PARVATH REDDY

Machine Learning Engineer

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Summary

Machine Learning Engineer with expertise in building production-ready ML systems, deep learning models, and RAG-based applications. Proficient in Python, TensorFlow, PyTorch, and MLOps, with experience deploying scalable models and computer vision solutions achieving 95% accuracy.

Technical Skills

Machine Learning: Scikit-learn, XGBoost, LightGBM, Random Forest, SVM, Ensemble Methods
Deep Learning & AI: TensorFlow, PyTorch, Keras, OpenAI API, Transformers, LSTM, CNN
Computer Vision & NLP: OpenCV, YOLO, Object Detection, OpenAI Whisper, RAG, Embeddings
MLOps & Deployment: Streamlit, Docker, Model Versioning, Pipeline Optimization
Programming & Tools: Python, SQL, Git, Jupyter, Pandas, NumPy, Matplotlib, Seaborn
Databases: MySQL, PostgreSQL, Vector Databases, Statistical Modeling

Experience

Machine Learning Intern **February 2025 – April 2025**
Mileto Foods (Remote) *ML Tools: Python, Scikit-learn, SQL, Statistical Analysis*

- **Constructed predictive analytics models** on 50,000+ multi-state sales records using Python and Scikit-learn, applying time series forecasting algorithms that **enhanced demand prediction accuracy by 15%** across 5 regional markets.
- Designed feature engineering pipeline with statistical analysis techniques, creating 12+ predictive features for inventory optimization models, **decreasing forecasting error by 25%** and enabling proactive supply chain decisions.
- Delivered machine learning insights through systematic reporting systems using statistical modeling and regression analysis, providing actionable predictions that **boosted revenue forecasting precision by 12%** for strategic planning.

Machine Learning Projects

RAG AI Teaching Assistant | *NLP, Embeddings, LLM, Vector Search, Production ML* **August 2025** Live Demo

- Developed production-grade RAG system with advanced NLP pipeline achieving **90% semantic accuracy** using BGE-M3 embeddings, vector similarity search, and Llama 3.2 LLM integration with **sub-3-second inference time**.
- Executed end-to-end ML pipeline with speech recognition (OpenAI Whisper), text preprocessing, and semantic chunking algorithms, processing **1,000+ educational segments** with 95% content extraction accuracy.
- Launched scalable ML application using Streamlit with cosine similarity algorithms, vector database integration, and real-time model serving infrastructure handling **500+ daily ML inference requests**.

Financial Fraud Detection ML System | *Ensemble Methods, Feature Engineering, Production ML* **June 2025** Live Demo

- Constructed high-performance ensemble ML model using XGBoost, Random Forest, and Gradient Boosting on **1M+ transaction dataset**, achieving **99.7% accuracy, 98.5% precision** with advanced hyperparameter tuning and cross-validation.
- Designed sophisticated feature extraction pipeline creating **15+ behavioral and statistical features** including transaction velocity, anomaly scores, and temporal patterns, **elevating model AUC-ROC from 0.85 to 0.992**.
- Delivered real-time ML inference system with performance monitoring, A/B testing framework, and performance tracking, serving **1,000+ predictions daily** with 99.9% uptime and model retraining capabilities.

Credit Risk ML Prediction Engine | *Tree-based Models, Risk Analytics, Model Deployment* **April 2025** Live Demo

- Established robust credit risk assessment ML model using Extra Trees Classifier with advanced feature selection techniques, achieving **85% accuracy** and **0.88 AUC-ROC score** through ensemble learning and model stacking approaches.
- Executed comprehensive feature engineering workflow extracting **12 financial risk indicators** with statistical validation, correlation analysis, and feature importance ranking, improving model interpretability by 40%.
- Launched production ML system with model serving, confidence scoring, and drift detection mechanisms, processing **500+ risk assessments monthly** with real-time prediction capabilities and model performance monitoring.

Research & Publications

Computer Vision Research: YOLOv8 Pothole Detection System **April 2025**
Deep Learning & Object Detection - 92.5% Precision Achievement *Published on SSRN*

Education

Bachelor of Technology - Computer Science Engineering **Expected: 2026**
Vellore Institute of Technology, Bhopal *CGPA: 7.7/10.0*