Md Ashiqur Rahman

MENTOR · PROBLEM SOLVER · RESEARCHER

📍 Mesa, AZ 85201, USA

📱 +1(480)310-7674 | ✉ ashiqrahmanopu@gmail.com | ✉ marahman@cs.arizona.edu

🏠 ashiqrahman.com | 💻 ashiqopu | 💼 ashiqopu117 | 🎓 Google Scholar

Education

The University of Arizona *Tucson, AZ, U.S.A*
PH.D. CANDIDATE, COMPUTER SCIENCE (COURSEWORK GPA: 3.75) *Aug. 2016 - Present*

The University of Arizona *Tucson, AZ, U.S.A*
M.SC. TOWARDS PH.D., COMPUTER SCIENCE (COURSEWORK GPA: 3.75) *Aug. 2016 - May 2020*

Khulna University of Engineering & Technology (KUET) *Khulna, Bangladesh*
B.SC. IN COMPUTER SCIENCE AND ENGINEERING (GPA: 3.60) *Feb. 2011 - May 2015*
Earned Dean's List award for academic year of 2014

Skills

Research
Information-Centric Networking (ICN) with Named Data Networking (NDN),
Protocol design and performance optimization in wireless networks,
Packet scheduling with network coding in RSU-based VANETs.

Coding & Tools **C/C++** ; familiar with Scala, Python, Java ; Bash, Lucene, Vim, GDB, Docker, Jenkins, NS-3, CSIM.

Topics
Computer Networks, Database Systems, Operating Systems, Information Retrieval,
Algorithms, Data Structures.

Others Teaching, Project management.

Experience (Research)

Network Research Lab, Computer Science, The University of Arizona *Tucson, AZ, U.S.A*
GRADUATE RESEARCH ASSOCIATE (PH.D. ADVISOR: DR. BEICHUAN ZHANG) *Jan. 2016 - Present*
- Studying NDN as a Future Internet Architecture and optimizing data-centric approach in wireless networks.
- Architectural differences between NDN and IP in mobile ad-hoc networks
- Performance optimization and NDN protocol design at the transport, network, and link layers in wireless networks.
- Analyzing application challenges and designing optimization techniques for NDN in Delay-tolerant Networks (DTN).

Computer Science and Engineering, Khulna University of Engineering & Technology (KUET) *Khulna, Bangladesh*
UNDERGRADUATE RESEARCHER (THESIS ADVISOR: DR. G.G. NAWAZ ALI) *Apr. 2014 - May. 2015*
- Studying applications of Network Coding in scheduling algorithms for Vehicular Ad-hoc Networks (V2I).
- Minimize wireless broadcast and Vehicle-to-RSU latency for better road-safety and infotainment.
  - Optimizing scheduling in multi-item query applications.
  - Designing passive cache-transfer policy in multi-RSU environment.
  - Optimizing maximal clique finding with dynamic threshold in heterogeneous data access.

Experience (Teaching)

Computer Science, The University of Arizona *Tucson, AZ, U.S.A*
GRADUATE TEACHING ASSOCIATE (GRADING, PROJECT MANAGEMENT, DISCUSSION) *Aug. 2016 - Present*
- CSC 452 Operating Systems: Fall 2019, 2020, 2021.
- CSC 425 Computer Networks: Spring 2017, 2020, 2021, Fall 2017.
- CSC 477/577 Introduction to Computer Vision: Fall 2016.

Computer Science, The University of Arizona *Tucson, AZ, U.S.A*
SUMMER INSTRUCTOR *Jun. - Aug.*
- **2021:** CSC 352 Systems Programming and UNIX,
    - Teaching basics of C programming, FILE I/O, memory management, UNIX commands, and Shell scripting.
- **2020:** CSC 210 Software Development,
    - Teaching fundamentals of algorithms, data structures, design, and unit-testing using Java.

Computer Science and Engineering, Daffodil International University (DIU) *Dhaka, Bangladesh*
LECTURER *Sept. 2015 - Jul. 2016*
- CSE 221/222 Algorithms (Fall 2015, Spring 2016),
    - Searching, sorting, basic graphs traversal and dynamic programming.
- CSE 134/135 Data Structures (Fall 2015, Spring-Summer 2016),
    - Covered fundamental structures such as arrays, linked-lists, trees, heaps, hash-maps.
- CSE 122/123 Programming and Problem Solving (Fall 2015, Spring-Summer 2016),
    - C programming, solving ad-hoc problems with basic data types, arrays, strings.
- CSE 334 Wireless Programming (Fall 2015, Spring 2016),
    - Designing and implementing graphics logic with Unity for mobile applications.
- CSE 332 Software Engineering (Summer 2016),
    - Software development models, project management, testing and debugging.

Leadership

Computer Science and Engineering, Daffodil International University (DIU) *Dhaka, Bangladesh*
MENTOR: COMPETITIVE PROGRAMMING (BEGINNER AND INTERMEDIATE). *Sept. 2015 - Jul. 2016*
- Host training sessions on technical topics for fast programming.
- Organized intra and inter-university programming contests.
    - 2015 ACM ICPC Dhaka Regional, DIU, Dhaka, Bangladesh.
    - 2016 National Girls Programming Contest (NGPC), DIU, Dhaka, Bangladesh.

SGIPC (Special Group of Interest in Programming Contests), KUET *Khulna, Bangladesh*
WORKSHOP MANAGER AND INSTRUCTOR *Feb. 2012 - Apr. 2015*
- Host workshop sessions on technical topics for ACM ICPC participation.
- Organized intra and inter-university programming contests.
    - 2012 GPIT CSE Festival Programming Contest, KUET, Khulna, Bangladesh.

IEEE Student Branch, KUET *Khulna, Bangladesh*
CHAIR, WORKSHOP MANAGER AND INSTRUCTOR *Feb. 2014 - Apr. 2015*
- Organize workshops, manage funding and student outreach program.
- Instructor of workshop on Introduction to Python (2014).

Honors & Awards

May, 2021	**Winner**, 11th NDN Hackathon	*Virtual*
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*
Sep., 2015	**Best Research Poster Award**, University Day Poster Competition, KUET	*Khulna, 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

30TH INTERNATIONAL CONFERENCE ON COMPUTER COMMUNICATIONS AND NETWORKS (ICCCN), *Athens, Greece*, *July 2021*.

- Md Ashiqur Rahman ; Beichuan Zhang

On the Analysis of Adaptive-Rate Applications in Data-Centric Wireless Ad-Hoc Networks

2021 IEEE 46TH CONFERENCE ON LOCAL COMPUTER NETWORKS (LCN) [ACCEPTED], *Edmonton, Canada*, *October 2021*.

- Md Ashiqur Rahman ; Beichuan Zhang

Enabling Named Data Networking Forwarder to Work Out-of-the-box at Edge Networks

2020 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS WORKSHOPS (ICC WORKSHOPS), *Virtual*, *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 TRANSACTION ON EMBEDDED COMPUTING SYSTEMS, *ACM*, *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

2018 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS (ICC), *Kansas City, MO, USA*, *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 INTERNET OF THINGS JOURNAL, *IEEE*, *Apr. 2018*.

- G. G. Md. Nawaz Ali ; Md. Noor-A-Rahim ; Md. Ashiqur Rahman ; Syeda Khairunnesa Samantha ; Peter Han Joo Chong ; Yong Liang Guan

Efficient coding based heterogeneous data access in vehicular networks

2017 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS (ICC), *Paris, France*, *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

2016 IEEE 84TH VEHICULAR TECHNOLOGY CONFERENCE (VTC-FALL), *Montreal, QC, Canada*, *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

2016 IEEE 22ND INTL. CONF. ON EMBEDDED AND REAL-TIME COMPUTING SYSTEMS AND APPLICATIONS (RTCSA), *Daegu, S. Korea*, *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

2016 IEEE 83RD VEHICULAR TECHNOLOGY CONFERENCE (VTC SPRING), *Nanjing, China*, *May. 2016*.

- G. G. Md. Nawaz Ali ; Md. Ashiqur Rahman ; Peter Han Joo Chong ; Syeda Khairunnesa Samantha