Adrita Anika

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LinkedIn Google Scholar Github Website

Research Interests

NLP, Information Retrieval, HCI, Machine Learning

Education

M.Sc. in Computer Science 2021 - 2023

Department of Computer Science and Engineering, Texas A&M University College Station, Texas, USA
CGPA: 4.00/4.00

B.Sc. in Electrical and Electronic Engineering (EEE) 2015 - 2019

Bangladesh University of Engineering and Technology (BUET) Dhaka, Bangladesh
Major: Communication and Signal Processing

Work Experience

Data Science Co-op, Amazon Robotics July 2023 - Present

- I leverage data-driven methodologies to optimize robotic systems' performance, maximize customer return on investment and optimize human resources as a member of Global Safety and Support-Data Solutions and Insights (GSS-DSI) team.

Graduate Assistant Lecturer, Department of Computer Science, Texas A&M University Jan 2023 - May 2023

- I have worked as the principal instructor of CSCE 110: Programming I for undergraduate students.

Machine Learning Engineer Intern, Tenstorrent Inc. May 2022 - Aug 2022

- I have worked on developing a software stack for deep learning algorithms that can be run on the new AI processors capable of delivering the best performance.

Teaching Assistant, Department of Computer Science, Texas A&M University 2021 - 2022

- Courses: CSCE 120/121: Program Design and Concepts, CSCE 482: Capstone Design, CSCE 110: Programming I, CSCE 221: Data Structures and Algorithms

Lecturer, Department of EEE, Brac University 2019 - 2021

Research Experience

- **Multi-evidence Natural Language Inference for Clinical Trial Data** Oct 2022 - Present

  The project aims at determining the entailment or contradiction given a hypothesis and premise of clinical trials on Breast Cancer which requires numerical and quantitative reasoning of natural language. We explored several BERT-based models to infuse medical knowledge, and compared our performance with the state-of-the-art (SOTA) models. The proposed approach achieved 64.24 % and 62.04 % accuracy and F1-score, respectively.
- **Estimation of Macronutrients with Continuous Glucose Monitors** Jan 2021 - Aug 2021

  The goal of the research was to estimate dietary intake automatically by analyzing the post-prandial glucose response (PPGR) of a meal, as measured with continuous glucose monitors (CGM). Specifically, we wanted to estimate the amount of macronutrients (protein, fat, carbohydrate) from CGM responses using machine learning algorithms.
- **Search & Rescue with Drone-Embedded Sound Source Localization** Sep 2018 - Nov 2020
  The goal of the research was to develop algorithms capable of localizing a sound source based on audio recordings made with an 8-channel microphone array embedded in an unmanned aerial vehicle (UAV).
- **Gaze for Responsive Interaction with 3D Avatar in Mixed Reality Environment** May 2018 - Apr 2019
  The goal of the research was to develop a real-time system where 3D avatar can respond in a virtual environment based on the gaze-to-gaze interaction with the user.

Skills

- **Programming:** Python, R, C/C++, MATLAB, Bash, SQL, Git
- **Machine Learning:** Keras, Scikit Learn, PyTorch, OpenCV, Spark, Hugging Face
- **Simulation & Design:** PSpice, Simulink, AutoCAD

Publications

In Review

- ***Adrita Anika**, Md Messal Monem Miah, Tracy Hammond, "Investigating the Role of Context in Evidence Retrieval for Natural Language Inference from Clinical Trials" AAAI Conference on Artificial Intelligence 2024*

Published

- *Qayyum AB, Hassan KN, **Anika A**, et al. DOANet: a deep dilated convolutional neural network approach for search and rescue with drone-embedded sound source localization. EURASIP Journal on Audio, Speech, and Music Processing. 2020 Dec;2020(1):1-8.*
- ***A. Anika**, M. Junaed-Al-Hossain, S. Hasibul Alam and Nahid-Al-Masood, Fault Detection and Classification of Power System Busbar using Artificial Neural Network, 2019 IEEE International Conference on Power, Electrical, and Electronics and Industrial Applications*
- *S. Hossain, B. Debnath, **A. Anika**, M. Junaed-Al-Hossain, S. Biswas and C. Shahnaz, "Autonomous Trash Collector Based on Object Detection Using Deep Neural Network," TENCON 2019 - 2019 IEEE Region 10 Conference*
- *A. B. A. Abdul Qayyum, **A. Anika** et al., "Direction of Arrival Estimation through Noise Supression: A Novel Approach using GSC Beamforming and Room Acoustic Simulation," 2019 IEEE International Conference on Signal Processing, Information, Communication Systems*
- *S. Hossain, B. Debnath, S. Biswas, M. J. Al-Hossain, **A. Anika** and S. K. Zaman Navid, "Estimation of Blood Glucose from PPG Signal Using Convolutional Neural Network," 2019 IEEE International Conference on Biomedical Engineering, Computer and Information Technology for Health*
- *B. Debnath, **A. Anika** et al., "Automatic Handwritten Words on Touchscreen to Text File Converter," TENCON 2018 - 2018 IEEE Region 10 Conference*

Relevant Projects

- **Matching Patients to Clinical Trials** [Project Website]
  Clinical trials are necessary for the development of novel medical treatments. The objective of this study is to address the clinical trials matching problem: given a free-text summary of a patient's health record, locate clinical trials that are appropriate for that patient.
- **Analysis and Visualization of Motor Vehicle Collision Data of New York City** [Dashboard, Poster]
  The project aims at exploring the motor vehicle collision data of New York City that can give insights regarding the causes of such accidents which may lead to potential remedies for preventing road accidents. Specifically, the project targets to explore the statistical relationship of road accidents with respect to the time of accident occurrence, types of injuries of the victim, vehicle types, etc. using multiple datasets containing more than 1M rows of data which are publicly available from Open Data, City government of NYC.
- **Bringing Machine Learning into the Classroom** [Slides]
  The project aims at developing an interactive learning tool to help learners understand algorithms by step-by-step visualization. It has two main parts. The **Sketch Viz** enables users to learn sketch graphs e.g. speed graphs, curvature graphs etc. for each data point. The system's **ML Algo Viz** let users enter data points interactively, choose algorithms and hyperparameters, run and visualize the model's training iteratively. User study results demonstrated that users found the interface easy to use & understand, it can help them learn, they will use it in the future and recommend it to others.
- **Estimation of Public Speaking Anxiety from Bio-Behavioral data** [Poster]
  The goal is to better understand individuals' affective responses while performing public speaking tasks. Several deep learning models, feature selection, feature transformation algorithms have been used on the Verbio Dataset.

Awards and Scholarships

- **Disney Data & Analytics Women (DDAW) Award**, Disney Data Analytics Conference 2022, Orlando, Florida
- **Techfest 2017, IIT Bombay India**, (Asia's Largest Science and Technology Festival) 1st runner up, Digitalize Category.
- **The Duke of Edinburgh's International Award 2018** The Silver Standard
- **Scientific Poster Presentation, Esonance 2018, IUT, Bangladesh** Champion
- **National Power and Energy Hackathon 2017, Bangladesh** 1st runner up in the Smart Grid category.
- **Dean's List Scholarship, Department of EEE, BUET** Level 2, Level 3 and Level 4

Professional Service

Reviewer, Empirical Methods in Natural Language Processing (EMNLP) 2023
Executive Committee Member, Bangladesh Students Association, Texas A&M University, 2022 - 2023