AVIJIT MITRA

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EDUCATION

PhD in Computer Science — Setp 2025
University of Massachusetts Amherst (UMass Amherst), MA, USA

Master of Science in Computer Science — Feb 2024
University of Massachusetts Amherst (UMass Amherst), MA, USA

Master of Science in Electrical and Electronic Engineering — Jan 2021
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

Bachelor of Science in Electrical and Electronic Engineering — Feb 2017
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

WORK EXPERIENCE

Applied Scientist II, SPS Machine Learning Accelerate, Amazon.com Inc., Seattle, USA — Sept 2025 - Present

- Team: Machine Learning Accelerate Selling Partner Service (MLA SPS), Manager: *Kevin Chen*

Graduate Assistant, BioNLP Lab, UMass Amherst, MA, USA — Sept 2019 - Aug 2025

- Advisor: Professor *Hong Yu*
- Areas of Study: Clinical Natural Language Processing, Epidemiology

Applied Scientist Intern, SPS Machine Learning Accelerate, Amazon.com Inc., CA, USA — June 2024 - Aug 2024

- Team: Machine Learning Accelerate Selling Partner Service (MLA SPS), Manager: *Kevin Chen*
- Project: Hallucination localization in LLM responses.

Applied Scientist Intern, Alexa AI, Amazon.com Inc., WA, USA — May 2023 - Sept 2023

- Team: Apex Science, Manager: *Chetan Nagaraj Naik*
- Project: Multimodal content generation from long-form text.

Applied Scientist Intern, Alexa AI, Amazon.com Inc., WA, USA — May 2022 - Sept 2022

- Team: Context Carryover (CC), Manager: *Chetan Nagaraj Naik*
- Project: Building a synthetic dataset for utterance similarity detection and assessing its feasibility.

Applied Scientist Intern, Alexa AI, Amazon.com Inc., WA, USA — Jun 2021 - Aug 2021

- Team: Context Carryover (CC), Manager: *Zeynab Raeesy*
- Project: Hallucination mitigation for constrained contextual query rewriting (CQR).

Machine Learning Researcher, Semion Ltd., Dhaka, Bangladesh — Mar 2017 - Feb 2019

- Provided ML-based solutions to clients
- Reimplemented SOTA systems and applied them on proprietary datasets
- Designed and developed necessary software infrastructures

Intern, Semion Ltd., Dhaka, Bangladesh — Aug 2016 - Dec 2016

SELECTED PUBLICATIONS 🇬

NLP & ML

1. Z. Yao, Y. Zhao, **A. Mitra**, D. A. Levy, E. Druhl, J. Tsai, H. Yu. *"SynthEHR-Eviction: Enhancing Eviction SDoH Detection with LLM-Augmented Synthetic EHR Data"*, npj Digital Medicine, 2026 ↗
2. Z. Yang, **A. Mitra**, W. Hu, D. Berlowitz, H. Yu. *"Predicting suicide death among veterans after psychiatric hospitalization using transformer based models with social determinants and NLP"*, Scientific Reports, 2025 ↗
3. **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"*, EMNLP 2025 ↗
4. **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 ↗
5. **A. Mitra**, N. Gupta, C. Naik, A. Sethy, K. Bice, Z. Raeesy. *"Generating contextual images for long-form text"*, LREC-COLING, 2024 ↗
6. 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 ↗

7. 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 ↗

8. 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 ↗

9. 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 ↗

10. 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 ↗

11. H. Ahsan, E. Ohnuki, **A. Mitra**, H. Yu., *"MIMIC-SBDH: A Dataset for Social and Behavioral Determinants of Health"*, Machine Learning for Healthcare, 2021 ↗

12. **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 ↗

13. **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 ↗

14. **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. F. Ouyang, W. Hu, J. Reisman, T. K. Pogoda, K. F. Carlson, W. Liu, Y. Moradi, Y. Zhang, S. Han, S. Sultana, W. S. Jang, Z. Yao, **A. Mitra**, H. Yu. "Association between PTSD and health-related social needs in US Veterans: an NLP analysis using Veterans Health Administration Data", Journal of Affective Disorders, 2025 ↗

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 ↗

In Review

1. **A. Mitra**, R. Pradhan, K. S. Gordon, H. Yan, R. D. Kerns, W. C. Becker, H. Tu. *"Associations Between Natural Language Processing Enriched Social Determinants of Health and Fatal Opioid Overdose among US Veterans"*, American Journal of Public Health, 2026 (In review)

2. R. Pradhan, Y. Zhang, F. Ouyang, W. Hu, **A. Mitra**, W. Liu, J. Reisman, D. Berlowitz, J. Mez, J. Kaufman, H. Yu. *"Associations Between Natural Language Processing-Enriched Social Determinants of Health and Alzheimers Disease and Related Dementias Among United States Veterans"*, Nature Aging, 2026 (In review)

3. S. Sultana, F. Ouyang, J. Qian, Y. Zhang, **A. Mitra**, R. Pradhan, Y. Moradi, T. Pogoda, J. Reisman, H. Yu. "One-Year Buprenorphine Initiation and Its Association with SDOH Among US Justice-Involved Veterans", JAMA Network Open, 2026 (In review)

4. C. Leon, M. Sung, J. Reisman, W. Liu, R. D. Kerns, K. Gordon, **A. Mitra**, S. Kwon, H. Yu, W. Becker, W. Li. *"The association of neurocognitive symptoms with opioid overdose events among patients on long-term opioid therapy"*, Substance Use & Addiction Journal, 2026 (In Review)

5. 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, 2026 (In review).

SKILLS

Programming Languages: Python, Java, R, MATLAB, C, C++, HTML
Machine Learning Frameworks: Pytorch, Tensorflow, Keras, Scikit-learn
Other Expertise: LaTeX, Git, Microsoft Office, Weka, Arduino

ACHIEVEMENTS

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

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

SERVICES

- **Paper Reviewer**

  - Conferences: ACL, EMNLP, AACL, EACL, ICLR, AAAI, IJCNLP-AACL, AMIA

  - Journals: Nature Mental Health, JMIR, JMIR Medical Informatics, JMIR Medical Education, JMIR AI, JMIR Aging, npj Mental Health Research, BMC Pulmonary Medicine, BMC Health Services Research, Frontiers in Bioengineering and Biotechnology, PLOS One, Substance Use and Addiction Journal, Journal of Affective Disorders Reports

- **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, Fall 25)