

# Afsana Airin

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## Education

### United International University

BACHELOR IN COMPUTER SCIENCE AND ENGINEERING

- Major in Data Science
- CGPA: 3.63

Madani Avenue, Dhaka  
January 2019 - May 2023

## Research Interests

- Data Mining and Machine Learning
- Large Language Models
- Computer vision, Computer Graphics

## Publications

### PUBLISHED

#### Attention-Based Scene Graph Generation: A Review [🔗](#)

AFSANA AIRIN, REZAB UD DAWLA, AHMED SHABAB NOOR, MUHIB AL HASAN, AHMED RAFI HASAN, AKIB ZAMAN, DEWAN MD FARID, 14TH INTERNATIONAL CONFERENCE SKIMA

Phnom Penh, Cambodia  
December 2022

#### A Novel Method for Imbalanced Data Classification based on Label Reassignment [🔗](#)

AHMED SHABAB NOOR, AFSANA AIRIN, REZAB UD DAWLA, AHMED RAFI HASAN, MUHIB AL HASAN, AKIB ZAMAN, DEWAN MD FARID, IEEE REGION 10 INTERNATIONAL CONFERENCE TENCON

Honkong  
November 2022

#### The Impact of Data Locality on the Performance of Cluster-Based Under-Sampling [🔗](#)

AHMED SHABAB NOOR, MUHIB AL HASAN, AHMED RAFI HASAN, REZAB UD DAWLA, AFSANA AIRIN, AKIB ZAMAN, DEWAN MD FARID, MIET 2022

Noakhali, Bangladesh  
September 2022

## Research Experience

### Thesis

SCENE GRAPH GENERATION

- Conducted an in-depth literature review on several SGG methodologies, including RNN/LSTM and attention-based SGG
- Gap analysis on the relationship detection between distant objects to enhance the scene graphs integrity
- Feature analysis of the existing applications that are using SGG methods

Madani Avenue, Dhaka  
2022

### Data Imbalance

COLLABORATIVE RESEARCH

- Identifying limitations in conventional sampling techniques
- Developed Label Reassignment method

Madani Avenue, Dhaka  
2022

### UIU Mars Rover Team

SCIENCE TEAM CO-LEAD

- Developed a deep learning model and a custom dataset for rock detection
- Obtained knowledge about data cleaning and maintenance
- Conducted research on multiple biomolecule detection
- Participated in the world's most prestigious undergraduate competition "University Mars Rover Challenge" at MDRS, Utah, USA in 2022
- Achieved **1st** place in Asia and **13th** in worldwide.

Madani Avenue, Dhaka  
June 2021 - June 2022

## Work Experience

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### Aboitiz Data Innovation

DATA ENGINEER

Singapore, Remote

August 2023 - Present

- Designing and maintaining batch and stream data pipelines using Python, Spark, and SQL.
- Implementing data pipelines with Databricks, Apache Airflow, dbt (Data Build Tool), and AWS
- Utilizing AWS services such as S3 storage, API Gateway, and Lambda functions.
- Building virtual machines and compute clusters to optimize resource allocation, including CPU and memory usage.
- Collaborating closely with the Data Science team and clients to align on project goals and deliverables.

## Awards/ Achievements

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### Academic Achievements

|            |  |                      |
|------------|--|----------------------|
| 2019-2023  | <b>100% Scholarship Award (Summer 2019) and 50% Tuition Waiver for the remaining semesters</b> , United International University                     | UIU,<br>Bangladesh   |
| 2022       | <b>Achieved 1st place in Asia and 13th worldwide</b> , University Mars Rover Challenge   | UTAH, USA            |
| 2022       | <b>Runner up, software project</b> , Intra-university project show competition   | UIU,<br>Bangladesh   |
| 2018- 2022 | <b>4-year Board Scholarship for outstanding performance in the Higher Secondary Certificate (HSC) Examination</b> , Bangladesh Dhaka Education Board | Dhaka,<br>Bangladesh |

### Professional Achievements

|      |   |           |
|------|---|-----------|
| 2024 | <b>Received Promotion at workplace for exceptional performance and contribution to data pipeline management</b> , Aboitiz Data Innovation (ADI) | Singapore |
|------|---|-----------|

### Other Activities

|      |  |                      |
|------|--|----------------------|
| 2025 | <b>Completed 10 km Run, demonstrating commitment, endurance, and personal discipline</b> , Dhaka International Marathon                                  | Dhaka,<br>Bangladesh |
| 2022 | <b>Public Relations Secretary, Robotics Club — organized events, managed outreach, and coordinated student engagement activities</b> , UIU Robotics Club | UIU,<br>Bangladesh   |
| 2019 | <b>Debater of the tournament (English Debate)</b> , 10th Intra-university Debate Competition   | UIU,<br>Bangladesh   |

## Projects

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### Fuel Management System (FMT) [Industry Project]

PYTHON | SPARK | SQL

2025

- Besides Renaissance, I am leading the FMT project on the Data Engineering side.
  - Developed a robust data pipeline to automate the Philippines' fuel pricing management system.
  - Extracted and integrated data from different sources using Python and Spark, and transformed them for the data science team.
  - Automated key formulas and pricing calculations within the pipeline.

### Renaissance [Industry Project]

PYTHON | SPARK | SQL

2024

- For the past year, I have been working on the Renaissance project to build and optimize data pipelines for machine learning models.
  - Developed end-to-end data pipelines for data ingestion, transformation, and orchestration using technologies such as Spark, Databricks, and Airflow.
  - Enhanced forecasting accuracy by implementing real-time data integration.
  - Reducing processing latency through the use of cloud-based AWS Lambda functions

### Rock Detection Model (University Rover Challenge 2022) [Academic Project]

PANDAS | OPENCV | TENSORFLOW

2022

- Developed a binary rock classification pipeline to classify fossil and metamorphic rock using Python and OpenCV.
- Processed and analyzed large image datasets, applying VGG16 for feature extraction.

### **InstaCity: A social media App [Academic Project]**

REACT NATIVE | FIREBASE

2022

- A social media platform where users will be able to upload pictures and statuses. The picture and the text status are stored in Firebase real-time database. I did the project for my Mobile Application Development course.

### **Codersher: A coding contest platform [Academic Project]**

PHP | BOOTSTRAP

2023

- It was for my Computer Security course. Here, I applied attack prevention methods CSRF token, SQL Injection, and Bruteforce in the backend.

## Reference

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**Prof. Dr. Dewan Md. Farid**, Dean CS Dept, Southeast University

*Dhaka,  
Bangladesh  
Cambridge,  
MA, USA*

**Akib Zaman**, Lecturer, United International University, Phd Candidate, MIT