Sahid Hossain Mustakim

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RESEARCH INTERESTS

Multimodal Deep Learning - Networking - Expandable AI - Machine Learning

EDUCATION

United International University, Dhaka, Bangladesh   2020 — 2024
Bachelor of Science in Computer Science and Engineering (**Major**: Data Science)   CGPA: 3.91/4.00
Thesis Title: AVLoS: Audio-Visual Long Text Scene Summarization   Major CGPA: 4.00/4.00
Thesis Supervisor: Prof. Dr. Swakkhar Shatabda

EXPERIENCE

Lecturer (contractual)   June 2024 — Present
United International University
Courses conducted: Introduction of Computer Systems, Discrete Mathematics.
Undergraduate Assistant   Oct 2022 — May 2024
United International University
Courses supervised: Structured Programming Language Laboratory, Data Structure and Algorithms I Laboratory, Digital Logic Design Laboratory, Microprocessors and Microcontrollers Laboratory, Electronics Laboratory.
Grader   Mar 2023 — Dec 2023
United International University
Courses supervised: Electronics, Probability and Statistics, Data Structure and Algorithms II, Theory of Computation.

ACHIEVEMENTS

Academic Excellence Scholarship   2020 — 2024
Gold Award (Champion), International Blockchain Olympiad 2023   November 2023
Champion, Bhashamul: Bengali Regional Text to IPA National NLP Datathon   March 2024
Global Participant, Hult Prize Boston Summit   June 2024
Champion, Hult Prize OnCampus Round   March 2024
Champion of the UIU CSE Project Show Sum'23, Software Engineering Lab   September 2023
Silver Award(1st Runner Up), Bangladesh Blockchain Olympiad 2023   July 2023
2nd Runner Up of the UIU CSE Project Show Sum'22, Database Management Systems Lab   May 2022
Champion of the UIU CSE Project Show Fall'21, Advanced Object Oriented Programming Lab January 2022

PUBLICATIONS

Journal papers
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). [Under Review]

RESEARCH EXPERIENCE

An audio video-based multi-modal fusion approach for speech emotion recognition.

- **Co-supervised by**: Md. Rayhan Ahmed, Assistant Professor (on study leave), Dept. of CSE, UIU & PhD Student at the University of British Columbia, Dr. Salekul Islam, Dr. Swakkhar Shatabda, Dr. A.K.M Muzahidul Islam, Professor, Dept. of CSE, UIU.
- 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, Professor, Dept. of CSE, UIU.
- In Progress.

- We are experimenting with 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.

BhaShammo: IPA Transcription of Bengali Regional Dialect using Dialect Guided Tokens

- **Co-supervised by**: Dr. Swakkhar Shatabda, Professor, Dept. of CSE, UIU and Dr. Farig Sadeque, Associate Professor, Dept. of CSE, BracU.
- In Progress. [arxiv version] [codebase].
- This paper introduces a method to improve IPA transcription of Bengali regional dialects by applying District Guided Tokens (DGT) to a new dataset, Vashantor, covering six districts in Bangladesh. The approach involves providing the model with regional dialect information to enhance transcription accuracy.

PROJECTS

NurtureAid (github.com/sadia-ahmmed/AgeWell-Frontend)
A real-time AI-based cross-platform mobile application that simplifies care through caretakers.
Tech Stack: React Native, Node.js, Flask, MongoDB, Firebase, LLaMA-Index, PyTorch.
Acknowledgements: Champion of the Software Engineering Lab project show by the department of CSE-UIU; Champion of the Hult Prize OnCampus round in UIU; Selected for the Hult Prize Summit in Boston.

ECMS Desktop (github.com/UIU-Developers-Hub/ECMS-Desktop)
A desktop app for managing the co-curricular activities of students, clubs and forums, and admins our university.
Tech Stack: Java, JavaFX, MySQL.
Acknowledgements: Champion of the UIU CSE Project Show, Advanced Object Oriented Programming Laboratory.

BhaShammo [**Research**] (https://github.com/S-M-J-I/bhashammo-dgt-regional-bengail-2-ipa)
Solving the unique problem of IPA Transcription of Bengali Regional Dialects using Dialect Guided Tokens.
Tech Stack: Python, Hugging Face, PyTorch.
Acknowledgements: Champion of the Bhashamul national NLP datathon.

Multimodal SER [**Research**] (https://github.com/S-M-J-I/Multimodal-SER)
Solving the problem of identifying emotions through facial and speech using a multimodal fusion network.
Tech Stack: Python, PyTorch.
Acknowledgements: Under review at Knowledge-Based Systems (Elsevier).

Sujog (github.com/sahidmustakim/Sujog)
Solving the challenge of providing equal access to opportunities and educational resources for young people regardless of geographic location.
Tech Stack: HTML, CSS, JS, PHP, MySQL [Github]
Acknowledgements: 2nd Runner-up Champion at the UIU CSE Project Show, Database Management Systems Laboratory

SKILLS

- **Soft Skills and Competencies:** Leadership, Communication, Project Management, Public Speaking, Teamwork, Problem-solving, Cross-team Collaboration, Product Research, Data Analysis, Agile Methodologies
- **Programming & Scripting Languages:** C, C++, Python, Java, PHP, SQL
- **Machine Learning Frameworks & Libraries:** PyTorch, Keras, Scikit-Learn, NumPy, Pandas
- **Development Tools & Frameworks:** React.js, Firebase, React Native
- **Collaboration Tools:** Git, GitHub

EXTRA CURRICULARS

UIU Computer Club - served as Vice President	Apr 2024 — July 2024
UIU Computer Club - served as Head of Public Relations	Jun 2023 — Mar 2024
UIU Computer Club - served as Head of Human Resource	Jun 2022 — Jun 2023
UIU Entrepreneur Development Forum - served as Head of Human Resource	May 2021 — May 2022

REFERENCES

Prof. Dr. Swakkhar Shatabda
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United International University
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Prof. Dr. Salekul Islam
Professor of CSE & Director, Institutional Quality
Assurance Cell - United International University
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