

# Sadman Sakib

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[Google Scholar](#) | [LinkedIn](#) | [Github](#)

## EDUCATION

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### B. Sc., Computer Science and Engineering

Feb 2017 – May 2022

Bangladesh University of Engineering & Technology (BUET)

Current GPA: 3.87/4.00 (8/8 terms).

Major GPA: 3.94/4.00

Final two years GPA: 3.96/4.00 (4/4 terms)

## RESEARCH INTEREST

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- Networks
- Mobile Computing
- Systems
- Artificial Intelligence

## RESEARCH EXPERIENCE

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### Transparent Third-party Authentication and Application Mobility in Federated Edge Computing

Feb 2020 – Oct 2021

Supervisor: [Dr. Ying-Dar Lin](#) (NYCU), [Dr. Md. Shohrab Hossain](#) (BUET)

Keywords: Cellular Networks (4G/5G), Edge Computing, Security, Mobility. Resources: [\[PDF\]](#) [\[Slides\]](#)

- We design transparent proxy-based architecture and protocols for authentication and application state transfer for roaming users in federated edge networks.
- We optimize our design by prefetching data and reusing token stored in UE.
- We attain 73.6%-84.6% reduction in service interruption latency compared to cloud-based services.

### IoT-VR: IoT Simulation Platform for Cost-free Deployment and Monitoring of IoT Networks

Jan 2020 – Feb 2022

Supervisor: [Dr. Matthew Caesar](#) (UIUC), [Md. Iftekharul Islam Sakib](#) (BUET)

Keywords: Internet of Things, Simulation, Wireless Networks. Resources: [\[Website\]](#) [\[Slides\]](#)

- We design and develop discrete-event simulation to simulate IoT devices (e.g. Arduino) and sensors.
- We design and develop simulation of wireless networks to connect IoT components.
- We develop a virtual world where users can deploy and monitor IoT networks. Our software is presently being used in the UIUC CS 437 Internet of Things course.

### Predicting Sequence Features of DNA Bendability and Chromosome Conformation with Deep Learning

Mar 2021 – May 2022

Supervisor: [Dr. Md Abul Hassan Samee](#) (BCM), [Dr. M. Sohel Rahman](#) (BUET)

Keywords: Deep Learning, Bioinformatics, Model Interpretation. Resources: [\[Poster\]](#) [\[Slides\]](#)

- We find important sequence patterns that contribute to DNA and chromatin conformation
- We use multinomial CNN to obtain sequence motifs.
- We use Global Importance Analysis methods to interpret the CNN model and rank sequence motifs.

## PRESENTATION

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[1] **A deep learning model reveals sequence signatures associated with DNA bendability and links bendability-altering mutations with aberrant chromosomal conformation**

**Authors:** Samin Rahman Khan, [Sadman Sakib](#), M. Sohel Rahman, Md. Abul Hassan Samee

In *Conference on Genome Informatics, Cold Spring Harbor Laboratory*, 2021. Resources: [\[Poster\]](#)

## PUBLICATION

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### [1] Federated 3GPP Mobile Edge Computing Systems: A Transparent Proxy for 3rd-Party Authentication with Application Mobility Support

**Authors:** Asad Ali, Samin Rahman Khan, [Sadman Sakib](#), Md. Shohrab Hossain and Ying-Dar Lin  
*In IEEE Access.* DOI: [10.1109/ACCESS.2022.3162851](https://doi.org/10.1109/ACCESS.2022.3162851)

### [2] Provisioning Fog Services to 3GPP Subscribers: Authentication and Application Mobility

**Authors:** Asad Ali, Tushin Mallick, [Sadman Sakib](#), Md. Shohrab Hossain, and Ying-Dar Lin  
*In IEEE International Conference on Communications 2022 (To appear).* arXiv: [2112.02476](https://arxiv.org/abs/2112.02476)

## NOTABLE PROJECTS

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### **Radar: Detecting and Tracing Objects** | Microcontrollers, Sensors, Android, Wi-Fi Module

A small-scale radar is created with microcontrollers and sonar sensors. The microcontrollers are connected with a smartphone using Wi-Fi module to visualize data in a smartphone application. [\[Demo\]](#)

### **Bengali Handwritten Digit Recognizer** | Keras, OpenCV

A CNN model is trained to classify Bengali handwritten digits as part of a competition. Images are unblurred, sharpened and transformed spatially for better prediction. The model achieves 91.4% accuracy. [\[Repository\]](#)

### **Implementation of AI Algorithms** | Java, Algorithms

AI algorithms, such as local search, maintaining arc consistency and hidden markov model, are implemented to solve interesting problems in the Artificial Intelligence course. [\[Repository\]](#)

## RELEVANT COURSEWORK

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- Data Communication • Computer Networks • Microprocessors, Microcontrollers and Embedded Systems
- Artificial Intelligence • Machine Learning (Coursera) • Deep Learning Specialization (Coursera)

## TECHNICAL SKILLS

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**Languages:** C, C++, Python, Java, R, Unix shell scripts, LaTeX, MATLAB, Arduino, Javascript, HTML, CSS, SQL

**Frameworks:** Linux networking, OpenAirInterface, Tensorflow, Keras, Docker, Kafka, MongoDB, PostgreSQL

**Platforms:** Network Simulator 3, ThingsBoard, Proteus, Wireshark, Google Cloud Platform, AWS

## COMMUNITY ENGAGEMENT

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Participant, ACM SIGPLAN International Conference on Functional Programming 2021

Participant, International Conference on Research in Computational Molecular Biology 2021

## HONORS & AWARDS

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Dean's List Scholarship, BUET	2018-21
University Merit Scholarship, BUET	2017-21
Winner, National Undergraduate Mathematics Olympiad	2018
Honorable Mention, Notre Dame College	2016
National Winner, Bangladesh Mathematical Olympiad	2014-16

## EXTRA-CURRICULAR ACTIVITIES

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Contestant, CSE Hackathon, 2019

Academic Team Member, Bangladesh Mathematical Olympiad, 2018-19

President, Notre Dame Chess Club, 2015-16