Md Ashiqur Rahman

PhD Candidate & MS in Computer Science

📍 Mesa, Arizona, 85201

📱 (+1) 480-310-7674 | ✉ marahman@email.arizona.edu

🏠 ashiqrahman.com | ⬛ ashiqopu | ⬛ ashiqopu117

Skills

Research	Computer Networks, Data-centric networking in mobile ad-hoc networks, packet scheduling with network coding in RSU-based vehicular ad-hoc networks (V2I).
Coding	**C/C++**, familiar with Python, Java, Bash
Others	Database Systems, Information Retrieval, NS-3, MySQL

Education

The University of Arizona   *AZ, U.S.A*

PhD Candidate, Computer Science (Coursework GPA: 3.75)   *2016 - 05/2022*

The University of Arizona   *AZ, U.S.A*

MS towards PhD, Computer Science (GPA: 3.75)   *2016 - 2020*

Khulna Univ. of Engineering & Technology (KUET) *Bangladesh*

BS in Computer Science and Engineering (GPA: 3.60)   *2011 - 2015*

Experience

Graduate Associate, The University of Arizona   *AZ, U.S.A*

Research   *2016 - Present*
- Analyzing network and transport layer with Named Data Networking (NDN) in mobile ad-hoc, delay-tolerant and challenging networks.

Teaching   *2016 - Present*
- Instructor: CSC 210 Software Development (Summer 2020)
- TA: CSC 425 Computer Networks; CSC 452 Operating Systems

Computer Sc. & Engrg., Daffodil Intl. Univ. (DIU) *Bangladesh*

Instructor   *2015 - 2016*
- Mentor: Competitive Programming (Beginner-Intermediate).
- Courses instructed: CSE 221 Algorithms; CSE 134 Data Structures.

Computer Science and Engineering, KUET   *Bangladesh*

Lead Undergraduate Researcher (with Dr. G.G. Nawaz Ali)   *2014 - 2015*
- Studying scheduling algorithms and applications of Network Coding in On-demand Vehicular Ad-hoc Networks.

SGIPC (Special Group of Interest in Programming Contests), KUET *Bangladesh*

Workshop Manager and Trainer   *2012 - 2015*

Honors & Awards

2019 **2nd Runners-up**, 8th NDN Hackathon at UCLA, CA, USA

2018 **Winner**, 6th NDN Hackathon at FIU, FL, USA

2017 **Winner**, 4th NDN Hackathon at Univ. of Memphis, TN, USA

Relevant Coursework

Graduate   *2016-Present*
- Principles of Computer Networking, Database Systems and Implementation, Algorithms in NLP, Information Retrieval, Operating Systems.

Undergraduate   *2011-2015*
- Computer Networks, Machine Learning, Data Mining, Data Structures and Algorithms, Algorithm Analysis and Design, Data Communication.

Projects

NDN in mobile ad-hoc, delay-tolerant and challenging networks.   *Ongoing*
- **Problem:** Identify existing IP-network limitations and improve network performance in mobile ad-hoc, delay-tolerant networks.
- **Primary solution:** Understanding effect of NDN-based Interest-Data exchange on network performance.
- *Sub-solution-1:* RTT-based hop-by-hop neighbor update for fast reaction to network dynamics.
- *Sub-solution-2:* Neighborhood measurement in long-delay networks.
- **Expected outcome:** High data retrieval rate at low latency under moderate to high mobility and high reliability in long-delay communication.
- Tools: ndnSIM (built on NS-3), C++

Network Coded Data Dissemination in RSU-based Vehicular Ad-hoc Networks (VANETs)   *2014-2019*
- **Problem:** Minimize wireless broadcast data transmissions and overall Vehicle-to-RSU communication latency in VANETs to provide improved road-safety and infotainment.
- **Primary solution:** Network coded wireless broadcast with optimized scheduling algorithms for time sensitive data request
- *Sub-solution-1:* Co-operative RSU-to-RSU cache information transfer which excludes explicit upload by vehicles.
- *Sub-solution-2:* Coding for heterogeneous data with weighted moving average of maximum data size in a clique.
- *Sub-solution-3:* Time-sensitive heuristic coding for heterogeneous data in real-time multi-item query.
- **Results:** Significant lower latency and wireless broadcast overhead with high data-retrieval rate.
- **Publications:** Two Journals and four Conference papers. Two as first author, two as second and two as third (Google Scholar).
- Tools: CSIM (C, C++)

Weighted Dropout: Supporting Multi-Level Annotations for Medical Literature on Patient, Interventions and Outcomes   *2018*
- **Problem:** Annotating abstracts from medical literature.
- **Solution:** Variable-dropout based on distance from tokens of interest.
- Maintains higher context information from all hot-word neighbors.
- **Outcome:** Near-SotA performance with near-half model training time.
- *Tools:* Python, Tensorflow, Docker.

Components of MINIBASE DBMS in C   *2017*
- Implemented self-resizing Heapfile manager, Buffer manager
- Implemented B+ tree (non-balancing)

Building (a part of) Watson   *2017*
- An end-to-end Information Retrieval system that indexes a large set of Wikipedia pages to retrieve top relevant pages for short queries similar to the Jeopardy game.
- Tools: Scala, Apache Maven, Lucene.

Email Spam classifier   *2017*
- Built a spam classifier model by training with spam labeled/unlabeled dataset and finding similarity between unknown dataset
- Tools: Scala, Apache Maven, Lucene.

Implementing a Software Router in C   *2016*
- *Problem:* forward IP packets under possible link changes.
- *Solution:* Wrote the ARP protocol, IP forwarding, and PWOSPF routing algorithm that can react to link changes.

Gas Station Automation   *2014*
- Easy and secured management of gas station's monetary, repository, and human resources and report generation using cloud services.
- Tools: C#, SQL, ASP.NET, Crystal Report, JavaScript