

Kartik Choudhary

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EDUCATION

University of Massachusetts Amherst, Amherst, MA

MS in Computer Science

Expected May 2024

GPA: 4.00/4

Indian Institute of Technology Delhi, New Delhi, India

B.Tech in Electrical Engineering

Jun 2019

GPA: 3.30/4

PROFESSIONAL EXPERIENCE

Machine Learning Engineer, Reliance Jio Infocomm Ltd.

Jul 2021 - Jul 2022

Led the initiative to develop cost-effective solutions for improving the 4G experience for customers and providing network insights.

- Coordinated a team of 6 to design a statistical model using *response surface methodology* for optimizing network coverage.
- Attained a 15% improvement in network throughput predictions by implementing a *Mixture of Experts* model with PyTorch.
- Overhauled the call drop RCA pipeline by utilizing *SHAP scores* resulting in 18% fewer false positives in downstream tasks.

Data Scientist, Reliance Jio Infocomm Ltd.

Jul 2019 - Jun 2021

Used statistical and machine learning methods to gain actionable insights into customer behavior and refine retention strategies.

- Deployed a distributed model with *Apache Spark* and *MS Azure* to perform churn prediction for 400M+ daily customers.
- Curated over 1100 features for churn prediction to improve customer retention resulting in \$35M/mo in additional revenue.
- Collaborated with vendors to launch *A/B testing* of ad campaigns on *geographic cohorts* and created a Tableau dashboard.
- Reduced data pre-processing time by 70% during ETL by implementing a *multiprocessing pipeline* for feature extraction.

Intern, Claym Media and Tech Pvt. Ltd.

Summer 2018

Developed an automated solution for analyzing financial reports and detecting fraudulent transactions in mobile advertising.

- Created a low-latency pipeline in *Java* for the *AI-driven* framework to flag potentially fraudulent transactions in real time.
- Standardized reports of 50M+ monthly transactions from 20+ sources by *regex* string manipulation in a modular framework.

RESEARCH EXPERIENCE

Graduate Student Researcher

Sep 2022 - Present

Autonomous Learning Laboratory, UMass Amherst

- Developed off-policy algorithms to learn personalized sepsis treatment policies from historical data of over 17K ICU patients.
- Contributed to the Seldonian ML Toolkit, an open-source Python library for safe and interpretable machine learning.

Natural Language Processing Group, UMass Amherst

- Evaluated the zero-shot ability of vision-language models like CLIP to associate correct comparative adjectives to images.
- Created a novel dataset to evaluate comparative reasoning capabilities of vision-enabled large language models like GPT-4.

PROJECTS

Mapping pet preferences in the US

2023

A Python app that leverages *HuggingFace's* Object Detection API to map pet preferences using Google *Street View* images.

Cloud-based distributed stock exchange

2023

Distributed stock exchange with a *microservice* architecture and REST interface hosted on *AWS*. Utilizes LRU cache for improved performance and replication for fault tolerance. Uses *Docker* for containerization and *Kubernetes* for container orchestration.

Personalized news feed with summarization

2022

A news feed app that recommends articles based on user preferences and uses the *BART* model fine-tuned on CNN Daily Mail dataset for news summarization. Processed articles are stored in *MongoDB* and the *Flask* backend is hosted on *Google Cloud*.

Efficient GANs for generating high-quality artificial images

2021

Trained a sparse Generative Adversarial Network in *TensorFlow* to generate high-resolution RGB images on a single GPU.

Occupancy prediction in commercial spaces

2019

Automated HVAC control that reduces energy usage by up to 25% by using *Hidden Markov Models* for forecasting occupancy.

SKILLS

Tools and Languages : Python, C++, SQL, R, Java, Latex, Jupyter, Git, Linux, XGBoost, Bash, SciPy, Scikit-learn
Big Data and Cloud : Spark, AWS, Google Cloud, Azure, Docker, Tableau, PySpark, Hadoop, Hive, Airflow
Data Science and ML : PyTorch, TensorFlow, Huggingface, MongoDB, Prompt Engineering, LSTM, Postgres, MySQL

HONORS AND ACTIVITIES

- Graduate Teaching Assistant, Reinforcement Learning, UMass Amherst 2023
- Highest annual performance feedback rating (A*) for 3 years in a row, Reliance Jio 2020-22
- Student Mentor, Mentorship Committee, IIT Delhi 2018-19
- Secretary, Electrical Engineering Society, IIT Delhi 2017-18