

AWANTIKA SRIVASTAVA

Machine Learning Engineer | LLMs & AWS

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PROFILE SUMMARY

Data Scientist with 2+ years of experience in predictive modeling, NLP, vector space modeling, machine learning, and scalable data systems. Strong expertise in Python, statistical modeling, ensemble methods, and deep learning. Hands-on experience in building LLM-powered search systems using Retrieval-Augmented Generation (RAG), embeddings, semantic retrieval, and reranking techniques. Proven experience in developing scalable ML pipelines, optimizing classifiers, and deploying production-grade AI systems on AWS and Databricks.

CORE TECHNICAL SKILLS

- **Programming & Data Science:** Python, C++, SQL, PySpark, Pandas, Numpy, Scikit-learn
- **Statistics & Mathematics:** EDA, Statistical Modeling, Descriptive & Inferential Statistics, Bayesian Statistics, Hypothesis Testing, Probability, A/B Testing
- **Machine Learning:** Supervised & Unsupervised Learning, Regression, Classification, Clustering, Random Forest, Decision Trees, SVM, KNN, K-Means, XGBoost, LightGBM, Model Evaluation Metrics (Accuracy, Precision, Recall, F1-score, ROC-AUC).
- **Deep Learning:** ANN, CNN, RNN, LSTM, BERT, Transfer Learning, Self-Attention, multi-head Attention, Time-Series Forecasting, Tensorflow, PyTorch, Keras
- **NLP:** Text preprocessing, Tokenization, Chunking, Sentiment Analysis, Transformer-based models, NLTK, TextBlob, SpaCy
- **Generative AI & LLMs:** LLMs (GPT, LLaMA, Mistral), Prompt Engineering, RAG, RAG Pipeline, Vector Search, FAISS, Embeddings, LLM Evaluation, Confidence Grading, LangChain, Agent system
- **Computer Vision:** Image Classification & Preprocessing, Object detection (YOLO, SSD, MobileNet, ResNet), Video Analytics, OpenCV
- **Search & Indexing Technologies:** Elasticsearch, OpenSearch, Solr, Embedding-based Vector Search
- **MLOps & Deployment:** MLflow, Docker, REST API, AWS (EC2, S3), CI/CD Pipelines, Scalable ML Deployment, Model Monitoring
- **Tools & Version Control:** Git, GitHub, Jupyter, Streamlit

EXPERIENCE

Machine Learning Engineer | PPS International Pvt. Ltd.

January 2024-Present

- Developed **predictive modeling solutions** using regression, decision trees, random forest, gradient boosting, and deep learning models for datasets.
- Built **scalable ML pipelines** using PySpark and Spark SQL for large-scale distributed data processing and model training.
- Designed and optimized **classifiers using feature selection, hyperparameter tuning, and ensemble methods**, improving model performance by 15–20%.
- Applied **Bayesian statistics and advanced evaluation metrics** to enhance model robustness and decision accuracy.
- Built **LLM-powered search and automation systems** using **Retrieval-Augmented Generation (RAG)** pipelines with embedding-based semantic retrieval.
- Fine-tuned **LLM models using PEFT/LoRA techniques** for domain-specific query understanding and improved contextual response generation.
- Designed and implemented **reranker models (cross-encoder based reranker design)** to improve search relevance and ranking quality.
- Integrated **Elasticsearch / OpenSearch** for semantic indexing, hybrid search, and vector search capabilities.
- Developed **scalable data systems in collaboration with product and engineering teams** to enhance user experience and search quality.
- Managed model lifecycle using **MLflow**, and deployed **real-time inference APIs on AWS**, ensuring low-latency production systems.

PROJECTS

Railway Driver Assistance System (RDAS) | Enterprise ML Project

- **Designed and deployed** a real-time computer vision-based ML system for **unsafe driver behavior detection** using **CNN-based SSD MobileNet** model.
- Trained and optimized models on large-scale video datasets, achieving **20–25 FPS** real-time processing with **<150 ms inference latency**.
- Implemented **end-to-end ML pipelines** for data ingestion, preprocessing, model training, evaluation, and production inference.
- Deployed optimized models using **TensorFlow Lite** on edge/production environments for continuous monitoring.
- Built a **Flask-based web dashboard** to visualize detections and automatically record **30-second event clips**, reducing manual review effort.

Chatbot Using LLM & RAG | Applied ML Project

- Built a **Lightweight LLM-Powered chatbot** using **TinyLLaMA** to answer user queries over content.
- Implemented a **Retrieval-Augmented Generation (RAG) pipeline** to retrieve relevant resume sections for contextual question answering.
- Selected **TinyLLaMA** to ensure **low memory footprint and fast inference**, making the solution suitable for resource-constrained environments.
- Applied **prompt engineering techniques** to improve response relevance and consistency.
- Deployed the chatbot as an interactive **Streamlit web application** for real-time user interaction.

YouTube Comments Sentiment Analyzer | link-<https://youtube-ai-analyzer-ndzqo6r2mepjtsdjmwxl.streamlit.app/>

- Developed **LSTM-based time-series forecasting** model trained on 5+ years historical stock data reducing **RMSE** by 18%.
- Engineered **lag features, rolling statistics**, and volatility indicators improving prediction stability.
- Implemented custom **BPTT training** loop with adaptive learning rate scheduling for **stable convergence**.
- Applied **regularization techniques** reducing overfitting gap by 20%.

CERTIFICATION

- IBM Data Science & AI Certification
- AWS Generative AI with Large Language Models
- OpenCV Computer Vision Certification

EDUCATION

IMS Engineering College, Ghaziabad
Bachelor of Technology (Electrical and electronics engineering)

September - 2020