

# Md Nadim

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## Research Interests

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Rural Broadband, Next Generation Wireless Networks, Wireless X-haul communications (Microwave and Millimeter Wave), Free Space Optical Communication (FSOC), Predictable Wireless Networking and Routing, Distributed Systems, Testbeds, and Real-world Network measurement.

## Education

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**Iowa State University** June 2022 – Present  
*Ph.D. in Computer Engineering* GPA: 3.88/4.0  
Advisor: [Dr. Hongwei Zhang](#)

**Iowa State University** Aug 2022 – Aug 2025  
*M.Sc. in Computer Engineering* GPA: 3.89/4.0  
Advisor: [Dr. Hongwei Zhang](#)

**Bangladesh University of Engineering and Technology (BUET)** Feb 2013 – Sep 2017  
*B.Sc. in Electrical and Electronic Engineering*

## Experience

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**Graduate Research Assistant** Ames, IA  
*Center for Wireless, Communities and Innovation (WiCI)* June 2022 – Present

- Core team member within the Research, Development, and Operations unit and a Lead of the Wireless X-haul Subgroup of the ARA Wireless Living Lab, an NSF-funded PAWR (Platforms for Advanced Wireless Research) project.

**Specialist** Dhaka, Bangladesh  
*Robi Axiata Limited* July 2019 – June 2022

- Contributed to the Wireless Transport Planning team within the Technology Planning Department, focusing on network design and capacity optimization.
- Led the Transmission First-Line Support in the Service Operation Center under the Technology Operations Department, providing front-line support for transmission network issues.

**Network designer (Remotely)** Ontario, Canada  
*SM Consulting Services Inc.* Dec 2021– June 2022

- Project leader and IP and Network Planner for two entire provinces.

**Jr. System Engineer** Dhaka, Bangladesh  
*Bangla Phone Limited* Nov 2017 – June 2019

- Led the network surveillance and maintenance of a nationwide network.

## Publications

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### Journals

- Design and Implementation of ARA Wireless Living Lab for Rural Broadband and Applications** May 2025  
*Computer Networks*  
Taimoor Ul Islam, Joshua Ofori Boateng, **Md Nadim**, Guoying Zu, Mukaram Shahid, Xun Li, Tianyi Zhang, Salil Reddy, Wei Xu, Ataberk Atalar, Vincent Lee, Yung-Fu Chen, Evan Gosling, Elisabeth Permatasari, Christ Somiah, Zhibo Meng, Sarath Babu, Mohammed Soliman, Ali Hussain, Daji Qiao, Mai Zheng, Ozdal Boyraz, Yong Guan, Anish Arora, Mohamed Selim, Arsalan Ahmad, Myra B Cohen, Mike Luby, Ranveer Chandra, James Gross, Hongwei Zhang.

## Conferences

1. **Real-World Integration and Evaluation of Open-Source 5G Core with Commercial RAN** *Accepted*  
*IEEE MILCOM 2025: IEEE Military Communications Conference, Los Angeles, CA, USA.*  
Guoying Zu, Joshua Ofori Boateng, Varun S. Advani, Taimoor Ul Islam, Vincent Lee, Sarath Babu, **Md Nadim**, Daji Qiao, Mohamed Y. Selim, Hongwei Zhang.
2. **AraSync: Precision Time Synchronization in Rural Wireless Living Lab** *Dec 2024*  
*ACM MobiCom '24: Proceedings of the 30th Annual International Conference on Mobile Computing and Networking, Washington, D.C., USA.*  
**Md Nadim**, Taimoor Ul Islam, Salil Reddy, Tianyi Zhang, Zhibo Meng, Reshal Afzal, Sarath Babu, Arsalan Ahmad, Daji Qiao, Anish Arora, and Hongwei Zhang.
3. **Real-Time Liquid Wireless Transport for Video Streaming in Rural and Agricultural Applications** *Mar 2024*  
*ACM MHV '24: Proceedings of the 3rd Mile-High Video Conference, Denver, CO, USA.*  
E. K. A. Permatasari, E. Gosling, **Md Nadim**, S. Babu, D. Qiao, H. Zhang, M. Luby, J. W. Byers, L. Minder, and P. Aggrawal
4. **AraHaul: Multi-Modal Wireless X-Haul Living Lab for Long-Distance, High-Capacity Communications** *Nov 2023*  
*2023 IEEE Future Networks World Forum (FNWF), Baltimore, MD, USA.*  
Guoying Zu, **Md Nadim**, Salil Reddy, Taimoor Ul Islam, Sarath Babu, Tianyi Zhang, Daji Qiao, Hongwei Zhang, Anish Arora.

## Demos and Posters

1. **Demo: Real-World Integration and Evaluation of Open-Source 5G Core with Commercial RAN** *Accepted*  
*IEEE MILCOM 2025: IEEE Military Communications Conference, Los Angeles, CA, USA.*  
Guoying Zu, Joshua Ofori Boateng, Varun S. Advani, Taimoor Ul Islam, Vincent Lee, Sarath Babu, **Md Nadim**, Daji Qiao, Mohamed Y. Selim, Hongwei Zhang.
2. **Long-range, high-capacity FSOC system for rural wireless x-haul using COTS transceivers** *Accepted*  
*ECOC '25: 51th European Conference on Optical Communication, Copenhagen, Denmark.*  
Xun Li, Ataberk Atalar, **Md Nadim**, Sarath Babu, C. J. Margison, M. M. Bayer, A. Ahmad, D. Qiao, H. Zhang, and O. Boyraz
3. **Demo: AraSync: Precision Time Synchronization in Rural Wireless Living Lab** *Nov 2024*  
*ACM MobiCom '24: The 30th Annual International Conference on Mobile Computing and Networking, Washington, D.C., USA.*  
**Md Nadim**, Taimoor Ul Islam, Salil Reddy, Tianyi Zhang, Zhibo Meng, Reshal Afzal, Sarath Babu, Arsalan Ahmad, Daji Qiao, Anish Arora, and Hongwei Zhang.
4. **ARA PAWR: Enabling Wireless Experiments with Commercial Off-the-Shelf RAN and X-Haul Platforms [Best Demo Award]** *Sep 2024*  
*MERIF '24: Midscale Experimental Research Infrastructure Forum, Kansas City, MO, USA.*  
Taimoor Ul Islam, **Md Nadim**, Guoying Zu, Vincent Lee, Owen Perrin, Joshua Ofori Boateng, Mukaram Shahid, Tianyi Zhang, E.K.A. Permatasari, Zhibo Meng, Sarath Babu, Daji Qiao, Hongwei Zhang
5. **ARA PAWR: Wireless Living Lab for Smart and Connected Rural Communities** *Oct 2023*  
*ACM MobiCom '23: Proceedings of the 29th Annual International Conference on Mobile Computing and Networking, Madrid, Spain.*

## Technical Reports

1. **A Long-Range, High-Capacity FSOC System in Heterogeneous and Multi-Modal Rural Wireless X-Haul Networks**

Aug 2025

*Iowa State University Digital Repository*

**Md Nadim**

## Projects

### ARA: Wireless Living Lab

*NSF-Funded PAWR Research Initiative*

*Research, Development and Operation Team Lead — AraHaul: Wireless Xhaul Mesh Network*

- Co-led the design and deployment of a cutting-edge Wireless Living Lab supporting smart rural connectivity.
- Planned and implemented mmWave and Microwave Xhaul Mesh Networks for backhaul resilience.
- Led state-of-the-art Free Space Optical Communication (FSOC) link design for long-range, high-speed rural internet
- Oversaw IP addressing scheme and Layer 2/3 network planning for the entire ARA testbed.
- Developed and implemented Precision Time Protocol (PTP) synchronization strategies for cross-site timing accuracy.

### RAISE: AraOptical 2.0: MISO Free-Space Optical Communications for Long-Distance, High-Capacity X-Haul Networking

*NSF-Funded Research & Development*

- Lead member in the research, development, implementation, and real-world experimentation of MISO-based Free-Space Optical systems for high-capacity, long-distance X-Haul networking.

### CNS Core: Medium: Real-Time Liquid Wireless Networking for Data-Intensive Rural Applications

*NSF-Funded Research and Development*

- Lead member of transport-layer research, development, and real-world implementation of data-intensive wireless networking solutions for rural applications.

**Auto Fiber Link Detection:** Developed logic-based script to detect outages and send alerts in real time.

**Link Database Automation:** Built a tool to automatically flag and block out-of-band spectrum uploads using logic rules.

**Whole Slide Image Scanner, Two-Wheel Balancing Robot, Home Automation System:** Course-based hardware/software integration projects using sensors, microcontrollers, and circuit design tools.

## Awards, Scholarships, and Recognition

**Recognition Award: The Department of Electrical and Computer Engineering, Iowa State University**

Oct 2024

- Best Demo at the NSF MERIF Forum

**Best Demo Award: NSF Midscale Experimental Research Infrastructure Forum (MERIF)**

Sep 2024

- ARA PAWR - Enabling Wireless Experiments with Programmable COTS RAN and X-Haul Platforms.

**Travel Grant: MERIF Workshop**

Sep 2024

**Takano Fellowship: Iowa State University**

2022-2023

**Star Performer of Q3'21: Technology Division, Robi Axiata Limited**

2021

**Technical award at every academic year of BUET**

2013-2017

## Professional Affiliations

### Institute of Electrical and Electronics Engineers (IEEE)

- Graduate Student Member
- Professional Member
- Vice Chair, IEEE BUET Student Branch

Aug 2024 – Present

Feb 2018 – Feb 2019

Mar 2017 – Sep 2017

## Association of Computing Machinery (ACM)

- SIGMOBILE Member
- Professional Member

*Nov 2018 – Present*

*Nov 2018 – Present*

## Professional Activities

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### Journal Reviews

- IEEE Transactions on Wireless Communications (IEEE TWC)

## Synergistic and Leadership activities

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**Event Convener, Organizer and Treasurer**

*Mar 2017 - May 2017*

*Orion EEE DAY 2017*

**General Secretary**

*Mar 2017 - Oct 2017*

*BUET Dance Club*

**Vice President**

*Mar 2017 - Oct 2017*

*BUET Drama Society*

**Organizing Secretary**

*Mar 2017 - Oct 2017*

*BUET Energy Club*

## Technologies

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**Languages:** C++, C, Python, Assembly, Java, C#

**Networking Tools:** Pathloss, MapInfo Pro, U2020/U2000, UNMS, Mini Link Craft

**Simulation/Design:** MATLAB, Simulink, Proteus, PSPICE, AutoCAD

**Others:** MS Office, LaTeX, Linux

## Extra-curricular activities

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### Cricket

- Player of Faculty Cricket Team (ECE Faculty)
- Player of Departmental Cricket Team (Department of EEE)

### Cycling

- Member of BD Cyclist, BUET Branch

### Photography

- Member of BUET Photographic Society