CagriICC2024.pdf>
- 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”, submitted to *AgriEngineering*, 2023. Available: <https://www.preprints.org/manuscript/202309.1681/v1>

## In Progress

- **Md Kamran Chowdhury Shisher**, I-Hong Hou, and Yin Sun, “Timely Communications for Remote Inference,” *in preparation*, 2023.
- Tasmeen Zaman Ornee, **Md Kamran Chowdhury Shisher**, Clement Kam, and Yin Sun, “Timely Updates for Situational Awareness”, in preparation, 2023.

## TALKS

### 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 March 2023
- ACM MobiHoc, Seoul, South Korea. Oct 2022
- College of Engineering Research Showcase at the U.S. Space and Rocket Center, Huntsville, AL Aug 2022

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

IEEE INFOCOM AoI Workshop, Vancouver, BC, Canada (virtual)

May, 2021

## Student Mentoring

**Cagri Ari**, Middle East Technical University Graduate Student

Designed scheduling strategies for goal-oriented communications for remote inference systems with two-way delay. A paper is submitted at IEEE ICC, 2024.

Technical report: <https://webhome.auburn.edu/~yzs0078/CagriICC2024.pdf>

**Mengxue Li**, Tuskegee Graduate Student

Currently working on a food pantry visit forecasting project.

Project webpage: <https://github.com/Kamran0153/Food-Pantry-Household-Visit-Forecasting>

**Justin Tran**, Auburn University Undergraduate

Worked on optimal pilot scheduling for throughput maximization.

Project webpage: [http://webhome.auburn.edu/~yzs0078/project\\_Justin/project\\_Justin.html](http://webhome.auburn.edu/~yzs0078/project_Justin/project_Justin.html)

**Kevin Yan**, High School Student

Worked on transfer learning-based Deep Convolutional Neural Network for Detection of Fusarium Wilt in Banana Crops. A paper from this project is under review in *AgriEngineering*.

Preprints: <https://www.preprints.org/manuscript/202309.1681/v1>

## Awards and Honors

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<b>Candidate Profile</b> , ACM SIGMETRICS Performance Evaluation Review accepted for a special issue on job market candidates.	Dec 2023
<b>NSF Student Travel Grant</b> , ACM MobiHoc to attend ACM MobiHoc 2023 in Washington, D.C.	Oct 2023
<b>NSF Travel Grant</b> , North American School of Information Theory to attend and present poster at NASIT 2023 in Philadelphia, PA.	June 2023
<b>ACM SIGMOBILE Student Travel Grant</b> , ACM MobiHoc to attend and present paper at ACM MobiHoc 2023 in Seoul, Korea.	Oct 2022
<b>IEEE INFOCOM Student Conference Grant</b> to attend IEEE INFOCOM virtually.	June 2022
<b>NSF Student Conference Award</b> , IEEE INFOCOM to attend and present paper at IEEE INFOCOM 2021 virtually.	June 2022
<b>Dean's Award</b> , BUET, Bangladesh for outstanding academic performance in those years.	2017, 2016, 2015
<b>Best Cadet</b> , Rangpur Cadet College for outstanding academic performance during 2006-2012	2012
<b>SSC Scholarship (Talent)</b> , Government of Bangladesh for outstanding results in SSC examination	2010
<b>Primary Scholarship (Talent)</b> , Government of Bangladesh for outstanding results in Primary Scholarship examination	2005

## SERVICES

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### TPC member

- IEEE WCNC, 2021
- IEEE WCNC, 2022

### Reviewer for Journal Manuscript Submissions

- IEEE Journal of Communications and Networks, 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
- IEEE Journal of Communications and Networks, 2020

### Reviewer for Conference Manuscript Submissions

- IEEE ISIT, 2022
- IEEE WCNC, 2022
- IEEE INFOCOM, 2022
- IEEE WCNC, 2021
- IEEE INFOCOM, 2020
- IEEE INFOCOM AoI Workshop, 2020
- IEEE INFOCOM AoI Workshop, 2019

Maintainer of an <b>online paper repository on Age of Information</b>	Aug 2018-Aug 2021
<b>Volunteer</b> on E-Day, Auburn University, Auburn, AL	Feb 2020
<b>Organizing Secretary</b> , Bangladesh Student Organization, Auburn University	2022-2023
House Cultural Prefect, Rangpur Cadet College, Bangladesh	2011-2012
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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**Prof. Yin Sun**, yzs0078@auburn.edu, Auburn University

**Prof. Shiewen Mao**, smao@auburn.edu, Auburn University

**Prof. Roy Yates**, ryates@winlab.rutgers.edu, Rutgers University

**Prof. Elif Uysal**, uelif@metu.edu.tr, Middle East Technical University

**Prof. Bo Ji**, boji@vt.edu, Virginia Tech