

Anshumaan Chauhan

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Education

University of Massachusetts Amherst, Amherst, MA

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.

Professional Experience

Bose Corporation, Framingham, MA - *Data Engineer CoOp*

2024

- Designed and implemented secure ETL pipelines using AWS serverless components (Lambda, Step Functions, Secrets Manager), achieving a 5% cost reduction through efficient secret consolidation and provisioning automation.
- Optimized data extraction processes for PowerBI Cloud, reducing operational costs by 10% while enhancing data loading into Snowflake, utilizing SQL transformations and Snowpark for seamless Python integration.
- Developed a Streamlit app for JIRA ticket creation, leveraging AWS pipelines for automated data fetching, resulting in a 20% increase in onboarding productivity.

Amazon, Amherst, MA – *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, Melbourne, FL – *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 (Python, PyTorch, NumPy, Pandas)

2024

- Developed a unified attention-based UNet model incorporating Conditional Optimal Transport and Classifier Free Guidance (CFG) for proficient conditional and unconditional image generation, achieving FID scores of 105.54 and CLIPScore/FID scores of 22.19/385.56.
- Enhanced image captioning for the CIFAR10 dataset using the BLIP2 FLAN T5 model, addressing descriptive limitations and significantly improving the quality of generated captions.

Recipe Infusion (Python, Transformers, Matplotlib, Sklearn)

2023

- Created a Recipe Infusion framework featuring Recipe Generation and Style Transfer components, enhancing culinary creativity and personalization.
- Fine-tuned the DistilGPT model on combined RecipeNLG and RecipeBox datasets, improving BLEU and Perplexity scores by +0.04 and 24.5 points, respectively, and successfully implemented style transfer for various celebrities using T5-small models.

Scalability Check for Machine Learning System Predicting Flight Delays (Python, SQL, MySQL, PySpark)

2023

- Developed a robust pipeline leveraging MySQL for data storage and Spark for querying, ensuring efficient flight delay predictions.
- Evaluated scalability by measuring MySQL and SparkSQL response times across varying dataset sizes, achieving linear latency growth and successful feature extraction and ML algorithm application for accurate predictions.

Technical Skills

Programming Languages: Python | SQL | Java | HTML | CSS | TypeScript | Lex | Yacc

Databases: MySQL | MongoDB | DuckDB

AWS: EC2 | Lambda | Batch | S3 | DynamoDB | Athena | Step Functions | SNS | SES | SDK | CDK

Applications/Tools: Tableau | Git | Postman | Docker | Airflow | Snowflake | PySpark | Linux | Streamlit | LangChain

Productivity Software: JIRA | Confluence | Lucidchart