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

- Developed **secure and scalable AWS pipelines** using Lambda, Secrets Manager, and Step Functions, **reducing costs by 5%** through secret consolidation and **automating provisioning** with AWS CDK.
- Optimized PowerBI Cloud data extraction by minimizing AWS Step Functions state transitions, **cutting operational costs by 10%** and streamlining Snowflake data loading.

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.
- Leveraged RL Double Deep Q Networks with TensorFlow for **Neural Architecture Search (NAS)**, **resolving scalability and time complexity issues** by implementing One Shot Training and Prioritized Experience Replay, without compromising Search Space.

PROJECTS

Guided Conditional Image Generation with Conditional Flow Matching (Python, PyTorch, NumPy, Pandas) 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 (Python, Transformers, Matplotlib, Sklearn) 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
Machine Learning Frameworks – PyTorch, Tensorflow
Cloud Technologies – AWS (Lambda, Step Functions, Athena, DynamoDB, EC2, S3, SNS, Secrets, CDK, SDK)
Tools – MySQL, Tableau, Git, Postman, Docker, Airflow, Snowflake