Satyam Chandrakant Chatrola

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https://www.cloudskillsboost.google/public_profiles/8f8d70ce-809c-45e2-b6ba-022e3bc4cf9f

EDUCATION

New York University **September 2023 – May 2025, New York City, USA**

- Master of Science in Computer Science (3.61 GPA)
- Coursework: **Machine Learning**, **Computer Vision, Deep Learning, Big Data**, Design and Analysis of Algorithms, **Cloud Computing**.

Gujarat Technological University **June 2018 – June 2022, Gujarat, India**

- Bachelor of Engineering in Computer Engineering (3.79 GPA)
- Coursework: DBMS, Operating System, Software Engineering (Java), Compiler Design, Artificial Intelligence, Data Visualization

WORK EXPERIENCE

Machine Learning Engineer / Data Scientist at Rapidops **January 2022 – June 2023, Ahmedabad, India**

Face Recognition and Authentication System

- Spearheaded the development of an internal **face recognition and authentication system** employing a **10-megapixel** camera for **500+** employees, enhancing **productivity tracking** and **premises security**.
- Revamped face embedding generation with **Triplet loss** to generate distant embeddings based on **68 face landmarks** on live video stream**.**
- Optimized performance and embedding retrieval speed by **30%** with **vector databases** such as **Qdrant.**

AI-Powered Search and Recommendation System

- Developed AI-powered search & recommendations with **custom taggers** & **LTR** techniques with Apache Solr to serve results in **10ms**.
- Designed advanced data and **machine learning pipelines** with PySpark and reduced model training time by **60%**.
- Strengthened **recommendation system** with **market basket analysis** that boosted product interaction by **45%** and sales by **30%**.

Natural Language (English) to SQL query generation

- Researched, analyzed and benchmarked **State of the Art (SOTA)** AI models generating SQL from Natural Language with **76% EMA**.
- Experimented with Transformer models and developed a **fine-tuned T5** and **BERT** model generating **73%** Exact Match Accuracy (EMA).

SKILLS

- Regression, Classification, **Gradient Boosted Trees**, Computer Vision, NLP, Text Processing, Word Embedding (Word2Vec, BERT).
- Neural Networks**, Recommendation and Search Systems**, **Transformers**, **LLMs (RAG, PEFT, LoRA)**, Prompt Engineering, Generative AI.
- **Python**, NumPy, Pandas, Polars, Matplotlib, Seaborn, Scikit-learn, **TensorFlow**, **PyTorch**, OpenCV, NLTK, Transformers, **MLflow**.
- **Apache Spark**, **Apache Airflow**, **Hadoop, Tableau**, SQL, **Statistical Modeling, A/B Testing, Hypothesis Testing,** FastAPI, Flask, REST APIs.
- **AWS** (**SageMaker**, EC2, Lambda, S3, AutoGluon, Autoscaling, IAM), **Apache Kafka**, Git, **Docker**, **CI/CD (GitHub Actions)**, C, C++.
- Data Analysis, Data Wrangling, Data Storytelling, Feature Engineering, Spark-SQL, **Model Monitoring (Evidently AI)**, System Design.
- SQL and NoSQL databases, PostgreSQL, MySQL, MongoDB, Apache Solr, vector databases like Qdrant, **XGBoost**, **CatBoost**.

RESEARCH EXPERIENCE

Approaches to Type 2 Diabetes Mellitus Prediction with Machine Learning and Deep Learning

- Authored a research paper on Machine Learning and Deep Learning techniques for predicting Type-2 Diabetes Mellitus, achieving a classification accuracy with **95.8% precision** and recall, and **99.4% specificity** using BRFSS data.

CERTIFICATIONS

- Graduated from Udacity's **AWS Machine Learning Engineer** Nanodegree with top remarks.
- Certified for **Inferential Statistical Analysis with Python** by the **University of Michigan**.
- **University of Michigan** certified **Applied Machine Learning in Python**.

PROJECTS AND OPEN-SOURCE CONTRIBUTION (with embedded GitHub Links)

Microservices webapp: Essay Evaluator (model registry with MLflow, deployed on AWS EC2 and monitored with Evidently)

- Leveraged **Transformers like BERT** and **fine-tuned LLMs** like **GPT-2** and **Llama 3.1** with dynamic learning rate with cosine-annealing and warm-up, to evaluate essays with a Kappa Score of **81.7%,** improving the Benchmark score by **5.7%**.
- Accelerated model training by **54%** with dynamic learning rate and **Parameter Efficient Fine Tuning (PEFT)** techniques like **quantization**.
- Leveraged **AWS SageMaker** for model training, **AWS S3** to store artifacts and served **asynchronous** requests with **FastAPI.**

Migrating ETL Data Pipeline to Spark

- Migrated the data pipeline from pandas to **Spark** for **NYU's Open-Source** wildlife trafficking prevention project with **160% speedup**.

New York City Noise Source Identifier

- Developed a CNN model with ensemble of Machine Learning techniques to identify **10 noise sources** of NYC with **86%** accuracy.

ACHIEVEMENTS

- Secured **1st place** in the prestigious **India's Next Development Renewable Energy & Astronomy (INDRA-9)** competition, presenting an innovative smart irrigation system in sustainable agricultural technology, outperforming over **100** competing teams.
- Achieved **1st runner-up** in the **Kaggle O Predictor**, a data science competition, showcasing analytics and **predictive modeling skills**.
- Delivered **workshops** on Git/GitHub and Machine Learning to **23 summer interns**, facilitating **12** project contributions.