

## Education

### Doctor of Philosophy (Ph.D)

Computer Science and Engineering

Research Topics: Multimodal Machine Learning, Computer Vision, NLP

University of California, Riverside

September 2022 – Present

Supervisor: [Dr. M. Salman Asif](#)

### Bachelor of Science (with Honors)

Computer Science and Engineering

Research Topics: Natural Language Processing

Bangladesh University of Engineering & Technology (BUET)

February 2015 - April 2019

Supervisor: [Dr. M. Sohel Rahman](#)

## Research Interests and Publications

### Research Interests

My interests broadly span the area of Multimodal ML, Computer Vision and NLP. Currently I am working on:

- Multimodal data fusion which is robust to missing, noisy, occluded and unaligned modalities
- Incorporating new modalities to existing models without increasing computational overhead significantly
- Methods for extracting information from noisy/unaligned/low-resolution data & test time model adaptation

### Robust Multimodal Learning with Missing Modalities via Parameter-Efficient Adaptation

Md Kaykobad Reza, Ashley Prater-Bennette, M. Salman Asif

[arXiv](#) | [Webpage](#)

Proposed a parameter efficient adaptation method for multimodal models that can enhance missing modality performance by up to 31.46% and applicable to diverse modality combinations, datasets and tasks.

### MMSFormer: Multimodal Transformer for Material and Semantic Segmentation

Md Kaykobad Reza, Ashley Prater-Bennette, M. Salman Asif

[IEEE OJSP](#) | [arXiv](#) | [Webpage](#) | [Code](#)

Proposed a novel fusion strategy and model for multimodal material and semantic segmentation that outperforms current state of the art models for all modality combinations.

### Model, Analyze, and Comprehend User Interactions and Various Attributes within Social Media Platform

Md Kaykobad Reza, S M Maksudul Alam, Yiran Luo, Youzhe Liu

[arXiv](#)

Developed a graph-based approach to model and analyze social media user interactions, revealing key insights into community dynamics, user behavior, and content preferences.

### Automatic Summarization of Scientific Articles from Biomedical Domain

[IJCCI 2019](#)

Md Kaykobad Reza, Rifat Rubayatul Islam, Sadik Siddique, Md. Mostofa Akbar, M. Sohel Rahman

Proposed an algorithm for generating summaries automatically that outperforms traditional methods.

## Machine Learning Projects

### Language generation using RNNLM (NLP Project)

Deep Learning, Keras | [Github](#)

Used Quora question pair dataset to generate sentences for gap filling & template-based sentence generation.

### Automated Lawn Mower (Hardware Project)

Deep Learning, Computer Vision | [Youtube](#)

Automated device using computer vision, camera, sonar sensors to detect and cut grass, avoiding obstacles.

### Weather Station (Microcontroller Project)

Machine Learning, Microcontroller | [Youtube](#)

A compact device that monitors current weather, stores data, conducts analysis and predicts future weather.

## Work Experience

### Graduate Student Researcher

University of California, Riverside

September 2022 – Present

California, USA

- Proposed a [parameter efficient adaptation technique](#) for multimodal models that can enhance missing modality performance and applicable to diverse modality combinations, datasets and tasks.

- Designed a novel fusion strategy and model named [MMSFormer](#) for multimodal material and semantic segmentation that outperforms current state of the art models in all modality combinations.

## Senior Engineer, Software Research & Engineering

bKash Limited (Joint venture of Money in Motion, Ant Group & SoftBank)

July 2019 – August 2022

Dhaka, Bangladesh

- Developed a solution for receiving remittance to bKash digital wallet directly from popular platforms like **Payoneer**, **Wise** and **Remitly** resulting in **17%** increase in total number of active users.
- Worked with **bKash Customer App** team to link bKash digital wallet to **36** government and private banks for real time and secure money transfers.
- Worked with **bKash Merchant App** team to build a real-time dashboard for small to large businesses.
- Collaborated with **bKash Payment Gateway** team for implementing fast and secure payment solution resulting in a **23.2%** increase in user engagement and **12.6%** increase in total yearly revenue.
- Our team also implemented send money, mobile recharge, cash out and deposit pension scheme (DPS).

## Software Projects

**Dyne: Meet Your Friends Over Food (Social Media App)** Flutter, Firebase, NodeJs, Geolocation | [Details](#)

Social app for instant food meetups, exploring restaurants, chatting, coupons, fostering connections & savings.

**Dorao: Your Running Companion (Fitness Tracker App)** Flutter, Firebase, Django, Geolocation | [Details](#)

Track walks/runs, log time & distance, real-time stats, create group, complete daily challenges & earn rewards.

**Procurement Institute (Tender Management Solution)** Flutter, Firebase, In-App Purchase | [Details](#)

Find out all the gazetted tenders, see details, search or filter, save for later, subscribe for alerts and reminders.

**Payvor: Pay & Get Paid for a Favor (Freelance Platform)** Flutter, Firebase, C# .NET, Stripe | [Details](#)

Post job/apply for job, select preferred applicant, assign the job, get the work done, make payment or get paid.

**Tourist Guide App** Flutter, Firebase, Geolocation, In-App Purchase | [Details](#)

Find out hotels, tourist spots, restaurants, transportation, events, adventures and everything at your fingertips.

**Pessa: Real-Time Financial Transaction (FinTech App)** Flutter, Firebase, C# .NET | [Details](#)

All-in-one mobile wallet for seamless money management. Add money, send funds instantly, cash out, & more.

**Cherished Prayers (Social Media for the Pious)** Flutter, Firebase, Django, Real-Time Chat | [Details](#)

Record, share, seek solutions, connect with others via chat, groups, and feedback for an enriched experience.

## Skills

|                              |  |
|------------------------------|--|
| <b>Soft Skills</b>           | Communication, Collaboration, Problem Solving  |
| <b>Programming Languages</b> | Python, Dart, Java, C/C++  |
| <b>Library/Frameworks</b>    | PyTorch, TensorFlow, Huggingface, Scikit-learn, OpenCV, NumPy, Pandas, Matplotlib, Flutter, Django |
| <b>Database</b>              | MySQL, PostgreSQL, HBase, Firebase Firestore, Firebase Realtime DB                                 |
| <b>Software/Technologies</b> | Anaconda, PyCharm, Android Studio, VSCode, Firebase, RestAPI, GraphQL, FastAPI, Git                |

## Leadership

|                             |   |                         |
|-----------------------------|---|-------------------------|
| <b>Vice President</b>       | Greater Rangpur Students' Welfare Association, BUET | Aug 2018 – May 2019     |
| <b>Class Representative</b> | Department of Computer Science & Engineering, BUET  | April 2016 - April 2019 |

## Awards

|  |  |                     |
|--|--|---------------------|
| <b>Dean's Distinguished Fellowship</b> | University of California, Riverside          | Fall'22 - Spring'23 |
| <b>Department Dean's List Award</b>    | Bangladesh University of Eng. & Tech. (BUET) | 2015 - 2019         |
| <b>University Merit Scholarship</b>    | Bangladesh University of Eng. & Tech. (BUET) | 2015 - 2019         |
| <b>MetLife Pathways Scholarship</b>    | MetLife Foundation                           | 2015 - 2018         |
| <b>Education Board Scholarship</b>     | Bangladesh Education Board                   | 2012 - 2018         |