Spandan Das

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Education

Carnegie Mellon University   **May 2026**

M.S. Machine Learning, B.S. Computer Science

Relevant Coursework: (PhD) Intro to Deep Learning [Python], Deep Reinforcement Learning [Python], (PhD) Advanced NLP [Python], Algorithm Design and Analysis, Machine Learning with Large Datasets [Python], (PhD) Convex Optimization, Intro to ML [Python], Intro to Computer Systems [C], Probability and Computing, Statistics and Computing

Experience

NVIDIA   **May – August 2024**

Artificial Intelligence Engineer Intern

○ Developed an anomaly detection system for NVIDIA TEGRA chip production environment
○ Implemented monitoring system to autonomously report issues in build, packaging, and testing processes via email and Slack
○ Designed and built a real-time harmless error filter using **ElasticSearch** database and **Flask** web server to perform LLM search over vector database of log embeddings

Apple   **May – August 2023**

Machine Learning Engineer Intern

○ Wrote **Golang** backend service to automate labeling queries with LLM-based natural language understanding results
○ Created LangChain-inspired LLM integration library to filter and annotate semantic search results over 2.3 billion datapoints across various Siri domains including web video ("show me how to bake a cake"), app launch ("open Facebook"), and sentence usage ("use autonomous in a sentence")
○ Technologies used: **Amazon Web Services (AWS)**, **Docker**, **Kubernetes**

NASA Goddard Space Flight Center   **June - August 2020; June – August 2021**

Research Intern

○ Trained machine learning models (**TensorFlow**, **Scikit-learn**, **XGBoost**) on data from NASA's Global Precipitation Measurement mission's Core Observatory Satellite to reduce satellite costs
○ Utilized NASA Center for Climate Simulation (NCCS) supercomputing cluster to work with large data (2016 and 2017 annual satellite data) and optimize training of bagging models using multithreading
○ Presented research to GSFC Climate and Radiation Lab and at international conference (AGU Fall Meeting)
○ Published in MDPI Remote Sensing Journal [`https://doi.org/10.3390/rs14153631`]

Research & Projects

CMU Language Technologies Institute (CX Group)   **February – May 2024**

○ Developed an active learning based approach for data-efficient instruction tuning for LLMs by utilizing data impact models
○ Improved pretraining efficiency and effectiveness by continuously adapting to models' evolving data preferences
○ Published in NeurIPS 2024 [`https://arxiv.org/abs/2406.06046`]
○ Technologies: **HuggingFace**, **PyTorch**

Visual Question Answering with LLMs   **May – August 2023**

○ Redesigned the Winoground dataset as a visual question answering (VQA) problem
○ Designed and evaluated modified data with various multi-modal LMs including MiniGPT4, Salesforce BLIP2, PromptCap, ViperGPT, LLaVA, and GPT4
○ Submitted paper to EMNLP 2023 [Link to Paper]
○ Technologies: **HuggingFace**, **OpenAI API**, **SceneXplain**

CMU Robotics Institute (AirLab)   **May – August 2022**

Research Assistant

○ Developed an online camera calibration algorithm for a multi-view stereo setup (6 cameras; Double Sphere model) on drones used to determine real-time depth maps
○ Technologies: **PyTorch**, **CUDA**, **OpenCV**, **Docker**

Achievements

○ 2021 USA Math Olympiad – Top 2% (Top 550 out of 30,000+ contestants; 232.5 USAMO Index)
○ USA Computing Olympiad (USACO) – Top 600 in nation (Gold Division)
○ 2022 Goldman Sachs Quantathon – Honorable Mention

Skills/Extracurriculars

Technical Skills: Java, Python, Golang, C, C++, LaTeX, HTML, Linux

Extracurriculars: Tennis, Hindustani Classical Music, CMU Sahara (Bollywood Fusion Dance), Basketball, Card/Board Games