

Shitanshu Bhushan

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EDUCATION

University of Michigan, Ann Arbor

Master of Science in Data Science

GPA - 4.0

August 2023 – Present

Birla Institute of Technology Mesra

Bachelor of Engineering in Computer Science and Engineering

83.0%

July 2017 – June 2021

EXPERIENCE

Data Engineering Analyst

Accenture

July 2021 – August 2023

- Leveraged Azure Databricks and Azure Data Factory to develop business critical reporting solutions for a major FMCG's Southeast Asia division.
- Optimized Scala based workloads. Improved performance by as much as 97% by using better data structures and incremental data handling.
- Spearheaded the development and implementation of data solution for a major business group of the FMCG client spanning five South Asian countries, resulting in shortened monthly operation process and greater visibility to required data. Led a team of 3 people and the data solution is being used by the region head.
- Collaborated closely with client to gather requirements and conducted feasibility analyses, showcasing strong interpersonal and communication skills in driving successful cross-country data integration project.

PROJECTS

Offline Reinforcement Learning for Autonomous Driving

Feb. 2024 – May 2024

- Reinforcement learning project to use soft-actor critic conservative Q-learning implementation to clone human driving behavior and predict vehicle trajectories in complex roundabout scenarios.
- Leveraged the INTERACTION dataset to preprocess real-world driving data into {State, Action, Reward, Next State} tuples for training reinforcement learning agents. Developed a custom reward function that combines positional, velocity, and collision metrics to simulate human-like driving behavior.

Multilabel chest X-ray classification using PCA+FCN and EfficientNeXtV2

Oct. 2023 – Dec 2023

- Proposed two machine learning methods to classify chest X-rays for pneumonia detection to help doctors make quicker judgement. Dataset used was ChestX-ray14, comprising of 112,120 chest X-rays.
- Introduced a new deep-learning efficientNet architecture called EfficientNeXtV2 - a hybrid of EfficientNet and EfficientNetV2 with a Gaussian error linear unit (GELU) as an activation function. For training, we used SGD with momentum as our optimizer and as we had an imbalanced data ratio, we used Focal loss. The model was implemented using PyTorch.

Tutor RAG-Based Educational Chatbot Using LLM

Oct. 2024

- Designed a Django-based chatbot powered by OpenAI's LLM to help middle school students learn about genetic mutation, using interactive Q&A to adapt to each student's understanding level.
- Applied creative prompt engineering to make responses engaging and varied, with multiple question types and adaptive feedback to support active learning.

Boosting LLM Efficiency with Linear Attention

Oct. 2024-Present

- Integrating an efficient linear attention mechanism in a pre-trained LLM to balance speed and accuracy, aimed at reducing inference time without compromising quality.
- Experimenting with enhancements like gated linear attention and improved fine-tuning techniques to support stable, high-performance deployment in resource-limited environments.

SKILLS

Languages: Python, C/C++, SQL, R, Scala

Technical skills: Machine Learning, Deep Learning, Computer Vision, Reinforcement Learning, Ensemble Methods

Soft skills: Teamwork, Leadership, Adaptability, Quick Learner

Frameworks: Spark, PyTorch, Scikit-Learn, Pandas, NumPy, Matplotlib

Platforms: AWS, Azure, Databricks