S M Jishanul Islam

Lecturer (Contractual), United International University, Dhaka, Bangladesh
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RESEARCH INTERESTS

Machine Learning - Computer Vision - Multimodal Deep Learning - Multimodal Representation.

EDUCATION

United International University, Dhaka, Bangladesh · 2020 — 2024
Bachelor of Science in Computer Science and Engineering (**Major**: Data Science) · CGPA: 3.77/4.00
Thesis Title: AVLoS: Audio-Visual Long Text Scene Summarization · Major CGPA: 4.00/4.00
Thesis Supervisor: Prof. Dr. Swakkhar Shatabda

EXPERIENCE

Apurba Technologies Ltd. · Dhaka, Bangladesh
Software Engineer · December 2024 — Present

- Designed and developed scalable RESTful APIs using FastAPI and Node.js while containerizing them in Docker and deploying them to AWS.
- Optimized query performance, reducing retrieval and data creation times by 5% by implementing indexing strategies.
- Led the migration of monolith applications to a service-oriented architecture or microservices architecture, improving system modularity and deployment efficiency.
- Built a permission blockchain network from scratch.
- Authored unit and integration tests using PyTest. Used Locust for load and stress tests.
- Collaborated with multiple companies and government agencies to implement, research, and complete project deliverables.
- **Technical stack:** Python, FastAPI, Node.js, Hyperledger Fabric, PostgreSQL, Docker, AWS.

United International University · Dhaka, Bangladesh
Lecturer (contractual) · June 2024 — October 2024

- Taught core CS concepts to students.
- Took class tests and term exams to monitor students' performance and provide informative feedback.
- Worked with the Dept. of CSE to audit students' marks for BAETE/IEB accreditation.
- **Courses conducted:** Object-Oriented Programming Lab, Data Structures and Algorithms 1 Lab, and Database Management Systems Theory.

United International University · Dhaka, Bangladesh
Undergraduate Assistant · September 2023 — May 2024

- Managed to facilitate course content and materials with the lab faculty, checked and evaluated assessments, and judged lab projects.
- Created the very first course materials for the country's first-ever undergraduate degree in Data Science.
- **Courses supervised:** Programming for Data Science, and Object-Oriented Programming for Data Science.

PUBLICATIONS

Journal papers
Under Review

- **S M Jishanul Islam**, Sahid Hossain Mustakim, Musfirat Hossain, Mysun Mashira, Nur Islam Shourav, MD. Rayhan Ahmed, Salekul Islam, Swakkhar Shatabda, and A.K.M. Muzahidul Islam. 2024. An audio video-based multi-modal fusion approach for speech emotion recognition. Knowledge-Based Systems (Elsevier).

Conference papers
Published

- Sadia Ahmmed, Taimur Rahman, **S M Jishanul Islam**, Al-Momen Reyad, Sonjoy Dey, James Anthony Purification, and Md. Dewan Farid. 2024. E-MedViTR - Enhanced Vision Transformers with Registers for Biomedical Image Classification. 6th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT 2024) [Scopus Indexed]. DOI: 10.1109/ICEEICT62016.2024.10534573

Workshop papers
Accepted

- **S M Jishanul Islam**, Sahid Hossain Mustakim, Sadia Ahmmed, Md. Faiyaz Abdullah Sayeedi, Swapnil Khandoker, Syed Tasdid Azam Dhrubo, and Nahid Hossain. 2024. MIMIC: Multimodal Islamophobic Meme Identification and Classification. 3rd Muslims in ML Workshop - Neural Information Processing Systems 2024 (NeurIPS 2024). DOI: 10.48550/arXiv.2412.00681

RESEARCH EXPERIENCE

An audio video-based multi-modal fusion approach for speech emotion recognition.
- **Co-supervised by**: Md. Rayhan Ahmed, Dr. Salekul Islam, Dr. Swakkhar Shatabda, and Dr. A.K.M Muzahidul Islam.
- Under Review at Knowledge-Based Systems (Elsevier) [codebase].
- We present an approach to classify human emotions by fusing audio and visual inputs. Our approach sets new state-of-the-art results while keeping the architecture very simple. Additionally, we present a new frame filtering strategy to overcome the problem of spatiotemporal redundancy.

AVLoS: Audio-Visual Long Text Scene Summarization
- **Supervised by**: Dr. Swakkhar Shatabda.
- Thesis Work. In Progress.
- We are experimenting on fine-grained long text scene summarization from videos using video and audio inputs. Most approaches use queries to guide text generation, we are experimenting to generate text without these queries.

MIMIC: Multimodal Islamophobic Meme Identification and Classification
- **Supervised by**: Nahid Hossain.
- Accepted. Future work for version 2. [arXiv version] [OpenReview] [codebase].
- Anti-Muslim hate speech has emerged within memes, characterized by context-dependent and rhetorical messages using text and images that seemingly mimic humor but convey Islamophobic sentiments. This work presents a novel dataset and proposes a classifier based on the Vision-and-Language Transformer (ViLT) specifically tailored to identify anti-Muslim hate within memes by integrating both visual and textual representations.

BhaShammo: IPA Transcription of Bengali Regional Dialect using Dialect Guided Tokens
- **Co-supervised by**: Dr. Swakkhar Shatabda and Dr. Farig Sadeque.
- In Progress. [arXiv version] [codebase].
- We present an approach to transcribe regional Bengali text to IPA by introducing the Dialect Guided Tokens (DGT) technique on a new dataset spanning six districts of Bangladesh. We provide the model with information on the regional dialect of the input text before generating the IPA transcription. This is the first time this problem has been solved.

E-MedViTR: Enhanced Vision Transformers with Registers for Biomedical Image Classification
- **Supervised by**: Dr. Dewan Md. Farid.
- Published at ICEEICT. [paper].
- We investigated the effectiveness of the ViT with registers (aka DINO v2) in classifying medical pathology images. Normally, it doesn't perform up to the mark as SOTA models do, but with an extension and data augmentations, it performs relatively close to SOTA models.

PROJECTS

NurtureAid (github.com/sadia-ahmmed/AgeWell-Frontend)
Developed a real-time AI-based cross-platform mobile application that simplifies care through caretakers. Led the app's backend and frontend development as a full-stack engineer.
Tech Stack: React Native, Node.js, Flask, MongoDB, Firebase, LLaMA-Index, PyTorch.
Acknowledgements: Champion of the UIU CSE Project Show, Software Engineering Laboratory; Champion of the Hult Prize OnCampus round in UIU; Selected for the Hult Prize Summit in Boston.

IPBlockchainPro (https://github.com/S-M-J-I/ipblockchainpro)
Developed a web3 dApp that helps users protect, license, and commercialize Intellectual Property (IP) through blockchain technology. Led the app's backend, frontend, and blockchain development as a full-stack engineer.
Tech Stack: React.js, Spring Boot, Flask, MySQL, Firebase, Langchain, Solidity, Hyperledger Fabric.
Acknowledgements: Gold Award (Champion) at the International Blockchain Olympiad 2023.

Quest Aid (github.com/sadia-ahmmed/quest-aid)
Developed an AI-driven web application to manage the ECAs of students, clubs, universities, and organizations under the same platform.Led the app's backend, frontend, and AI development as a full-stack engineer..
Tech Stack: React.js, Spring Boot, Flask, MySQL, Langchain.

iamspecial.com (github.com/S-M-J-I/iamSpecial-dbms-project)
Developed a web app built to tackle the lack of misinformation, accessibility and guidance for people with special needs. Led the app's backend and frontend development as a full-stack engineer.
Tech Stack: HTML, CSS, JavaScript, PHP, MySQL.
Acknowledgements: Champion of the UIU CSE Project Show, Database Management Systems Laboratory.

SKILLS

Programming: C, C++, Java, Python, JavaScript, PHP, SQL, NoSQL.
Machine Learning: PyTorch, Tensorflow, Scikit-Learn, Matplotlib, Numpy, Pandas, NLTK, HuggingFace.
Frameworks/Libraries: React.js, Node.js, Spring Boot, FastAPI, Firebase, Langchain.
Research Skills: LaTeX, Data Visualization, Data Interpretation, Methodology Formulation.
DevOps Tools: Git, GitHub, Docker.
Soft Skills: Communication, Leadership, Design Thinking, Public Speaking, Team Player.

ACHIEVEMENTS

Academic Excellence Scholarship	2020 — 2024
Gold Award (Champion), International Blockchain Olympiad (IBCOL) 2023	November 2023
Champion, Bhashamul: Bengali Regional Text to IPA National NLP Datathon	March 2024
Champion, Hult Prize OnCampus Round	March 2024
Representative, Hult Prize Summit in Boston, USA	June 2024
Silver Award(1st Runner Up), Bangladesh Blockchain Olympiad (BCOLBD) 2023	July 2023
1st Runner Up, Intra-University Deep Learning Sprint	January 2023
Finalist, ICT Innovation Grant (for NurtureAid)	December 2023
Champion, Software Engineering Lab	September 2023
Champion, Database Management Systems Lab	May 2022
Champion, Advanced Object Oriented Programming Lab	January 2022
The Daily Star Award	2017
Academia High Achievers Award	2017

CERTIFICATIONS

Machine Learning by Stanford University & DeepLearning.AI on Coursera - Y5THDBZLEU54
Generative AI with Large Language Models by DeepLearning.AI on Coursera - WMT6G49RS2ZS
Neural Networks & Deep Learning by DeepLearning.AI on Coursera - 3JB2HLGYVX4R
More certificates

EXTRA CURRICULARS

UIU Computer Club - served as the General Secretary	2022 — 2024
UIU Entrepreneur Development Forum - served as the Organizing Secretary	2020 — 2022

Triumph of IBCOL 2023 and the Future of Blockchain in Bangladesh by Jamuna TV - interview link.
Trainer, Hands-on Workshop on Automatic Speech Recognition by Bengali.AI and IUT Computer Society - workshop link.

REFERENCES

Dr. Swakkhar Shatabda
Professor of Computer Science and Engineering,
Brac University, Dhaka, Bangladesh
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Md. Rayhan Ahmed
Ph.D. Student, University of British Columbia, Vancouver,
Canada & Assistant Professor (on study leave) of Computer
Science and Engineering, United International University
E-mail: rayhan91@mail.ubc.ca