









EDUCATION

PhD in Computer Science University of Massachusetts Amherst (UMass Amherst), MA, USA	Sep 2019 - Present
Master of Science in Computer Science University of Massachusetts Amherst (UMass Amherst), MA, USA	Feb 2024
Master of Science in Electrical and Electronic Engineering Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh	Jan 2021
Bachelor of Science in Electrical and Electronic Engineering Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh	Feb 2017

WORK EXPERIENCE

Graduate Research Assistant , BioNLP Lab, UMass Amherst, MA, USA	Jan 2020 - Present
<ul style="list-style-type: none">• Advisor: Professor Hong Yu• Area of Study: Natural Language Processing, Epidemiology	
Applied Scientist Intern , Amazon Alexa AI, WA, USA	May 2023 - Sept 2023
<ul style="list-style-type: none">• Team: Apex Science• Developed a pipeline for generating multimodal content from long-form text	
Applied Scientist Intern , Amazon Alexa AI, WA, USA	May 2022 - Sept 2022
<ul style="list-style-type: none">• Team: Context Carryover (CC)• Developed synthetic utterance similarity detection dataset and assessed its feasibility	
Applied Scientist Intern , Amazon Alexa AI, WA, USA	Jun 2021 - Aug 2021
<ul style="list-style-type: none">• Team: Context Carryover (CC)• Developed tasks to minimize model hallucination for constrained contextual query rewriting (CQR)	
Machine Learning Researcher , Semion Ltd., Dhaka, Bangladesh	Mar 2017 - Feb 2019
<ul style="list-style-type: none">• Provided Deep Learning solutions to clients• Designed and developed necessary software infrastructures	
Intern , Semion Ltd., Dhaka, Bangladesh	Aug 2016 - Dec 2016

SELECTED PUBLICATIONS

1. Z. Yang, **A. Mitra**, W. Liu, D. Berlowitz, H. Yu. “TransformEHR: Transformer-based encoder-decoder generative model to enhance prediction of disease outcomes using electronic health records”, *Nature Communications*, 2023 
2. J. Wang, Z. Yao, **A. Mitra**, S. Osebe, Z. Yang, H. Yu. “UMASS_BioNLP at MEDIQA-Chat 2023: Can LLMs generate high-quality synthetic note-oriented doctor-patient conversations?”, *ACL 2023 Workshop CLinical NLP*, 2023 
3. **A. Mitra**, R. Pradhan, R. D. Melamed, K. Chen, D. C. Hoaglin, K. L. Tucker, J. I. Reisman, Z. Yang, W. Liu, J. Tsai, H. Yu. “Associations Between Natural Language Processing Enriched Social Determinants of Health and Suicide Death Among US Veterans”, *JAMA Network Open*, 2023 (nominated for VA Health Services Research & Development Best Paper Award 2023) 
4. Z. Yang, S. Wang, B. P. S. Rawat, **A. Mitra**, H. Yu. “Knowledge Injected Prompt Based Fine-tuning for Multi-label Few-shot ICD Coding”, *EMNLP Findings*, 2022 
5. A. J. Rose, J. S. Lee, D. R. Berlowitz, W. Liu, **A. Mitra**, H. Yu. “Guideline-discordant dosing of direct-acting oral anticoagulants in the veterans health administration”, *BMC Health Services Research*, 2021 
6. **A. Mitra**, H. Ahsan, W. Li, W. Liu, R. D. Kerns, J. Tsai, W. Becker, D. A. Smelson, H. Yu. “Risk Factors Associated With Nonfatal Opioid Overdose Leading to Intensive Care Unit Admission: A Cross-sectional Study”, *JMIR Medical Informatics*, 2021 
7. H. Ahsan, E. Ohnuki, **A. Mitra**, H. Yu., “MIMIC-SBDH: A Dataset for Social and Behavioral Determinants of Health”, *Machine Learning for Healthcare*, 2021 
8. **A. Mitra**, B. P. S. Rawat, D. McManus, H. Yu. “Relation Classification for Bleeding Events from Electronic Health Records: Exploration of Deep Learning Systems”, *JMIR Medical Informatics*, 2021 
9. **A. Mitra**, B. P. S. Rawat, D. McManus, A. Kapoor, H. Yu. “Bleeding Entity Recognition in Electronic Health Records: A Comprehensive Analysis of End-to-End Systems”, accepted at *AMIA Annual Symposium*, 2020 

10. **A. Mitra**, K. Ashraf. “Sepsis Prediction and Vital Signs Ranking in Intensive Care Unit Patients”, *arXiv preprint arXiv:1812.06686*, 2018 

RELEVANT PROJECTS

- **Prompt-based learning for generative NER** across multiple domains (Python, PyTorch) 2023
- **Generative NER** with pointer mechanism and constrained decoding (Python, PyTorch) 2022
- **Joint named entity recognition and relation extraction** (Python, PyTorch) 2021
- **Transferability of the winning tickets** in CV and NLP (Python, PyTorch) 2020
- **Evaluation of triplet fingerprinting** attack for website fingerprinting (Python, Keras) 2020
- **Offensive language identification** across multiple social media platforms (Python, PyTorch) 2020
- **SemRad**, a teleradiology solution (Java, JavaFX, SQLite, MySQL) 2018
- **Faulty semiconductor wafer detection** from machine logs (Python, Tensorflow) 2018
- **Finding hotspots** in semiconductor wafer logs using LRP algorithm (C++, Python) 2018
- **Detection of Arrhythmia** based on discrete wavelet transform (DWT) features (Python, Keras) 2018
- **HealthGeek**, an Android app and **Differential Diagnoses**, an Amazon Alexa skill (Java, Node.js, Flask) 2017
- **Risk factors detection** for heart diseases in diabetic patients (Python, Theano) 2017



SKILLS

Programming Languages: Python, Java, MATLAB, R, C, C++

Machine Learning Frameworks: Pytorch, Tensorflow, Keras, Scikit-learn

Other Expertise: Weka, Arduino, L^AT_EX, Git, Microsoft Office

ACHIEVEMENTS

- 449th among 2172 teams (Top 21%), Human Protein Atlas Image Classification, Kaggle ** 2019
- 355th among 3234 teams (Top 11%), TGS Salt Identification challenge, Kaggle ** 2018
- Dean's List Award**, for academic excellence, BUET, Bangladesh 2013, 2017
- 2nd Runner up**, Inter-University Project Show, BUET, Bangladesh 2015
- 1st Runner up**, Inter School & College Science Festival, Rajuk College, Bangladesh 2010
- National Level Scholarship**, Bangladesh 2003,2006,2009,2011

TEACHING EXPERIENCE

- Fall 2023** Guest Lecturer, COMP.5800: Topics in Computer Science, UMass Lowell
- Fall 2020** Guest Lecturer, COMP.5800: Topics in Computer Science, UMass Lowell
- Fall 2019** Teaching Assistant, COMPSCI 121: Introduction to Computing

SERVICES

- **Paper Reviewer**
 - EMNLP, JMIR, JMIR Medical Informatics, JMIR AI, npj Mental Health Research, BMC Pulmonary Medicine, Frontiers in Bioengineering and Biotechnology, PLOS One
- **MS Application Reviewer**, 2023, Manning College of Information and Computer Science, UMass Amherst
- **Mentor**
 - Mentored multiple MS and PhD students on different projects in NLP and multimodal learning