

# Shadman Saqib Eusuf

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[\[Google Scholar\]](#) [\[LinkedIn\]](#)

## EDUCATION

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- **University of Illinois Urbana-Champaign (UIUC)** Urbana, IL, USA  
*Ph.D. in Computer Science; CGPA: 4.0/4.0* 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*

## PROFESSIONAL EXPERIENCE

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- **University of Illinois Urbana-Champaign (UIUC)** Champaign, IL, USA  
*Research/Teaching Assistant, Siebel School of Computing and Data Science* January 2023 - Present
  - **Bangladesh University of Engineering and Technology (BUET)** Dhaka, Bangladesh  
*Lecturer, Department of Computer Science and Engineering* July 2018 - January 2023
  - **REVE Systems** Dhaka, Bangladesh  
*Junior Software Engineer* November 2017 - June 2018

## RESEARCH INTERESTS

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

## PUBLICATIONS

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1. 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. [\[Paper Link\]](#) [\[Slides\]](#)
  2. **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. [\[Paper Link\]](#)
  3. 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. [\[Paper Link\]](#) [\[Slides\]](#)

## OTHER RESEARCH EXPERIENCES

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1. **Allied and Adversarial Wireless Interference Mitigation**  
We address the wireless jamming problem from allied and adversarial perspectives. First, we aim to build an end-to-end solution where allied communication is possible in the presence of intentional interferences. On the other hand, when an adversary maliciously emits strong signals to overwhelm good communication, our goal is to extract information from the good signal exploiting domain knowledge. To achieve this, we are investigating optimum algorithms, learnable modules and hardware implementations.
  2. **Crowdshipped Package Delivery in a Large Trajectory Database**  
In this work, we study the crowdshipped package delivery which engages daily commuters to ship goods near their regular itinerary. We develop a two level index based on trajectory orientation for joining the co-visiting ones. We introduce a bidirectional exploration strategy to prune the trajectory search space and construct a trajectory graph where the query is answered, modeled as a shortest path finding problem.

### 3. Universal Predicate Pushdown to Smart Storage

We aim to reduce the disk I/O overhead while working with large amount of structured data by exploiting the built-in computational capability of some modern storage devices in this work. For this purpose, we use hashing techniques and devise an algorithm to convert query predicates to hashbits so that filtering is possible at the smart storage device through hashbit matching.

### 4. Improving File-System Crash Consistency in Replicated Block Storage

In this work, our goal is to design an intelligent file system that can achieve data consistency at the overhead of metadata consistency. Our approach is to make the block store semantic-aware and use replicas to recover from crashes instead of using a journal to reduce disk I/O (essential for storage device longevity) and network bandwidth requirements. We also investigate file-system caching in the same replicated setting.

## TEACHING EXPERIENCE (SELECTED)

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- **University of Illinois Urbana-Champaign**

Database Systems; Data Structures; Introduction to Computer Science II

- **Bangladesh University of Engineering and Technology**

Computer Graphics; Microprocessors, Microcontrollers, and Embedded Systems; Database; Data Structure and Algorithm; Algorithm Engineering; Object Oriented Programming Language; Software Development

## PROJECTS (SELECTED)

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- **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.*

- **Semi Autonomous Obstacle Avoiding Robot**

A 4WD robot capable of sensing obstacles in its path and avoiding them using a recursive algorithm. **Tools:** *Raspberry Pi, Python.*

- **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.*

- **Online Application Management for Overseas Employment**

An application and management portal for overseas employment opportunity for workers from Bangladesh. **Tools:** *Struts, Bootstrap, JavaScript.*

- **Customer Relationship Management Website**

A ticketing website including overall management of an organization. **Tools:** *MySQL, Struts, Bootstrap, JavaScript, jQuery, AJAX.*

- **Quality Assurance of Automated XI Class Admission System in Bangladesh**

Functional testing of the centralized application procedure of nearly 2M students into around 6000 educational institutions.

## COURSEWORK (SELECTED)

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- **Ph.D. Courses:**

Advanced Information Retrieval, Storage Systems, ML + Data Systems, Advanced Wireless Networks and IoT

- **M.Sc. Courses:**

Wireless Ad-hoc Networks, Advanced Artificial Intelligence, Neural Network, Advanced Algorithm, Programming Language and Systems

- **Undergraduate Courses:**

Digital System Design, Microprocessors and Microcontrollers, Data Structure, Algorithms, Database, Artificial Intelligence, Machine Learning, Computer Graphics

## TECHNICAL SKILLS (SELECTED)

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- **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
- **Hardware:** ATmega32, Raspberry Pi, HackRF
- **Others:** Git, AJAX, OpenGL, Postman, GNURadio

## HONORS AND AWARDS

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- **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

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- **Voluntary Works**
  - 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 \(M<sub>μ</sub>FEL\)](#), 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