

Swathi Subramanyam Pabbathi, MS  
Dallas, TX, [swanpsswathi@gmail.com](mailto:swanpsswathi@gmail.com), [LinkedIn](#), [GitHub](#)

Senior Applied Scien8st | Machine Learning Engineer

AI/ML Engineer with 14 years of software engineering experience, intelligent system design, and data-driven decision systems across finance, insurance, banking and telecom domains. Currently delivering production-grade ML solutions in credit risk, GenAI (RAG, LLMs), and predictive modeling at Bank of America. Completed masters in Applied Artificial intelligence with 4 GPA and led high- impact projects in GenAI, LLMs, and NLP applications.

#### CORE COMPETENCIES

- Machine Learning & Deep Learning (Supervised/Unsupervised, LSTM, Transformers)
- Computer Vision, Object Detection, Generative AI (RAG, Diffusion, GANs), Agentic AI
- Natural Language Processing (NLP, Prompt Engineering, LangChain, Langgraph, CrewAI, Topic Modelling)
- Time Series Forecasting & Predictive Modeling
- End-to-End ML System Design & Delivery
- MLOps, Model Deployment, CI/CD Pipelines
- Data Science & Analytics | IoT Integration | Scalable ML Pipelines
- Agile Project Planning & Execution | Solution Architecture

#### TECHNICAL SKILLS

- Languages & Libraries: Python, C, SQL, Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, Spacy, NLTK, OpenCV
- Deep Learning & ML Frameworks: PyTorch, TensorFlow, Keras, HuggingFace, XGBoost, LightGBM, MLflow
- MLOps & DevOps Tools: Docker, Airflow, GitHub Actions, CI/CD, MLflow, FastAPI, Flask
- Cloud & Infrastructure: AWS (EC2, S3, Lambda, ECS), Microservices, Serverless Architectures
- Big Data & Pipelines: Spark, PySpark, Data Lakes, Pipeline Orchestration

---

#### Career Experience

---

AI/ML Engineer | Technology Lead | Bank of America – Infosys Technologies Ltd | Hybrid – Plano, TX | 2022 – Present

Delivering scalable AI/ML solutions in a high-stakes financial environment. Leading the design, deployment, and operationalization of machine learning pipelines, GenAI applications, and predictive models to support credit risk, underwriting automation, and regulatory compliance.

- **ML Solutions & Impact:**
  - Architected and deployed end-to-end ML pipelines for auto loan default prediction using XGBoost and feature engineering, processing 100K+ applications monthly, reducing portfolio risk by 16% and generating \$35M in cost savings through improved risk assessment accuracy.
  - Partnered with cross-functional teams including product owners, risk analysts, and operations teams to translate business goals into data-driven decision systems.
  - Applied causal impact analysis to measure downstream effects of auto-approval thresholds on long-term default rates.
  - Collaborated with analytics teams to define KPIs and run A/B experiments to optimize borrower engagement and reduce time-to-approval.
  - Built production-ready BNPL default classifier using XGBoost with real-time scoring pipeline, achieving 82% AUC and processing 50K+ transactions daily, outperforming legacy models by 25% while reducing false positive rates by 18%.
  - Developed and deployed deep learning forecasting models (TFT, Lag-Llama) for 3-year loss prediction, improving forecast accuracy by 22% and enabling \$120M in strategic capital allocation decisions through enhanced long-horizon planning.
  - Architected intelligent document validation system using RAG (LangChain + GPT-4 + Pinecone) that automated 90% of underwriting decisions, reducing processing time from 3 hours to 18 minutes and improving approval accuracy by 12% across 10K+ monthly applications.
- **MLOps & Explainability:**
  - Implemented model explainability frameworks using SHAP and LIME for 15+ production models, ensuring regulatory compliance and reducing model audit time by 50% while maintaining interpretability for business stakeholders.
  - Built automated feature engineering pipelines using Spark and MLflow, processing 500GB+ datasets and reducing feature selection cycle time by 60%, enabling rapid model iteration and A/B testing for optimization experiments.
- **Leadership & Delivery:**
  - Led architectural design and technical guidance for 8+ ML initiatives across cross-functional teams (Product, Analytics, Operations), ensuring 99.5% system uptime and regulatory compliance while mentoring 5 junior engineers.
  - Served as technical lead and Agile coordinator for distributed teams of 12+ engineers, facilitating sprint planning and delivery that improved team velocity by 30% and reduced deployment cycle time from 2 weeks to 5 days.
  - Diagnosed and resolved critical production incidents for ML systems serving 1M+ daily predictions, reducing MTTR by 40% (from 4 hours to 2.4 hours) and achieving 99.8% system reliability through proactive monitoring and optimization.

#### Software Engineer – Project Lead | Charles Schwab – Mphasis | Remote – Westlake, TX | 2020 – 2022

Led engineering teams across distributed financial systems, ensuring delivery, reliability, and modernization in enterprise platforms.

- Led system architecture and design for Oracle-based financial platforms processing \$2B+ daily transactions across 4 Agile teams, implementing optimization strategies that improved query performance by 45% and reduced system latency.
- Orchestrated DevOps and infrastructure alignment initiatives that reduced production escalations by 40% and improved deployment success rate to 98%, enabling faster feature delivery and enhanced system stability.
- Analyzed and optimized batch processing workflows handling 10M+ daily records, eliminating performance bottlenecks that improved job completion time by 35% and reduced system downtime by 60%.
- Improved sprint planning efficiency by implementing data-driven prioritization frameworks, aligning delivery goals with business KPIs and reducing planning overhead by 25% while increasing feature delivery velocity by 20%.

#### Software Engineer – Technology Analyst | Verizon – Infosys Technologies Ltd | Remote -Irving, TX | 2019 – 2020

Led backend feature delivery and supported enterprise-grade distributed systems.

- Architected scalable backend services supporting 500K+ concurrent users, implementing microservices architecture that improved application response time by 40% and reduced infrastructure costs by 25%.
- Led incident response and root-cause analysis for customer-facing systems, reducing MTTR by 50% (from 6 to 3 hours) and implementing preventive measures that decreased recurring incidents by 70%.
- Mentored 6 junior developers and established code review processes that improved code quality metrics by 30%, reduced bug escape rate by 45%, and accelerated onboarding time for new team members by 40%.
- Coordinated UAT processes with QA and business stakeholders, achieving 95% defect-free deployment rate and reducing post-deployment issues by 60% through comprehensive testing frameworks and cross-team collaboration.

#### Early Career Highlights

Senior Software Engineer in IBM India Pvt Ltd, Software Engineer in CSC (Now DXC Technology), Wipro. Held engineering roles at IBM, CSC, and Wipro across banking and telecom domains. Built and supported large-scale distributed systems, led code reviews, and mentored junior engineers.

---

#### Educational

Master of Science in Applied Artificial Intelligence, University of San Diego, 4 GPA till now (2024 Aug – 2026 Apr)

BTech in Computer Science and Information Technology, Jawaharlal Nehru Technological University, 3.5 GPA (2004 – 2008)

---

#### Academic Projects:

InterCountNet: computer vision system for real-time detection, tracking, and multi-class vehicle counting at urban intersections to support traffic analysis and smart-city planning.

#### Capstone: Resume Coach (LLM + NLP + RAG)

Built a resume analysis app using ChatGPT 4.0, LangChain, CoT and Streamlit for ranking and summarizing profiles.

- Enabled resume-job match scoring across 3 job families, improving screening accuracy by 40%; deployed RAG-based pipeline using FAISS for real-time feedback.
- Integrated prompt-driven resume feedback using LLMs, helping users improve alignment with target roles.

#### Financial Analysis Multi Agent System

- This project demonstrates an Agentic AI architecture that orchestrates multiple specialized agents financial, news, and macroeconomic analyzers using LangGraph to enable autonomous, multi-step reasoning for holistic market insights

#### Drug Review Sentiment Analysis (NLP + LSTM)

Developed a sentiment classifier using Word2Vec embeddings and a PyTorch-based LSTM model.

- Preprocessed 30k+ reviews (lemmatization, stopword removal); achieved F1-score of 0.82, improving over baseline by 25%.
- Compared vectorization techniques (BoW, TF-IDF, Word2Vec) to evaluate model interpretability.

#### IoT Air Quality Forecasting (Time Series + LSTM)

Designed a real-time PM2.5 forecasting system with LSTM models using IoT-based weather data.

- Streamed sensor data ;engineered wind/time-based features; reached 3.2% MAPE, outperforming ARIMA by 18%.
- Visualized results in Tableau for smart city air monitoring use case.

#### Certifications

- Machine Learning / Data Science, Deep Learning, NLP and Gen- AI (2023-2025)
- Python Developer Certificate (2025 MAY)