Shadman Saqib Eusuf

Email: s.saqibeusuf@gmail.com

Website: https://s-saqib.github.io [Google Scholar] [LinkedIn]

Research Interests

- Databases and Data Management Systems
- Spatio-temporal Databases
- Geospatial Analytics
- Smart Embedded Systems and IoT
- Modern Storage Technology
- Wireless Networks

Professional Experience

- **University of Massachusetts Boston (UMass Boston)** — Boston, MA, USA
  PhD Researcher, Department of Computer Science — Jan 2026 - Present
- **University of Massachusetts Boston (UMass Boston)** — Boston, MA, USA
  Teaching Fellow (Instructor of CS 240), Department of Computer Science — Spring 2026
- **University of Illinois Urbana-Champaign (UIUC)** — Urbana, IL, USA
  Graduate Researcher, Siebel School of Computing and Data Science — Jan 2023 - Dec 2025
- **Bangladesh University of Engineering and Technology (BUET)** — Dhaka, Bangladesh
  Assistant Professor (on Leave), Department of Computer Science and Engineering — Jan 2023 - Present
- **Bangladesh University of Engineering and Technology (BUET)** — Dhaka, Bangladesh
  Lecturer, Department of Computer Science and Engineering — Jul 2018 - Jan 2023
- **REVE Systems** — Dhaka, Bangladesh
  Junior Software Engineer — Nov 2017 - Jun 2018

Education

- **University of Massachusetts Boston (UMass Boston)** — Boston, MA, USA
  Ph.D. in Computer Science — Ongoing
- **Bangladesh University of Engineering and Technology (BUET)** — Dhaka, Bangladesh
  M.Sc. in Computer Science and Engineering; CGPA: 4.0/4.0 — November 2022
- **Bangladesh University of Engineering and Technology (BUET)** — Dhaka, Bangladesh
  B.Sc. in Computer Science and Engineering (with Honours); CGPA: 3.91/4.0 — September 2017
  Ranked **5th in a class of 150 students*

Publications

1. **Shadman Saqib Eusuf**, Surag Nuthulapaty, Jin Sima, Jae H. Kim, Matthew Caesar, "Toward Resilience to Persistent Interference in Single Channel Wireless Communication Systems", *IEEE International Conference on Communications*, Scotland, UK, 2026.
2. **Shadman Saqib Eusuf**, Mohammed Eunus Ali, Muhammad Aamir Cheema, Hadi Ghaderi, Timos Sellis, "Scalable multi-hop trajectory join methods for efficient crowdshipping delivery", *Transportmetrica A: Transport Science, Pages 1–31, 2025.* [Paper Link]
3. Tianhao Yu, Matthew Caesar, **Shadman Saqib Eusuf**, "D-planner: An Efficient Surrounding-aware Multi-drone System for Urban Monitoring", In *MILCOM 2024 - 2024 IEEE Military Communications Conference (MILCOM), Washington, DC, USA, Pages 584-589, 2024.* [Paper Link] [Slides]
4. **Shadman Saqib Eusuf**, Kazi Ashik Islam, Mohammed Eunus Ali, Sifat Muhammad Abdullah, Abdus Salam Azad, "A Web-Based System for Efficient Contact Tracing Query in a Large Spatio-temporal Database", In *SIGSPATIAL '20: Proceedings of the 28th International Conference on Advances in Geographic Information Systems, Pages 473–476, 2020.* [Paper Link]
5. Mohammed Eunus Ali, **Shadman Saqib Eusuf**, Kaysar Abdullah, Farhana M. Choudhury, J. Shane Culpepper, Timos Sellis, "The Maximum Trajectory Coverage Query in Spatial Databases", In *Proc. VLDB Endow., Volume 12, Pages 197–209, 2018.* [Paper Link] [Slides]

Research Experience

1. **Tunable ZNS-SSD Policies for LSM Trees (ongoing)**
   We design an experimental framework to study interactions between file placement, zone allocation, and garbage collection in ZNS SSDs for different LSM tree operations under diverse workloads and compaction policies. **PI**: Prof. Tarikul Islam Papon
2. **Toward Superscalability in DBMS Using CXL (ongoing)**
   We explore how DBMS architectures can benefit from leveraging CXL-attached disaggregated memory as well as CXL-enabled I/O to overcome scalability limits in terms of buffer pool management and data-access mechanisms in traditional shared-memory systems. **PI**: Prof. Tarikul Islam Papon
3. **Adversarial Wireless Interference Mitigation (Published in ICC '26)**
   We study adversarial wireless interference in single-channel systems. We design amplitude-aware decoding and predictive interference mitigation techniques, and implement an SDR-based prototype to evaluate their effectiveness. Our system achieves 95–100% data recovery under persistent interference and is supported by theoretical analysis. **PI**: Prof. Matthew Caesar
4. **Crowdshipped Package Delivery in Large Trajectory Database (Published in Transportmetrica A '25)**
   We study the crowdshipped package delivery which engages daily commuters to ship goods near their regular itinerary. We develop a two level index – the first summarizing regional connectivity from trajectory orientation and the second providing with a linear ordering based on spatio temporal similarity facilitating trajectory joins. We construct a graph over the pruned trajectory set and compute the optimal delivery path using a cost-aware path-finding algorithm, achieving an order of magnitude performance gain in terms of runtime and I/O. **PI**: Prof. Mohammed Eunus Ali
5. **Trajectory Coverage in Spatial Databases (Published in VLDB '19)**
   We propose two new coverage queries for trajectory databases and design a novel index based on trajectory hierarchy and spatial locality. We develop a divide-and-conquer based informed search technique to answer the queries efficiently prune irrelevant trajectories with the novel index and achieve a 2-3 order of magnitude improvement, in terms of runtime and I/O. **PI**: Prof. Mohammed Eunus Ali

Research Talks

1. "Jamming Resilience in Cyber Protected Secure Communications for Distributed Air Launch Effects Platforms", Aug 2025, *Boeing Annual Project Review*, Coordinated Science Laboratory, UIUC, USA.
2. "D-planner: An Efficient Surrounding-aware Multi-drone System for Urban Monitoring", Oct 2024, *MILCOM*, Washington, D.C., USA.
3. "JAMGuardian: Co-channel Adversarial Jamming Mitigation Techniques in Wireless Communication", Aug 2024, *Boeing Annual Project Review*, Coordinated Science Laboratory, UIUC, USA.

Posters and Demonstrations

1. "UniZNS: Optimizing Any LSM Compactions for ZNS SSDs", Poster at *NEDB Day*, UMass Boston, USA, 2026.
2. "Jamming Resilient Secure Communication System Prototype with Software Defined Radios", Demonstration at *Boeing Annual Project Review*, UIUC, USA, 2025.

Teaching Experience (Selected)

- **University of Massachusetts Boston**
  Instructor: CS 240 - Programming in C.
- **University of Illinois Urbana-Champaign**
  Database Systems; Data Structures; Introduction to Computer Science II - C++.
- **Bangladesh University of Engineering and Technology**
  Theorey Courses (Co-instructor): (i) Computer Graphics; (i) Microprocessors, Microcontrollers, and Embedded Systems; (iii) Artificial Intelligence;
  Lab Courses: (i) Database; (ii) Data Structure and Algorithm; (iii) Algorithm Engineering; (iv) Object Oriented Programming Language (C++, Java); (v) Structured Programming Language (C); (vi) Software Development; (vii) Computer Networks; (viii) Computational Geometry.

Projects (Selected)

- **Coordinated Huge Page Management for VM Networking Stacks**
  A study on Linux kernel networking memory optimization to reduce TLB overhead via lower allocation fragmentation with transparent huge page support across the guest and host operating systems, achieving up to 1.18× throughput gain. ***Tools:*** *C, Bash.*
- **Object detection and classification with mmWave radars**
  A study on identifying objects (with a pre-trained ML classifier) from point clouds generated by intelligently filtering, merging, and interpolating multiple mmWave radar scans. ***Tools:*** *mmWave radar, Python.*
- **Selecting Between Pandas Alternatives** [Report] [Slides] [Implementation]
  A study on adopting multiple alternatives of Pandas to execute a Python notebook for runtime optimization by making cell-wise decisions. ***Tools:*** *Jupyter-notebook, Python.*
- **Database Logging Optimization Using Memory-Mapped Files** [Report] [Slides] [Implementation]
  A study on the benefits of using memory-mapped files in database logging for selective workloads at scale. ***Tools:*** *HyperSQLDB, Java.*
- **Bulk Code Downloader Using GitHub Code Search API** [Report] [Presentation] [Implementation]
  A web-based application to download source codes in bulk from GitHub, based on various search criteria, using its code search API. ***Tools:*** *Python Flask, JavaScript.*
- **Simplified Automated Quadcopter** [Demonstration]
  Automation of take off, landing and simple movements of a quadcopter using pulse-width modulation in AVR microcontrollers. ***Tools:*** *ATmega32, C.*
- **Quality Assurance of Automated XI Class Admission System in Bangladesh**
  Functional testing of a centralized application procedure of ∼2M students in ∼6000 educational institutions.

Technical Skills (Selected)

- **Programming Languages**: *Proficient in*: Java, C++, C, Python, JavaScript, HTML, CSS, PL/SQL; *Working Knowledge of*: Bash, Assembly Language (8086)
- **Frameworks**: Struts, Bootstrap, Flask
- **Databases**: MariaDB, MySQL, PostgreSQL, Oracle
- **Hardwares**: ATmega32, Raspberry Pi, HackRF
- **Others**: Git, AJAX, OpenGL, Postman, GNURadio

Honors and Awards

- **MILCOM Student Travel Grant**, MILCOM 2024
- **Dean's List Award** in all four levels of undergraduate study
- **University Merit Scholarship** in six out of eight terms of undergraduate study

Synergistic Activities

- **Voluntary Works**
  - Volunteering in NEDB Day 2026
  - Research mentoring of an undergraduate student (Class of 2026, CS, UIUC) 2025
  - Student volunteering in VLDB 2020
  - Website Design of Macro-to-Micro scale Fluids Engineering Lab (MμFEL), Dept. of ME, BUET 2018
- **Competitive Programming**
  - Coach, BUET National and International Collegiate Programming Contest Teams 2018 - 2022
  - Contestant [Codeforces] 2014 - 2017
- **Services**
  - Member, NSysS Conference Organizing Committee (Web Maintenance & Registration) 2018 - 2022
  - Member, Board of Undergraduate Studies (BUGS), Dept. of CSE, BUET 2018 - 2023
  - Convener, Technical Committee for UG Online Exam Conduction, Dept. of CSE, BUET 2021 - 2022