

Debrup Das

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Education

- Ph.D.** *Computer Science, University of Massachusetts, Amherst, MA, USA* Sept 2024 – Ongoing
- **Advisor:** Prof. Negin Rahimi [🔗](#)
 - **Member of CIIR Lab** (Center of Intelligent Information Retrieval [🔗](#))
- M.Sc.** *Mathematics and Computing, Indian Institute of Technology Kharagpur, India* Aug 2019 - Apr 2024
[Integrated Master of Science 5 yr]
- **Thesis Advisor:** Prof. Somak Aditya [🔗](#)
 - **CGPA:** 9.00/10

Research Interests

RAG for mathematical reasoning, Information Retrieval, Multi-agent and tool-based LLMs , Safety in LLMs

Experience

- University of Massachusetts, Amherst, CIIR** Research Assistant
Sep 2024 – Current
- Research on *retrieval augmented generation* for complex multi-step math reasoning in LLMs.
 - Mentored by Prof Negin Rahimi [🔗](#).
- Rakuten India, Language and Speech Processing Team** Research Intern
May 2023 – Dec 2023
- Research on *tool-augmented LLMs* for complex math reasoning.
 - Integrating LLMs with symbolic tools such as *Python, Wolfram Alpha* and web search with *Bing API*.
 - Accepted as a Main Conference Paper at **NAACL 2024**, Mexico City.
- Indian Institute of Technology, Kharagpur** (in collaboration with **MBZUAI**), Research Intern
Dec 2023 – May 2024
- Research on *sensitivity* of LLMs to different segments of the input, in classification tasks such as hate speech, sentiment analysis, etc.
 - *Adversarial example generation, attacks* using the notion of sensitivity.
 - Mentored by Prof Monojit Choudhury [🔗](#) and Prof Somak Aditya [🔗](#) and funded by **Microsoft AFMR** [🔗](#) (CURRENTLY IN SUBMISSION)

McGill University, Montreal, Genome Quebec Innovation Center

- Research on genome-wide association studies (GWAS) to detect rare disease causing variants.
- Mentored by [Prof Simon Gravel](#) and funded by the [MITACS Globalink Research Scholarship](#).

Research Intern
May 2022 – Dec 2022

Indian Institute of Technology, Kharagpur

- Research on deep learning methods, using tree-based models with nature-inspired optimization using genetic algorithms.
- Mentored by [Prof Nirupam Chakraborti](#), [Czech Technical University](#).

Research Intern
May 2021 – Dec 2021

Publications

MATHSENSEI: A Tool-Augmented Large Language Model for Mathematical Reasoning

June 2024

Debrup Das, Debopriyo Banerjee, Somak Aditya, Ashish Kulkarni

[NAACL 2024, Main Conference](#), [MATHSENSEI featured on Rakuten News](#)

Responsibilities

- Teaching Assistant, UMass Amherst, Fall 2024, **Search Engines** (CS 446) by [Prof James Allan](#)
- Served as reviewer for NAACL 2024.
- Former member of NATIONAL SOCIAL SERVICE SCHEME, India (NSS India)

English Proficiency

TOEFL: TOTAL: 112/120, SPEAKING: 30/30, READING: 29/30, LISTENING: 27/30, WRITING: 26/30

Relevant Coursework/Certifications

Coursework: *Natural Language Processing, Information Retrieval, Neural Networks, Machine Learning, Graphical and Generative AI models, Probability and Statistics, Stochastic Processes.*

Certifications: *Machine Learning Stanford University by Andrew Ng, Deep Learning by deeplearning.ai, Python for Everybody by UMichigan*

Technologies

Languages: Python, Bash, Matlab, R, SQL, C++/C

Libraries: Pytorch, Sympy, Numpy, Scikit-Learn, Scipy

Tools: Wolfram Alpha Programming, Git, Latex