

Aman Gupta

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EDUCATION

Carnegie Mellon University – School of Computer Science

August 2023 - December 2024

Master of Machine Learning (MSML)

4.0/4.0

Research Advisor: Prof. Graham Neubig

Relevant Coursework: Advanced Machine Learning, Probabilistic Graphical Models, ML Systems, Reinforcement Learning

Indian Institute of Technology Delhi

June 2019 - May 2023

Bachelor of Computer Science & Engineering

9.75/10

Relevant Coursework: NLP, Deep Learning, Operating System, Distributed Computing, Software Design Practices

PROFESSIONAL EXPERIENCE

Amazon

Seattle, USA

Applied Scientist Intern

May 2024-August 2024

- Built a scalable multi-agent system with a central orchestrator LLM, enhancing Amazon's Customer Service
- Evaluated the system by applying retrieval-based augmentations to the dialog system on MultiWOZ benchmark
- Implemented an ensemble of fine-tuned Mistral-7B, Flan-T5-large, and Prompted Claude Sonnet-3.0 for the dialog state tracking and response generation pipelines, achieving SOTA 96% Inform and 88% Success rates

Microsoft

Hyderabad, India

Cloud & AI Intern

June 2022-July 2022

- Improved restore and backup cycles of user data in the fundamental backend layer of Azure cloud
- Designed dynamic batch downloads supporting scalability, resilience to failed API calls, and crash recoverability

LimeChat

Bangalore, India

NLP Intern

June 2021-July 2021

- Analyzed e-commerce chatbot-customer conversations to identify model errors and generate augmented data
- Designed a Redis-based pipeline to enable clients to adjust bot responses for specific customer requests

RESEARCH EXPERIENCES & PROJECTS

Personalizing Chatbots | Prof. Graham Neubig & Snap Research

August 2023 - May 2024

- Developed retrieval-augmented methods for personalized dialogue generation, analyzed performance gains
- Evaluated the impact of extended conversation history on LLM-generated responses by assessing coherence and personalization using advanced metrics like BERTScore, UniEval, and chrF. Work under review in COLING 2025

LLM Enhanced Graphical Learning | Prof. Andrej Risteski

February 2024 - May 2024

- Used embeddings enriched by encoder language models and LLMs to demonstrate performance improvements
- Benchmarked our approach on 4 different test-attributed graph datasets and conducted detailed ablation studies

Natural Language to Machine Instructions | Prof. Mausam

February 2023 - June 2023

- Fine-tuned several language models (GPT-2, BERT, T5) to develop a Task-Oriented Dialog (TOD) system, transforming natural language inputs into precise user intents and related key-value pair data
- Systematically hyper-tuned weight and generation parameters leading to a match accuracy of 0.89

Parallel & Distributed Computing | Prof. Subodh Kumar

January 2022 - March 2022

- Designed and implemented parallel, distributed C++ programs for MergeSort, Twitter's RWR (PageRank), and HNSW algorithms. Used OpenMP and MPI constructs for threads and tasks.

SKILLS & CERTIFICATES

Academic Achievements: Expert Rated on Codeforces, Top-10 Institute Rank in IIT Delhi on Final GPA, Institute Merit Award - IIT Delhi (1st in Freshmen), Gold Medal in National Chemistry Olympiad (Top-35 in India), All India Rank-14 KVPY

Publications: ACM Sigmoid - 2024, ACM Compass - 2023 (Co-First Author), Nature Journal - 2022 (Co-First Author)

Programming & Software: Python, C++, SQL, Pytorch, PySpark, CUDA, Hadoop, Ray, Docker, Redis, AWS, Azure

Mathematics: Probability & Stochastic Processes, Statistics, Linear Algebra, Theory of Computation, Adv. Calculus