

Polasi Sai Deepak

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PROFESSIONAL EXPERIENCE

Coupa Software | Software Development Engineer

Remote, USA | Jan 2025 – Present

- **Architected and led the implementation** of next-generation **Agentic AI Systems**, developing **Retrieval-Augmented Generation (RAG)** pipelines using **LangChain** and vector DBs (FAISS/Chroma).
- **Engineered Complex Agent Orchestration**: Built stateful, multi-step workflows using **LangGraph** (nodes, edges, checkpointing) to ensure resumability and high reliability for critical spending analysis tasks.
- **High-Performance Backend & Scaling**: Developed high-throughput **FastAPI (Python)** and **Java APIs** with **OpenAPI** specs, optimizing responses by **30%** and scaling services to reliably handle **20M+ monthly requests** across Coupa's enterprise platform.
- **Prompt Engineering & Model Deployment**: Applied deep LLM fundamentals (Chain-of-Thought, structured JSON) to design production-ready prompts for **OpenAI/Gemini** integration, and prototyped **Model Context Protocol (MCP)** servers in Python for safe tool exposure.
- **Full-Stack Leadership & Integration**: Designed and implemented responsive **React + TypeScript** UI components to seamlessly connect key AWS services with external platforms (Salesforce/Jira), driving a **50% increase** in integration efficiency.
- **Data Integrity & Robustness**: Enforced rigorous data contracts by leveraging **Pydantic** for structured validation within Python services, ensuring reliability of all API inputs and agent outputs; containerized services with **Docker** for reproducible deployments.
- **Cloud Automation & Efficiency (AWS CDK)**: Automated **80%** of AWS infrastructure provisioning (API Gateway, Lambda, DynamoDB, SQS/SNS) using **CDK**. Developed **CloudWatch** dashboards to monitor traffic and boost operational efficiency by **60%**.
- **Quality Engineering & Reliability**: Enhanced system reliability with comprehensive end-to-end testing (**Cypress, React Testing Library**), reducing production bugs by **90%**. Concurrently refactored legacy components, cutting technical debt by **40%**.

CitiusTech | Software Development Engineer

Tamil Nadu, India | May 2021 - Dec 2023

- **Microservices Architecture & Scale**: Designed and maintained high-traffic **React/JavaScript** UIs and resilient **Node.js/Java Spring Boot** microservices for an insurance application, consistently handling **10M+ monthly transactions** with specifications governed by **Swagger/OpenAPI**.
- **Cloud Infrastructure**: Provisioned and managed scalable, multi-region cloud infrastructure (**AWS EKS, DynamoDB**) using **Terraform**. Implemented **Horizontal Pod Auto-Scaling (HPA)** to optimize Kubernetes cluster performance and cost-efficiency under varying patient/claim workloads.
- **High-Reliability Data Exchange**: Integrated **Apache Kafka** for inter-service communication, ensuring reliable, asynchronous event production and consumption across distributed microservices, and defined/maintained **Protocol Buffers** for efficient data serialization.
- **Database & Query Optimization**: Expertly created and optimized complex **SQL queries, indexes, and stored procedures** for highly efficient data retrieval and processing across patient and policy records.
- **Continuous Delivery & Quality**: Managed Git repositories, built projects with Maven, and configured **Jenkins CI/CD pipelines** to ensure continuous delivery. Achieved **90%+ test coverage** through comprehensive unit testing (**JUnit, Mockito**) across core services.
- **System Monitoring & Process**: Reduced deployment downtime by **20%** using **Agile** collaboration and centralized monitoring via **Datadog, Dynatrace, and Splunk**. Utilized **JIRA** boards to manage all work streams and client requests, improving issue resolution efficiency by **40%**.

CitiusTech | Software Development Engineer Intern

Tamil Nadu, India | Jan 2019 - May 2021

- **Full-Stack Feature Development**: Contributed to developing core web applications using **Java/Spring Boot** and **REST APIs**, successfully improving backend response time by **25%** and enhancing system scalability.
- **Frontend & User Experience**: Collaborated with senior developers to build responsive UI features using **React.js, JavaScript, Node.js, and Tailwind CSS**, achieving **95% cross-browser consistency** and improving user engagement by **20%**.
- **Security Implementation**: Implemented robust **Spring Security** for user authentication and role-based access control (RBAC), significantly improving application security and compliance by **35%**, a crucial factor in healthcare applications.
- **Database Fundamentals**: Integrated **MySQL** databases and optimized foundational **SQL queries**, reducing query execution time by **40%** and boosting data retrieval performance for key application reports.
- **Quality Assurance & Testing**: Wrote comprehensive unit tests with **JUnit** and debugged critical application issues, shortening QA feedback loops by **30%** and increasing overall test coverage by **20%**.
- **Version Control & Agile**: Used **Git and GitHub** for version control, improving team collaboration efficiency by **30%**. Consistently participated in **Agile** stand-ups and sprint planning, achieving **100% on-time delivery** of assigned features.

SKILLS

Agentic AI & ML:	Multi-Agent Orchestration (LangGraph, LangChain), Retrieval Augmented Generation (RAG), Prompt Engineering (CoT, Few/Zero-Shot), LLM Fundamentals, Vector Databases (FAISS, Chroma), Model Context Protocol (MCP), LLM APIs (OpenAI, Gemini, Ollama).
Backend & API:	FastAPI, Python, Java, Spring Boot, Node.js, GraphQL, REST APIs, Pydantic, Asynchronous Processing (Kafka, AsyncIO), OAuth 2.0.
Frontend & UI:	React.js, TypeScript, JavaScript (ES6+), HTML5, CSS3, Tailwind CSS, WebSockets/SSE, JSON-driven Forms, React Testing Library.
Cloud & DevOps:	AWS (EKS, Lambda, DynamoDB, API Gateway, EC2, S3), Kubernetes, Terraform, AWS CDK, Docker, Git (GitHub/GitLab), CI/CD, HPA.
Databases & Data:	MySQL, PostgreSQL, DynamoDB, SQL Optimization, Indexes, Stored Procedures, Apache Kafka.
Monitoring & QA:	Datadog, Dynatrace, Splunk, CloudWatch, End-to-End Testing (Cypress), Unit Testing (JUnit, Mockito), Test Coverage.
Methodology & Tools:	Agile/Scrum, Jira, OpenAPI (Swagger), Maven, Project Documentation, Code Refactoring.

EDUCATION

Florida International University / MS in Computer Science

Miami, FL | Jan 2024 - May 2025

Coursework: Data Structures and Algorithms, Object Oriented Design, Design Patterns, Web Development

GPA: 3.95/4.0

Projects

Movie streaming platform with AI recommendation (Full-Stack)

Engineered a scalable movie streaming platform to showcase modern technology integration, featuring a personalized recommendation engine built with **LangChain, Go** and **OpenAI**. The system utilizes a responsive **React** frontend, a high-performance **Go-based backend (gin-gonic)** for API services, and **MongoDB** for reliable metadata management, successfully demonstrating the delivery of a robust, AI-powered application designed for engaging user experience and high throughput.