Shanmugam M

ML Engineer • MLOps • Data Scientist

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Data Scientist with 7 years of technical experience, uniquely combining 4 years of Web Development with 3 years of Machine Learning expertise. Leveraged a strong foundation in full-stack engineering to build and deploy end-to-end data products on Azure Machine Learning(AML). Expert in bridging the gap between predictive modeling and user-facing applications, ensuring models are not just accurate but seamlessly integrated into production environments for maximum business impact

Professional Experience

Data Scientist

TVS Automobile Solutions Ltd, Chennai, Tamil Nadu *January 2022 - February 2025*

Project: Intelligent Demand Forecasting for Aftermarket Spares (myTVS) Role: Data Scientist / MLOps Engineer Tech Stack: Python, Azure Machine Learning, Prophet, XGBoost, MLflow, Docker, GitHub Actions, SQL.

Description: Addressed the challenge of inventory mismanagement across the PartSmart distribution network, where stockouts led to service delays and overstocking increased holding costs.

Data Engineering: Built data pipelines on Azure to ingest 2+ years of historical sales data, seasonality trends, and vehicle service volume across 500+ SKUs.

Modeling: Developed a hybrid time-series forecasting model using Facebook Prophet and XGBoost to predict weekly demand for fast-moving spare parts at a regional level.

MLOps Implementation: Deployed the model using Azure Machine Learning pipelines with MLflow for experiment tracking. Implemented a CI/CD workflow via GitHub Actions to automate model retraining and deployment, ensuring predictions remained accurate as market trends shifted.

Impact: Achieved a 15% improvement in forecast accuracy, directly contributing to a reduction in safety stock levels and ensuring faster part availability for the garage network.

Team Lead

TVS Automobile Solutions Ltd, Chennai, Tamil Nadu, India *May 2019 - December 2021*

Led cross-functional teams for successful project execution while maintaining strong collaboration among team members.

Managed risks and mitigated potential issues through proactive planning, monitoring, and timely decision-making.

Defined project scope and objectives, constructed detailed project plans, and monitored progress against established timelines, ensuring on-time delivery for 95% of assigned projects.

Increased customer satisfaction by ensuring timely completion of projects and adherence to high-quality standards.

UI Developer

CSS Corp, Chennai Area, India *June 2017 - May 2019*

Increased project adaptability by 15% using Agile Scrum model for solution delivery.

Developed custom UI components to address unique business requirements and improve overall functionality.

Worked closely with product managers to refine requirements, translating them into functional designs.

Communicated with product managers and UX designers to translate project requirements and business objectives into polished user interfaces.

Built highly functional web applications using JavaScript, HTML and CSS.

Worked closely with UX and product teams to define visual and functional requirements.

Key Skills

Languages: Python, SQL -

Machine Learning: Scikit-learn, TensorFlow/Keras, XGBoost, Prophet, Time Series Forecasting, Deep Learning, NLP -

MLOps & Cloud: Azure Machine Learning, MLflow, Docker, Kubernetes, CI/CD (GitHub Actions/Azure DevOps), Model Registry. -

Visualization: Matplotlib, Seaborn, Power BI -

KEY PROJECTS

Real-time Failure Prediction System on Azure

Project Title: Real-time Failure Prediction System on Azure

Data Engineering: Ingested streaming IoT sensor data (temperature, vibration) using **Azure Event Hubs** and processed it in real time with **Azure Stream Analytics** to detect anomalies.

Modeling: Built a predictive maintenance model using **XGBoost** in **Azure Databricks** to forecast equipment failure 7 days in advance, reducing potential downtime.

Deployment: Deployed the model on **Azure Kubernetes Service (AKS)** for scalable, low-latency inference and integrated results into a **Power BI** dashboard for shop-floor managers.

Corporate Policy Q&A Assistant (RAG)

Project Title: Intelligent HR Policy Search Engine using RAG

Data Engineering: Ingested raw PDF policy documents (employee handbooks, insurance files) using Azure Blob Storage. Implemented an indexing pipeline using **LangChain** to chunk text and generate embeddings, storing vectors in **Azure AI Search** for retrieval.

Modeling: Developed a Retrieval-Augmented Generation (RAG) system using **Azure OpenAI (GPT-4)**. Engineered prompts to strictly answer questions based *only* on the retrieved context to hallucination risks.

Deployment: Deployed the chat interface using **Streamlit** on **Azure App Service**, enabling employees to query complex HR policies in natural language and receive instant, cited answers.

Certifications

Machine Learning Specialization - DeepLearning.AI & Stanford

October 2025

Stanford University

www.coursera.org/account/accomplish...

Python for Everybody Specialization July 2025

Coursera

www.coursera.org/account/accomplish...

Education

Master’s Degree in Master of Computer Applications January 2011 - December 2014

Dr.G.R.Damodaran College of Science

Bachelor's degree in Computer Application June 2008 - May 2011

Hindusthan College Of Arts And Science