

# Sadman Sakib

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## EDUCATION

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

Feb 2017 – Apr 2022 (expected)

Bangladesh University of Engineering & Technology (BUET)

- Current GPA: 3.86/4.00 (7/8 terms). Rank: 14th among 120 students.
- Major GPA: 3.94/4.00
- Final two years GPA: 3.98/4.00 (3/4 terms)

## RESEARCH INTEREST

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- Wireless Networks
- Artificial Intelligence
- Mobile and Ubiquitous Computing
- Internet of Things

## 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

- 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 – Present

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

Keywords: Internet of Things, Simulation, Wireless Networks

- 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 design and deploy IoT networks. Our software is presently being used in UIUC CS 437 Internet of Things course.

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

Mar 2021 – Present

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

Keywords: Deep Learning, Bioinformatics, Model Interpretation

- 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 CNN model and rank sequence motifs.

## PRESENTATIONS

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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

## MANUSCRIPTS

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[1] **Provisioning Fog Services to 3GPP Subscribers: Authentication and Application Mobility** (Under-review)

**Authors:** Asad Ali, Tushin Mallick, Sadman Sakib, Md. Shohrab Hossain, and Ying-Dar Lin

*Submitted to IEEE ICC 2022. arXiv: [2112.02476](https://arxiv.org/abs/2112.02476)*

[2] **Federated 3GPP Mobile Edge Computing Systems: A Transparent Proxy for 3rd-Party Authentication with Application Mobility Support** (Under-review)

**Authors:** Asad Ali, Samin Rahman Khan, Sadman Sakib, Md. Shohrab Hossain and Ying-Dar Lin

*Submitted to IEEE Access.*

## PROJECTS

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### **Detecting and Tracing Objects with Microcontrollers and Sensors**

A small-scale radar created with microcontrollers and sonar sensors. The microcontrollers were connected with a smartphone using Wi-Fi module to visualize data in a smartphone application.

### **DingiMap: Map for providing enhanced location and urban services**

DingiMap is a web application to provide enhanced map services. Google Maps API were used to show map and services.

## TECHNICAL SKILLS

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

**Frameworks:** Linux networking, OpenAirInterface, Tensorflow, 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

Contestant, Bengali Handwritten Digit Recognition with Deep Learning, 2018

President, Notre Dame Chess Club, 2015-16