Anshumaan Chauhan

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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