

## Education

### Doctor of Philosophy (Ph.D)

Computer Science and Engineering

Research Topics: Multimodal Machine Learning, Computer Vision, NLP

University of California, Riverside

Spetember 2022 – Present

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

### Master of Science (M.Sc.)

Computer Science and Engineering

University of California, Riverside

Spetember 2022 – December 2024

### 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 [IEEE TPAMI](#)

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 [IEEE OJSP](#)

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

[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 within a Social Media Platform [ICCIT 2024](#)

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

[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.

### MMP: Towards Robust Multi-Modal Learning with Masked Modality Projection

Niki Nezakati, Md Kaykobad Reza, Ameya Patil, Mashhour Solh, M. Salman Asif

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

Masked Modality Projection (MMP) trains a single model to handle missing modalities by learning to project available inputs, improving robustness across various missing modality scenarios.

### Robust Multimodal Learning via Cross-Modal Proxy Tokens

Under Review

Md Kaykobad Reza, Ameya Patil, Mashhour Solh, M. Salman Asif

[arXiv](#)

We propose Cross-Modal Proxy Tokens (CMPTs) with low-rank adapters to enhance missing modality robustness of multimodal models, outperforming state-of-the-art baselines across five datasets.

### Basin-wide Groundwater Level Forecasting: A Novel Approach Integrating Transfer Learning with Long Short-term Memory Network [Hydrological Sciences Journal](#)

A. T. M. Sakiur Rahman, Shahriar M Sakib, Md Kaykobad Reza, Amiya Basak, Khandaker Nusaiba Hafiz, Md Shazid Islam, Takahiro Hosono

We introduces a basin-wide groundwater level forecasting model that combines transfer learning with LSTM to improve predictive performance across diverse hydrogeological regions.

### 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.

### Foundations and Recent Trends in Robust Multimodal Learning

ICIP 2025

M. Salman Asif, Md Kaykobad Reza

This tutorial provides a comprehensive overview of multimodal learning, covering fundamentals, challenges, recent advances, and future directions, with a focus on robustness and real-world applications.

## Work Experience

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### Applied Scientist Intern (L5)

Amazon Lab 126

Topic: Multimodal Machine Learning, Generative AI

January 2025 – June 2025

Sunnyvale, California, USA

### 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.
- Proposed [Masked Modality Projection \(MMP\)](#) to train a single model to handle missing modalities by learning to project available inputs, improving robustness across various missing modality scenarios.
- Designed [Cross-Modal Proxy Tokens \(CMPTs\)](#) with low-rank adapters to enhance missing modality robustness of multimodal models, outperforming state-of-the-art baselines across five datasets.

### 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 Engineer, Mobile Application

Samsung Research & Development Institute, Bangladesh

May 2019 – July 2019

Dhaka, Bangladesh

- I worked as an iOS application developer and worked in Mobile Application Group - 1.
- My primary responsibilities were to develop mobile applications, ensure code quality and fix critical bugs.

## Machine Learning Projects

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### 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.

## Software Projects

<b>Dyne: Meet Your Friends Over Food (Social Media App)</b>	Flutter, Firebase, NodeJs, Geolocation   <a href="#">Details</a>
Social app for instant food meetups, exploring restaurants, chatting, coupons, fostering connections & savings.	
<b>Dorao: Your Running Companion (Fitness Tracker App)</b>	Flutter, Firebase, Django, Geolocation   <a href="#">Details</a>
Track walks/runs, log time & distance, real-time stats, create group, complete daily challenges & earn rewards.	
<b>Procurement Institute (Tender Management Solution)</b>	Flutter, Firebase, In-App Purchase   <a href="#">Details</a>
Find out all the gazetted tenders, see details, search or filter, save for later, subscribe for alerts and reminders.	
<b>Payvor: Pay &amp; Get Paid for a Favor (Freelance Platform)</b>	Flutter, Firebase, C# .NET, Stripe   <a href="#">Details</a>
Post job/apply for job, select preferred applicant, assign the job, get the work done, make payment or get paid.	
<b>Tourist Guide App</b>	Flutter, Firebase, Geolocation, In-App Purchase   <a href="#">Details</a>
Find out hotels, tourist spots, restaurants, transportation, events, adventures and everything at your fingertips.	
<b>Pessa: Real-Time Financial Transaction (FinTech App)</b>	Flutter, Firebase, C# .NET   <a href="#">Details</a>
All-in-one mobile wallet for seamless money management. Add money, send funds instantly, cash out, & more.	
<b>Cherished Prayers (Social Media for the Pious)</b>	Flutter, Firebase, Django, Real-Time Chat   <a href="#">Details</a>
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

## Services

<b>Reviewer</b>	59th Annual Asilomar Conference on Signals, Systems, and Computers	2025
<b>Reviewer</b>	International Conference on Computer Vision (ICCV)	2025
<b>Reviewer</b>	IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)	2025
<b>Reviewer</b>	IEEE Transactions on Computational Imaging (IEEE TCI)	2025
<b>Reviewer</b>	IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)	2024

## 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