Venkata Sainath Reddy Pedaballi

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**Professional** **Summary**

*Software Engineer with 3+ years of experience building secure, cloud-native backend systems across AI, fintech, and IoT domains. Demonstrated success delivering production-ready applications through professional contract roles at ABS Wavesight and Navy Federal Credit Union—distinct from internships or academic engagements. Skilled in Python (FastAPI, Django, Flask) with additional experience integrating Java (Spring Boot) microservices. Proficient in AWS, Azure, Kubernetes, and Terraform, with expertise in scalable REST/gRPC APIs, OAuth2-secured services, observability stacks, and real-time ML pipelines in high-throughput environments.*

**Skills**

**Languages & Programming:** Python, R, C, C++, Java, TypeScript, SQL, Shell **ML & AI Frameworks :** PyTorch, TensorFlow, ONNX, SciKit-learn, LangChain, TinyML, NLP (BERT/GPT), Gurobi **Frameworks/Dev :** FastAPI, Django, Flask, React, Spring, .NET Core **Data Engineering :** Apache Kafka, Spark, Airflow, Redis, Delta Live Tables, AWS Glue, Databricks **Cloud & DevOps :** AWS, Azure, Docker, Kubernetes, Terraform, Ansible, Helm, Prometheus, Grafana **Databases & Storage :** PostgreSQL, MySQL, MongoDB, Cassandra, Redis, Azure Data Lake **APIs & Security :** REST, gRPC, OAuth2, Azure API Management, SiteMinder, ForgeRock AM, CA LDAP **Testing & Automation :** PyTest, JUnit, TestNG, Selenium, Autosys, Control-M, GitHub Actions, Jenkins

**Professional Experience**

**Machine Learning Engineer (Contract)** **– ABS Wavesight, Spring, TX | July 2024 – Present**

* Designed and deployed GenAI chatbots using Command R+, LangChain RAG, ONNX, and OpenCV on AWS for 10K+ daily queries, building low-code conversational flows using visual orchestration like Kore.ai and prototyping with Dialogflow, AWS Transcribe, and Google Vertex AI before Lambda-based deployment.
* Delivered ultra-low latency YOLOv8 pipelines using TensorRT and OpenCV on Kubernetes, achieving 60 FPS inference in real-time industrial systems with sensor stream integration over TCP/IP, MQTT, and Linux serial communication.
* Developed optimized modules in C++ for embedded inference and built telemetry APIs using .NET Core and C# with SQL Server and DynamoDB to handle high-throughput IoT and fraud data ingestion in production.
* Built secure REST and gRPC APIs using FastAPI, Django, Flask, and Spring Boot with OAuth2, enforced WCAG accessibility and privacy-first principles, and integrated them with AWS API Gateway and Azure API Management.
* Scripted PowerShell jobs and XML-based configuration for automating GenAI chatbot service deployments on AWS EC2, managing provisioning, release versioning, and rollout across live environments.
* Developed CI/CD pipelines using Jenkins, Terraform, GitHub Actions, and Maven to deploy ML services across Lambda and Kubernetes, maintaining rollback support and infrastructure parity across multi-cloud targets.
* Built real-time ML pipelines using Spark Streaming, Kafka, Redis, and Delta Live Tables for fault detection and personalization, orchestrated using Apache Airflow on AWS EMR with cost-efficient cluster spin-up/down over AWS S3.
* Integrated Couchbase for session-aware document caching in chatbots, reducing context retrieval latency by 35 percent and enabling faster, personalized user interactions under high concurrency.
* Implemented behavior-based fraud detection using K-Means and Naive Bayes and built reinforcement learning systems with Q-learning and policy gradients to dynamically optimize GenAI chatbot responses.
* Built internal reporting dashboards using React, ComfyUI, and PostgreSQL for live fraud alerts and KPIs, replicating Tableau-style interactivity and supporting real-time operational monitoring.
* Used SHAP and TensorBoard to interpret GPU-based model performance, monitored pipeline consistency with Great Expectations, and debugged production issues through deep observability tooling.
* Developed Spring Boot microservices using DAO, Service, and Controller patterns and integrated real-time model inference into Java-based APIs used in financial analytics and fraud decisioning systems.
* Configured audit logging and RBAC for AI pipelines using AWS Redshift and governed data access through schema enforcement, proxy/firewall rules in API Gateway, and compliance with NIST and BIMCO standards.
* Deployed Osquery on shipboard Linux systems for endpoint monitoring and file integrity checks and implemented EDR-style behavior-based alerting to secure remote maritime AI environments.
* Supported VR-based AI and chatbot systems in on-call rotations, mentored junior engineers in Python, FastAPI, and Kubernetes, used GitHub Copilot for AI-assisted code and test development, and followed Agile Scrum with sprint demos and backlog grooming to deliver continuous releases.
* Managed MLOps lifecycle including model deployment, monitoring, rollback, and governance across cloud-native environments using Jenkins, Airflow, Prometheus, and Terraform.

**Python Developer (Contract) – Navy Federal Credit Union, Vienna, VA | Aug 2023 – July 2024**

* Built secure fraud detection APIs using Django, Flask, and DRF with OAuth2, integrated into Azure Functions, Event Hubs, and API Management for real-time transaction processing and RBAC enforcement.
* Deployed ONNX and DeepSpeed models on Azure Kubernetes Service (AKS) using Helm, Terraform, and Bicep, while maintaining legacy .NET modules in TFS and migrating CI/CD to GitHub Actions and Azure DevOps with rollback-enabled release control.
* Engineered Informatica-style ETL workflows in Azure Data Factory and Logic Apps, with validation and transformation, and created Hive external tables on S3 for schema-on-read querying of fraud alerts.
* Built Vue and ComfyUI dashboards for real-time Kafka fraud signals, prototyped responsive frontends with HTML, CSS, React, and maintained legacy PHP dashboards for backend metric sync.
* Refactored monolithic ASP.NET fraud endpoints into microservices using Django and React, deployed on AKS with Azure SQL, and integrated OAuth2-secured APIs to enable session-aware fraud analysis at scale.
* Used GitHub Copilot to modernize Django-based fraud detection services, modularized legacy components, improved unit test coverage, and supported team onboarding through design docs and codebase walkthroughs.
* Applied A/B testing and ROC-AUC scoring to fraud models, reduced false positives by 12%, validated KPI logic in Excel prior to dashboard rollout, and modeled segmentation logic using supervised ML techniques like logistic regression and decision trees.
* Performed statistical anomaly detection using hypothesis testing, integrated airline-style yield forecasting logic to optimize fraud thresholds dynamically, and tuned feature sets for precision-targeted fraud behavior modeling.
* Built batch feature engineering pipelines using Spark and Scala on AWS EMR, improving pipeline runtime by 30%, enabling rapid experimentation, and pre-processing large-scale financial transactions for ML consumption.
* Implemented Osquery-based file integrity monitoring across Linux and Windows fraud servers, automated CIS benchmark hardening using PowerShell and Ansible, diagnosed API anomalies via ELK, Grafana, Dynatrace, and App Insights, and contributed actively to Agile ceremonies and team retrospectives.

**Python Developer (Full-Time) – SoulPage IT Solutions, Hyderabad, India | Jul 2021 – Aug 2022**

* Built and deployed Django-based microservices backed by MySQL and PostgreSQL, scaled to handle 1M+ monthly user requests, and designed modular ETL components with schema validation and logging to ensure data integrity across distributed systems.
* Implemented real-time Kafka + AWS Lambda pipelines that reduced processing latency by 45%, and orchestrated Apache Airflow workflows with SLA enforcement, PostgreSQL partitioning, and Control-M & Autosys-based alerts for resilient data flows.
* Engineered secure ingestion from AWS Glue to Snowflake using Python and SQL, applied RBAC and column-level masking for compliance, and monitored system health with Dynatrace, Prometheus, and Grafana across ETL environments.
* Built CI/CD pipelines using Jenkins, GitHub Actions, Terraform, and Shell scripts for zero-downtime rollouts, automated infrastructure provisioning via CloudFormation, Bash, and Ansible, and reduced configuration errors by 35% using PowerShell-based automation.
* Developed reusable infrastructure automation templates using Terraform, Ansible, and GitHub Actions, enabling scalable, production-ready deployments across AWS for data and backend services.
* Created responsive, accessible UI components using React, Vue, JavaScript, TypeScript, HTML, and CSS, ensured WCAG-compliant designs with full screen reader and keyboard navigation support, and collaborated with product managers and designers for pixel-perfect execution.
* Practiced Agile methodology with Jira, sprint planning, standups, and retrospectives, delivering user-centric features iteratively and aligning delivery timelines with business priorities and stakeholder feedback.
* Prototyped backend microservices in Golang for AI-augmented financial systems and used Django to build secure API endpoints, optimizing lightweight data access and reducing memory overhead for real-time scoring services.
* Worked across the full stack with a focus on automation, scalability, observability, and compliance—building end-to-end systems that merged low-latency backend architecture, live data pipelines, and universally accessible interfaces.

**Academic Projects**

**ICU Readmission Prediction Tool (2023)**

* Built Flask-based interface for supervised ML models (Logistic Regression, Random Forest), enabling 5K+ daily clinical predictions.
* Applied Trie, HashMap, and DP techniques in preprocessing; improved model interpretability by 30%.
* Used SHAP to interpret top clinical risk factors and improved recall using optimized thresholds.

**Predictive Model for Customer Churn (2022)**

* Modeled customer churn using Decision Trees & Logistic Regression in Python and R which delivered 85% precision and actionable retention insights.

**Time Series Analysis of Stock Price (2021)**

* Built a TensorFlow-based stock price prediction model, forecasting daily stock movements for 200+ assets.
* Applied walk-forward validation and smoothing techniques to improve temporal accuracy.

**Education**

**Stevens Institute of Technology**,

Master’s in engineering/industrial management **Sept 2022 – Dec 2023**

**Jawaharlal Nehru Technological University Hyderabad**,

Bachelor’s in computer science engineering **Jul 2018 – Aug 2022**