Sumesh Chakkaravarthi Purushothaman

(+1) 857-351-9440 | sumeshchakkaravarthi@gmail.com | sumesh-chakkaravarthi.github.io
sumesh-chakkaravarthi-purushothaman | Sumesh-Chakkaravarthi

Education

Northeastern University *Boston, MA*
M.S. in Analytics (Applied Machine Intelligence) | GPA: 3.81 *Sep 2024 - May 2026*

Sri Sairam Engineering College *Chennai, India*
B.Tech in AI and Data Science | GPA: 3.31 *Jun 2020 - May 2024*

Work Experience

Power of Patients *Boston, MA*
Intern, XN Project *Apr 2025 - Jul 2025*

- Engineered end-to-end ML pipeline analyzing clinical and NOAA weather datasets to predict Sickle Cell Disease pain crises, designing 7-day rolling temporal features (temperature, humidity, air pressure) synchronized by ZIP code using Python, Pandas, and NOAA API achieving statistically significant correlation patterns for strategic patient outreach planning.
- Built production-grade Random Forest and Logistic Regression classification models with Scikit-Learn implementing SHAP explainability framework for model interpretability and statistical validation through rigorous p-value analysis, achieving robust predictive performance with production-ready deployment capabilities.
- Deployed reproducible ML workflows in Jupyter notebooks with comprehensive documentation, translating complex model outputs into actionable healthcare recommendations while maintaining strict data privacy compliance and version control through Git.

Cisco AICTE *Chennai, India*
Data Analyst Intern *Jul 2022 - Sep 2022*

- Developed automated data processing pipelines using Python reducing manual preprocessing effort by 30%, implementing clustering algorithms for pattern detection and anomaly identification while optimizing SQL queries achieving 20% performance improvement.
- Built Tableau dashboards for real-time KPI monitoring and delivered actionable insights in Agile sprint cycles.

Projects

University Explorer AI Chatbot *Apr 2025 - Jun 2025*
Python, PostgreSQL, LangChain, OpenShift, REST APIs

- Engineered scalable RAG-based conversational AI system integrating LangChain framework with PostgreSQL backend containing IPEDS datasets for 7,000+ educational institutions, deployed on Red Hat OpenShift with containerized microservices architecture reducing query latency by 40% through optimized vector embeddings and semantic search algorithms.
- Built RESTful API endpoints with comprehensive error handling enabling seamless frontend integration, collaborating with Red Hat and Akamai engineering teams for enterprise-grade deployment scalability and reliability.
- Implemented caching strategies and database indexing with PostgreSQL optimization techniques improving concurrent user handling capacity, enabling real-time natural language query processing for complex educational data retrieval.

Time Series Forecasting of Prescription Demand *Jan 2025 - Mar 2025*
Python, ARIMA, Exponential Smoothing, Statsmodels, Tableau

- Built production-ready time series forecasting models using ARIMA and Exponential Smoothing on 2018-2022 Medicare prescription data achieving MAPE under 8%, implementing automated model selection pipeline with rolling window validation for robust performance evaluation enabling accurate seasonal demand prediction and inventory optimization reducing stockouts by 25%.
- Designed interactive Tableau dashboards with seasonal peak indicators and pricing anomaly alerts, automating trend detection through rolling window analysis enabling hospital administrators and pharmaceutical suppliers to optimize resource allocation.

Online Payment Fraud Detection *Sep 2024 - Nov 2024*
Python, Scikit-Learn, GridSearchCV, Pandas, Tableau

- Developed end-to-end ML fraud detection pipeline achieving 92% accuracy using Random Forest classifier with comprehensive feature engineering including transaction patterns, temporal features, and behavioral analytics, applying GridSearchCV hyperparameter tuning and SMOTE for class imbalance reducing overfitting by 15%.
- Built real-time fraud scoring system with interactive Tableau dashboards visualizing risk indicators, enabling automated flagging of suspicious transactions for security teams with explainable AI interpretations.

Smart Education AR/VR Platform *Aug 2023 - Apr 2024*
Unity, Python, TensorFlow, Computer Vision, Voice Recognition

- Developed immersive AR/VR learning platform integrating custom Python voice assistant (JESSIE) with real-time NLP processing and speech recognition, implementing ML-powered user interaction tracking and personalized content recommendations improving student engagement by 30%, deployed computer vision algorithms for gesture recognition.

Skills

Programming: Python, SQL, R, Java, C++, Bash | **ML/AI**: Scikit-Learn, TensorFlow, PyTorch, LangChain
Techniques: Supervised/Unsupervised Learning, Deep Learning, NLP, CV, Time Series, Feature Engineering
Data Processing: Pandas, NumPy, SHAP, GridSearchCV, SMOTE, Statsmodels | **Visualization**: Tableau, Power BI
Databases: PostgreSQL, MySQL, Redshift, Vector DBs | **Tools**: Git, Docker, Jupyter, AWS, OpenShift, Unity