Manav Reddy V

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Technical Skills

- **Languages:** C, C++, R, Python, SQL, Java, HTML
- **Frameworks and Libraries:** Spring Boot, Spring Security, WebSocket, RESTful APIs, Docker, AWS, FastAPI, Kafka
- **Tools and Technologies:** Git, GitHub, VS Code, Linux, MySQL, PostgreSQL, DynamoDB, Jupyter Notebook

Professional Experience

Trainee Analyst – SONIA Futures Trading

Axxela Research & Analytics Private Limited *[Jul'25] – [Present]*

- Traded SONIA futures, managing intraday positions and executing short-term rate strategies.
- Analyzed yield curve shifts and macroeconomic trends to identify trading opportunities.
- Monitored P&L, exposure, and risk metrics while optimizing trade execution.
- Built trading discipline and market intuition through live strategy development and review.

Key Projects

Real-Time Chat Application

Spring Boot · WebSocket · PostgreSQL (AWS RDS) · AWS SNS · Docker · EC2

- Developed a real-time chat app using Spring Boot, WebSocket, and Spring Security.
- Used AWS RDS (PostgreSQL) for persistent message storage and retrieval.
- Integrated AWS SNS for push notifications to offline users.
- Containerized with Docker and deployed on AWS EC2 for cloud scalability.
- Implemented typing indicators, online presence, and delivery confirmations.

Cricket Winner Prediction (AXP Campus Challenge)

American Express Campus Challenge 2024 Finalist *[June'24] - [Jul'24]*

Python · Pandas · NumPy · Scikit-learn · XGBoost · LightGBM · Ensemble Modeling

- Developed a robust tree-based ML model to accurately predict winners of T20 cricket matches.
- Conducted thorough data cleaning, normalization, and feature engineering to ensure model relevance.
- Integrated XGBoost and LightGBM with ensemble stacking, using randomized search to fine-tune hyperparameters.
- Achieved an out-of-sample accuracy of 62% with the final stacking ensemble approach.

Multi-Agent Borrower Assistance System

Local LLM Agentic System

Python · FastAPI · Ollama · Gemma · Multi-Agent Orchestration

- Built a local multi-agent system powered by Gemma (via Ollama) to assist distressed borrowers through structured debt-support conversations.
- Implemented counselor, nudge, and compliance agents coordinated by a supervisor that routes queries based on borrower intent and conversational context.
- Added borrower-specific memory using JSON persistence to enable personalized and context-aware interactions across sessions.
- Exposed a FastAPI-based inference service for LLM generation and connected it with the Python agent core for end-to-end conversational flow.

Anomaly Detection in Traffic Data

Prof. Amit Mitra, IITK (Course Project: MTH 442) *[Aug'23] - [Nov'23]*

R · Time-Series Analysis · ARIMA Modeling

- Identified days with outlier taxi usage and optimal time intervals for drivers to work.
- Examined data trends and seasonality, removing these components as needed.
- Fitted an ARIMA model with appropriate lags for auto-regressive and moving average processes.
- Discovered 7 anomalies corresponding to historical events, with higher passenger counts on weekday mornings and weekend midnights.

Impact of Various Factors on COVID-19 Outcomes

Prof. Dootika Vats, IITK (Course Project: MTH 208) *Aug'22 - Nov'22*

R · Visualization · Statistical Analysis

- Conducted data scraping and cleaning using R and rvest to analyze COVID-19 outcomes across countries.
- Created multiple graphs to visualize how factors like GDP influence COVID-19 death rates.
- Concluded that higher GDP countries have better healthcare access and lower COVID-19 mortality.

Distributed Job Scheduler

AWS SQS · ECS Fargate · Lambda · DynamoDB · CloudWatch · Docker

- Built a distributed task scheduling system using AWS SQS, Lambda, and ECS Fargate for reliable asynchronous job execution.
- Designed a scalable worker architecture with ECS Service Auto Scaling based on SQS queue length and CPU utilization.
- Stored job metadata and schedules in DynamoDB, enabling fault-tolerant and low-latency lookups.
- Implemented CloudWatch dashboards and alarms to track throughput, failure counts, and dead-letter queues.
- Containerized all services with Docker and deployed using AWS-native CI/CD workflows.

System Monitoring & Log Analyzer Tool

Java · Multithreading · psutil4j · SQLite · CLI Tools

- Developed a Java-based system monitoring tool to track CPU, memory, disk, and network usage in real time.
- Implemented log parsing using standard Java I/O and simple string-matching rules to detect errors, warnings, and exception messages.
- Designed a multi-threaded architecture to collect OS metrics and process log files concurrently for smoother performance.
- Stored summarized system events in SQLite and generated periodic reports for debugging and performance analysis.
- Built a clean CLI interface to display system health metrics, error summaries, and timestamped alerts.

Customer Churn Insights & Segmentation

SQL · PostgreSQL · Window Functions · CTEs · Data Modeling

- Designed a normalized relational schema covering customer activity, transactions, and retention signals.
- Used advanced SQL (window functions, CTEs, CASE logic) to compute churn indicators and behavioral trends.
- Performed RFM-based customer segmentation directly in SQL to identify high-value and at-risk customer cohorts.
- Built final SQL views that generate churn scores and actionable insights for retention strategies.

Real-Time Retail Sales Anomaly Detection

Python · Kafka · Prophet · STL Decomposition · FastAPI

- Streamed simulated retail sales data using Kafka and applied time-series decomposition to detect anomalies.
- Built a FastAPI service to process events in real time and trigger alerts for unusual sales spikes or dips.
- Benchmarked models including Prophet and STL-based residual analysis for robust anomaly detection.
- Delivered insights on category-level volatility and demand irregularities across different time windows.

Fraud Detection in Financial Transactions

Python · XGBoost · Isolation Forest · Imbalanced Learning · SHAP

- Processed highly imbalanced transaction data and engineered risk features for supervised and unsupervised models.
- Trained XGBoost and Isolation Forest models, applying SMOTE and undersampling for imbalance mitigation.
- Evaluated fraud-detection performance using precision-recall, ROC-AUC, and false-positive cost metrics.
- Used SHAP values to interpret patterns behind flagged fraudulent transactions.

Scholastic Achievements

- **JEE Advanced 2021:** Secured All India Rank (AIR) **2850** in the Common Rank List among 1.4 lakh candidates
- **JEE Mains 2021:** Achieved AIR **2667** in the Common Rank List among 9.3 lakh applicants

Education

Indian Institute of Technology, Kanpur

Bachelors in Statistics and data science(2021–2025)