

## EDUCATION








<b>PhD in Computer Science</b> University of Massachusetts Amherst (UMass Amherst), MA, USA	Sep 2019 - Sep 2025 (Expected)
<b>Master of Science in Computer Science</b> University of Massachusetts Amherst (UMass Amherst), MA, USA	Feb 2024
<b>Master of Science in Electrical and Electronic Engineering</b> Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh	Jan 2021
<b>Bachelor of Science in Electrical and Electronic Engineering</b> Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh	Feb 2017






## WORK EXPERIENCE

<b>Graduate Research Assistant</b> , BioNLP Lab, UMass Amherst, MA, USA <ul style="list-style-type: none"> <li>Advisor: Professor <i>Hong Yu</i></li> <li>Areas of Study: Clinical Natural Language Processing, Epidemiology</li> </ul>	Jan 2020 - Present
<b>Applied Scientist Intern</b> , Machine Learning Accelerate, Amazon.com Inc., CA, USA <ul style="list-style-type: none"> <li>Team: Machine Learning Accelerate Selling Partner Service (MLA SPS), Manager: <i>Kevin Chen</i></li> <li>Project: Hallucination localization in LLM responses.</li> </ul>	June 2024 - Aug 2024
<b>Applied Scientist Intern</b> , Alexa AI, Amazon.com Inc., WA, USA <ul style="list-style-type: none"> <li>Team: Apex Science, Manager: <i>Chetan Nagaraj Naik</i></li> <li>Project: Multimodal content generation from long-form text.</li> </ul>	May 2023 - Sept 2023
<b>Applied Scientist Intern</b> , Alexa AI, Amazon.com Inc., WA, USA <ul style="list-style-type: none"> <li>Team: Context Carryover (CC), Manager: <i>Chetan Nagaraj Naik</i></li> <li>Project: Building a synthetic dataset for utterance similarity detection and assessing its feasibility.</li> </ul>	May 2022 - Sept 2022
<b>Applied Scientist Intern</b> , Alexa AI, Amazon.com Inc., WA, USA <ul style="list-style-type: none"> <li>Team: Context Carryover (CC), Manager: <i>Zeynab Raeesy</i></li> <li>Project: Hallucination mitigation for constrained contextual query rewriting (CQR).</li> </ul>	Jun 2021 - Aug 2021
<b>Machine Learning Researcher</b> , Semion Ltd., Dhaka, Bangladesh <ul style="list-style-type: none"> <li>Provided ML-based solutions to clients</li> <li>Reimplemented SOTA systems and applied them on proprietary datasets</li> <li>Designed and developed necessary software infrastructures</li> </ul>	Mar 2017 - Feb 2019
<b>Intern</b> , Semion Ltd., Dhaka, Bangladesh	Aug 2016 - Dec 2016






## SELECTED PUBLICATIONS

### NLP/DL

- A. Mitra**, K. Chen, W. Liu, R.C. Kessler, H. Yu. “*Post-discharge Suicide Prediction Among US Veterans Using Natural Language Processing-enriched Social and Behavioral Determinants of Health*”, npj Mental Health Research, 2025 
- A. Mitra**, Z. Yang, E. Druhl, R. Goodwin, H. Yu. “*Synth-SBDH: A Synthetic Dataset of Social and Behavioral Determinants of Health for Clinical Text*”, arXiv preprint arXiv:2406.06056 (2024), In Review (ACL 2025) 
- A. Mitra**, N. Gupta, C. Naik, A. Sethy, K. Bice, Z. Raeesy. “*Generating contextual images for long-form text*”, LREC-COLING, 2024 
- P. Vashisht, A. Lodha, M. Maddipatla, Z. Yao, **A. Mitra**, Z. Yang, J. Wang, S. Kwon, H. Yu. “*UMass-BioNLP at MEDIQA-M3G 2024: DermPrompt-A Systematic Exploration of Prompt Engineering with GPT-4V for Dermatological Diagnosis*”, 6th Clinical Natural Language Processing Workshop, ACL, 2024 
- Z. Yang, **A. Mitra**, S. Kwon, H. Yu. “*ClinicalMamba: A Generative Clinical Language Model on Longitudinal Clinical Notes*”, 6th Clinical Natural Language Processing Workshop, ACL, 2024 
- 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 
- 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?*”, 5th Clinical Natural Language Processing Workshop, ACL, 2023 

8. 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 
9. H. Ahsan, E. Ohnuki, **A. Mitra**, H. Yu., “MIMIC-SBDH: A Dataset for Social and Behavioral Determinants of Health”, Machine Learning for Healthcare, 2021 
10. **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 
11. **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 
12. **A. Mitra**, K. Ashraf. “Sepsis Prediction and Vital Signs Ranking in Intensive Care Unit Patients”, *arXiv preprint arXiv:1812.06686*, 2018 

## NLP in Epidemiology

1. M. L. Sung\*, A. Feibel\*, J. I. Reisman, K. S. Gordon, C. Leon, R. D. Kerns, W. Li, W. Liu, **A. Mitra**, H. Yu, W. C. Becker. “Impact of COVID-19 pandemic on receipt of medications for opioid use disorder among older Veterans”. Addiction Science & Clinical Practice, 2025. In review.
2. C. Leon, M.L. Sung, J. I. Reisman, W. Liu, R.D. Kerns, K.S. Gordon, **A. Mitra**, S. Kwon, H. Yu, W.C. Becker, W. Li. “Occurrence of opioid related neurocognitive symptoms associated with long-term opioid therapy”, The Clinical Journal of Pain, 2025 
3. M.L. Sung, C. Leon, J.I. Reisman, K.S. Gordon, R.D. Kerns, W. Li, W. Liu, **A. Mitra**, H. Yu, W.C. Becker. “Disparities in receipt of medications for opioid use disorder before and during the COVID-19 pandemic in the U.S. Veterans Health Administration”, Substance Use & Addiction Journal, 2024 
4. **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) 
5. **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 
6. 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 

## SKILLS

**Programming Languages:** Python, Java, R, MATLAB, C, C++, HTML  
**Machine Learning Frameworks:** Pytorch, Tensorflow, Keras, Scikit-learn  
**Other Expertise:** L<sup>A</sup>T<sub>E</sub>X, Git, Microsoft Office, Weka, Arduino

## ACHIEVEMENTS

<b>Dean’s List Award</b> , for academic excellence, BUET, Bangladesh	2013, 2017
<b>2<sup>nd</sup> Runner up</b> , Inter-University Project Show, BUET, Bangladesh	2015
<b>1<sup>st</sup> Runner up</b> , Inter School & College Science Festival, Rajuk College, Bangladesh	2010
<b>National Level Scholarship</b> , Bangladesh	2003,2006,2009,2011

## TEACHING EXPERIENCE

<b>Spring 2025</b>	Guest Lecturer, COMP.5700: Methods in Data Science, UMass Lowell
<b>Fall 2020, 2023,2024</b>	Guest Lecturer, COMP.5800: Topics in Computer Science, UMass Lowell
<b>Fall 2019</b>	Teaching Assistant, COMPSCI 121: Introduction to Computing

## SERVICES

- **Paper Reviewer**
  - Conferences: ACL, EMNLP, ICLR, AMIA
  - Journals: JMIR, JMIR Medical Informatics, JMIR AI, npj Mental Health Research, BMC Pulmonary Medicine, BMC Health Services Research, Frontiers in Bioengineering and Biotechnology, PLOS One, JMIR Aging
- **MS Application Reviewer**, 2023, Manning College of Information and Computer Science, UMass Amherst
- **Mentor**
  - COMPSCI 696DS (Spring 24, Spring 25)
  - Independent Study Projects (Spring 23, Fall 23, Spring 24, Spring 25)