Md Ashiqur Rahman

PhD Candidate · Problem Solver · Researcher

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Skills

Coding & Tools: **C, C++** ; familiar with Scala, Python, Java, C# ; Shell scripting, GDB, Docker, NS-3, CSIM, MySQL, Git, Linux.

Research: Internet Architecture, Computer Networks, Probabilistic routing, Protocol design, Scheduling algorithms.

Other topics: Database and Operating Systems, Object-oriented Design, Data structures, Agile, CI/CD.

Education

PhD Candidate in Computer Science (exp. grad. May 2022) *Aug 2016 - Present*

THE UNIVERSITY OF ARIZONA, TUCSON, AZ, USA (GPA: 3.75 / 4.00)

Dissertation topic: Data-centric Wireless Networks.

Master of Science in Computer Science *Aug 2016 - May 2020*

THE UNIVERSITY OF ARIZONA, TUCSON, AZ, USA (GPA: 3.75 / 4.00)

Bachelor of Science in Computer Science and Engineering *Feb 2011 - May 2015*

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY (KUET), KHULNA, BANGLADESH (GPA: 3.60 / 4.00)

Work Experience

Graduate Associate (RA/TA) *Aug 2016 - Present*

COMPUTER SCIENCE, THE UNIVERSITY OF ARIZONA, TUCSON, AZ, USA

- **Network Research Lab:** Analyzing Named Data Networking (NDN) and its protocol stack optimization in wireless networks.
- **Software Development:** Student developer, Named Data Forwarding Daemon (`https://github.com/named-data/NFD`).
- **Teaching Associate:** Computer Networks, Operating Systems.

Summer Instructor *Jun - Aug (2020, 2021)*

COMPUTER SCIENCE, THE UNIVERSITY OF ARIZONA, TUCSON, AZ, USA

- **2021:** Systems Programming and UNIX (C programming, FILE I/O, memory management, and Shell scripting).
- **2020:** Software Development (development practices, testing, algorithms, and data structures using Java).

Lecturer *Sep 2015 - Jul 2016*

COMPUTER SCIENCE AND ENGINEERING, DAFFODIL INTL. UNIVERSITY (DIU), DHAKA, BANGLADESH

- **Mentor:** Competitive Programming (beginner and intermediate).
- **Courses instructed:** Algorithms, Data Structures, Programming and Problem Solving, Software Engineering.

Undergraduate Researcher *Apr 2014 - May 2015*

COMPUTER SCIENCE AND ENGINEERING, KUET, KHULNA, BANGLADESH (WITH DR. G.G. NAWAZ ALI)

- **Thesis:** Minimizing wireless broadcast and latency in V2I communication for improved road-safety and infotainment.

Key Projects

NDN in wireless, ad-hoc, and delay-tolerant networks (C++, NS-3). *2016 - Ongoing*

- Optimizing NDN's data-centric approach in wireless networks.
- Improved application data retrieval rate and throughput by reducing network latency and overhead.
- **Publications** in IC3N, and LNC 2021, ICC Workshops 2020 (Google Scholar: `https://bit.ly/gscholar-ashiqrahman`).

Network Coded Data Dissemination in RSU-based Vehicular networks (C, CSIM). *2014 - 2019*

- Minimizing wireless broadcast and Vehicle-to-RSU communication latency for improving road-safety and infotainment.
- Achieved significant lower latency and wireless broadcast overhead with high data-retrieval rate.
- **Published seven papers**; two as first, two as second and three as third author.

Supporting Multi-Level Annotations for Medical Literature (Python, Tensorflow, Docker) *Aug - Dec 2018*

- Capturing higher context information near all hot-word neighbors.
- Near-SotA performance with significantly lower model training time.

Implemented Heapfile manager, Buffer manager, B+ tree in a DBMS (C, MINIBASE). *Aug - Dec 2017*

Software router with ARP and PWOSPF protocols for shortest path forwarding (C). *Aug - Dec 2016*

Honors & Awards

Mar 2019	**2nd Runners-up**, 8th NDN Hackathon at University of California, Los Angeles	*LA, CA, U.S.A*
May 2018	**Winner**, 6th NDN Hackathon at Florida International University	*Miami, FL, U.S.A*
Mar 2017	**Winner**, 4th NDN Hackathon at University of Memphis	*Memphis, TN, U.S.A*
2014-15	**Dean's list award**, Academic excellence, KUET	*Khulna, Bangladesh*
Jul 2014	**Position 24**, IUT 6th National ICT Fest 2014 Programming Contest	*Dhaka, Bangladesh*
Jun 2012	**2nd Runner-up**, GPIT CSE Festival 2012 Programming Contest, KUET	*Khulna, Bangladesh*

Publications

On Data-centric Forwarding in Mobile Ad-hoc Networks: Baseline Design and Simulation Analysis   *Athens, Greece*
The 30th International Conference on Computer Communications and Networks (ICCCN 2021)   *July 2021*
- Md Ashiqur Rahman ; Beichuan Zhang

On the Analysis of Adaptive-Rate Applications in Data-Centric Wireless Ad-Hoc Networks   *Edmonton, Canada*
2021 IEEE 46th Conference on Local Computer Networks (LCN) [Accepted]   *October 2021*
- Md Ashiqur Rahman ; Beichuan Zhang

Enabling Named Data Networking Forwarder to Work Out-of-the-box at Edge Networks   *Virtual*
2020 IEEE International Conference on Communications Workshops (ICC Workshops)   *June 2020*
- Teng Liang, Ju Pan, Md Ashiqur Rahman, Junxiao Shi, Davide Pesavento, Alexander Afanasyev, Beichuan Zhang

Cooperative Cache Transfer-based On-demand Network Coded Broadcast in Vehicular Networks   *ACM*
ACM Transaction on Embedded Computing Systems   *May, 2019*
- G. G. MD. Nawaz Ali; MD. Noor-A-Rahim; Md. Ashiqur Rahman; Beshah Ayalew; Peter H. J. Chong; Yong Liang Guan

An Efficient Cross-layer Coding-assisted Heterogeneous Data Access in Vehicular Networks   *Kansas City, MO, USA*
2018 IEEE International Conference on Communications (ICC)   *May. 2018*
- GGM Nawaz Ali, Md Noor-A-Rahim, Md A Rahman, Syeda Khairunnesa Samantha, Peter HJ Chong, Yong Liang Guan

Efficient Real-time Coding-assisted Heterogeneous Data Access in Vehicular Networks   *IEEE*
IEEE Internet of Things Journal   *Apr. 2018*
- G. G. Md. Nawaz Ali ; Md. Noor-A-Rahim ; Md. Ashiqur Rahman ; Syeda K. Samantha ; Peter Han Joo Chong ; Yong Liang Guan

Efficient coding based heterogeneous data access in vehicular networks   *Paris, France*
2017 IEEE International Conference on Communications (ICC)   *May. 2017*
- G. G. M. Nawaz Ali ; Md. A. Rahman ; S. K. Samantha ; Yumeng Gao ; Peter H.J. Chong ; Y. L. Guan

On Accessing Heterogeneous Data Items Using Network Coding in Wireless Broadcast   *Montreal, QC, Canada*
2016 IEEE 84th Vehicular Technology Conference (VTC-Fall)   *Sept. 2016*
- Md. Ashiqur Rahman ; G. G. Md. Nawaz Ali ; Yumeng Gao ; Syeda K. Samantha ; Peter H. J. Chong

On Scheduling Real-Time Multi-item Query with Network Coding in Multi-RSU VANETs   *Daegu, S. Korea*
2016 IEEE 22nd Intl. Conf. on Embedded and Real-Time Computing Systems and Applications (RTCSA)   *Aug. 2016*
- Md. A. Rahman ; G.G.M. Nawaz Ali ; Peter H.J. Chong ; S.K. Samantha ; M.F. Muntasir ; C. Chen

On Efficient Data Dissemination Using Network Coding in Multi-RSU VANETs   *Nanjing, China*
2016 IEEE 83rd Vehicular Technology Conference (VTC Spring)   *May. 2016*
- G. G. Md. Nawaz Ali ; Md. Ashiqur Rahman ; Peter Han Joo Chong ; Syeda Khairunnesa Samantha