

EDUCATION

University of Massachusetts Amherst, United States

2022-2024

Master of Science (MS) in Computer Sciences GPA- 3.93/4

- Relevant Coursework: Algorithms for Data Science, Systems for Data Science, Machine Learning, Artificial Intelligence, Natural Language Processing, Reinforcement Learning, Software Engineering, Neural Networks

BITS Pilani Dubai Campus, United Arab Emirates

2018-2022

Bachelor of Engineering (B.E.) in Computer Sciences GPA – 9.83/10

- Awarded merit scholarship of 64,640 AED on total fees based on my GPA.
- Awarded Bronze Medal for an outstanding academic performance and standing third amongst the batch of 2018.

WORK EXPERIENCE

Bose, United States – Data Engineer CoOp

2024

- Designed and implemented **scalable and secure AWS pipelines** by leveraging AWS Lambda for processing, AWS Secrets Manager for secure management, and AWS Step Functions for orchestration. Deployed these pipelines using AWS CDK to **automate infrastructure provisioning**, leading to a **5% cost reduction** by consolidating similar secrets.
- **Optimized** the data extraction pipeline from PowerBI Cloud by minimizing state transitions within AWS Step Functions, leading to a **10% reduction in operational costs**. Streamlined the process of loading data into Snowflake, **improving efficiency** and reducing overall expenses.

Amazon, United States – Graduate Student Researcher

2024

- Conducted experiments to **enhance reasoning capabilities** of small language models (SLMs) using custom reasoning chains, highlighting limitations in zero-shot performance and proposing a decoupled three-step process (plan, reason, answer extraction) which improved GSM8K benchmark scores by **+0.57 (3B models) and +3.32 (7B models)**.
- Developed and tested a **Partial Self Consistency (PSC)** method for ensemble analysis, demonstrating that PSC outperforms standard self-consistency by up to **+1.85** across various reasoning techniques.

Florida Institute of Technology, United States - Machine Learning Researcher

2022

- Analyzed and extracted the representation of the specifications in a subset of English language using Natural Language Processing (NLTK library) and **designed a compiler** for translating it to AADL.
- Proposed an approach using Double Deep Q Networks for the **automated generation of Convolutional Neural Network architectures**, minimizing the scalability and time complexity problems without having effect on Search Space by implementing One Shot Training and Prioritized Experience Replay.

PROJECTS

[Guided Conditional Image Generation with Conditional Flow Matching](#)

2023

- Integrated **Conditional Optimal Transport** into an attention-based UNet model, ensuring proficiency in both conditional and unconditional image generation tasks with a unified model using **Classifier Free Guidance (CFG)**.
- Employed the BLIP2 FLAN T5 model for image captioning, addressing descriptive limitations of the CIFAR10 dataset.
- Achieved FID scores of 105.54 for unconditional generation and **CLIPScore/FID scores of 22.19/385.56** for conditional generation.

[Recipe Infusion](#)

2023

- Developed Recipe Infusion framework with Recipe Generation and Style Transfer components.
- Fine-tuned DistilGPT model after preprocessing and concatenating the RecipeNLG and RecipeBox datasets, resulting improvement in **BLEU and Perplexity scores by +0.04 and 24.5 points** respectively.
- Implemented Style Transfer for celebrities, including Donald Trump, Taylor Swift, William Shakespeare, and Michael Scott, training T5-small models on synthetic datasets and Shakespeare's parallel corpora, showcasing **the effectiveness of rephrasing recipes** in a specific style.

Programming Languages – Python, Java, SQL, HTML, CSS, TypeScript, Lex, Yacc

Tools/Frameworks – PyTorch, TensorFlow, MySQL, Tableau, AWS, Git, Postman, Docker, Airflow, Snowflake