

DEWASHEESH RANA

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GenAI Solution Architecture | AI Systems Engineering | Technical Leadership

AI/ML Solution Architect with 14.5+ years delivering cloud-native, production-grade data platforms and GenAI systems across BFSI and enterprise domains. Deep expertise in Retrieval-Augmented Generation (RAG), agentic orchestration (CrewAI, Langgraph), secure toolchains (MCP patterns), and LLMops/MLOps pipelines (Kubeflow Pipelines, Katib, KFServing, Terraform/CDK). Hands-on experience building vector search systems (Qdrant/FAISS/OpenSearch), multimodal document workflows (OCR + NLP), multi-LLM fallback strategies, and observability for drift-aware model lifecycles. Strong software engineering foundation — microservices, event-driven systems,

CORE COMPETENCIES

- Strategic AI Leadership & Vision - Business–Technology Alignment - Solution Architecture - Engineering Management - Cross-Functional Team Leadership	- Enterprise AI Architecture Design - Agile AI Delivery & Governance - Stakeholder Relationship Management - Quality Assurance - Operational Efficiency Optimization	- AI/ML Engineering Management - Performance Optimization - Process Improvement - Enterprise Integration - Software Development Lifecycle
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TECHNICAL SKILLS

GenAI, Agentic AI & ML: RAG, LangChain, LangGraph, CrewAI, MCP, Context Engineering, Prompt Design, Tool Calling, Multi-Agent Systems, Supervised & Unsupervised ML Models, Applied Mathematics for AI

AI Coding Tools: Claude Code, OpenAI Codex, GitHub Copilot, Cursor

MLOps / LLMops: Kubeflow Pipelines, Katib, KServe, SageMaker, MLflow, Evidently AI, LLM Evaluation, RAG Evaluation, GitHub Actions, Jenkins

Languages & Frameworks: Python, Java, SQL, FastAPI, Spring Boot, REST APIs, GraphQL, Microservices

Cloud & DevOps: AWS, Azure, EKS, Lambda, Docker, Kubernetes, Helm, Terraform, CDK, PCF

Search & Data: Qdrant, FAISS, OpenSearch, BM25, GraphDB, PostgreSQL, MongoDB, Redis, Spark, Airflow, Kafka

Observability: OpenTelemetry, Prometheus, Grafana, ELK/OpenSearch, CloudWatch

Engineering Practices: Microservices, Event-Driven Architecture, Secure APIs, Distributed Systems, CI/CD, DevSecOps

Growth Path: Project Engineer - Senior Project Engineer | Nov. 2011 – Mar. 2015 □ Software Development Engineer | Apr. 2015 – Feb. 2017 □ Software Senior Engineer | Feb. 2017 – Oct. 2018 □ Principal Software Engineer | Oct. 2018 — Mar. 2025 □ Software Engineer Consultant, Global Payments | Mar. 2025 – May 2026 | Sr Consulting Manager, Cognizant | June 2026 - Present

KEY ACHIEVEMENTS

Airflow & Spark Self-Service Architect RAG + CrewAI troubleshooting copilot for Spark & Airflow logs — reduced MTTR by 60% by the help of microservices-based self-service capability for Dell Digital Cloud Developer Copilot Delivered IDE developer copilot (VS Code / IntelliJ) integrated with CrewAI + MCP — reduced developer MTTR by ~50%. Contextual code & log retrieval, API doc lookups, replay/retry job workflows and audit logs. Airflow Upgrade & Patching Framework Designed an automated airflow upgrade and patching airflow instances with agentic workflows — reduced patch cycle from weeks → 2 days.	GenAI Incident Management Platform End-to-end incident lifecycle automation. CrewAI agents perform automated triage, produce ranked remediation steps with citations, and call secure toolchains to fetch live diagnostics or trigger playbooks. Outcome: 60% MTTR reduction, improved auditability and safer automation. Airflow & Spark Troubleshooting Copilot Agentic system combining RAG search on logs & configs with secure remediation actions (restart, reconfigure) exposed through audited tool endpoints. Reduced incident resolution time by 60%. Event-Driven Log Intelligence Framework Architected a centralized event-driven log intelligence framework and enhanced with a GenAI-powered RAG layer for semantic log search, RCA summarization, and anomaly pattern insights.
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WORK EXPERIENCE

Cognizant Technology Solutions

Sr Consulting Manager | June 2026 – Present



Key Deliverables:

- Designed an AI-powered Process Intelligence Platform using Soroco Scout/6D Process Mining, correlating execution logs from MuleSoft, Prometheus, OpenTelemetry, application logs, and enterprise telemetry to reconstruct end-to-end business processes and operational insights.
- Built an LLM-driven Incident Intelligence & RCA platform leveraging Context Fabric, RAG, and Agentic AI to correlate multi-source incidents, generate evidence-backed root cause analysis, recommend remediation actions, and create reusable historical precedents for accelerated incident resolution.
- Implemented enterprise AI Observability integrating Langfuse, OpenTelemetry, Prometheus, Grafana, and telemetry pipelines for prompt tracing, workflow monitoring, model evaluation, LLM quality analysis, and production governance.
- Architected a multi-tenant AI Code Intelligence platform enabling repository-aware code recommendations, ID collision analysis, semantic code search, dependency discovery, and secure enterprise knowledge retrieval using Agentic AI, vector databases, and RAG.
- Designed scalable Agentic AI orchestration using FastAPI, CrewAI, MCP, RAG, vector search, and enterprise APIs to automate incident investigations, engineering workflows, and business process intelligence across distributed enterprise platforms.
- Led enterprise AI solution architecture, stakeholder engagement, technical governance, and delivery of cloud-native AI platforms on AWS, Kubernetes, Terraform, CI/CD, and LLMops technologies, ensuring secure, scalable, and production-ready deployments.

Key Deliverables:

- Designed a GenAI-powered synchronization system supporting multi-ERP integrations (NetSuite, Intacct, QBO, SAP). The platform orchestrates Initial, Ongoing, and Historical Syncs using Java/python-based microservices
- VS Code & IntelliJ plugin backed by CrewAI + MCP: contextual code & log retrieval, API doc lookups, replay/retry job workflows and audit logs.
- Developed the Intacct term discount synchronization feature in MineralTree by extending ERP connectors and workflow orchestration, enabling automated discount validation and intelligent financial processing aligned with Intacct rules.
- Designed an event-driven document intelligence pipeline integrating with AI-powered OCR providers to identify, split, and extract multiple invoices from bulk PDF documents, leveraging SQS, SNS, S3, and DynamoDB for scalable processing and automated invoice creation.
- Developed a supervised classification ML model leveraging historical Snowflake invoice data to predict item-level department and location with Top-K recommendation capability.
- Implemented production MLOps pipelines on AWS EKS: CI/CD via GitHub Actions and Terraform for infra.

Key Deliverables:

- End-to-end incident lifecycle automation: ingest alerts & logs → chunking & embeddings → vector store (Qdrant/OpenSearch) → hybrid retriever (dense + BM25) → cross-encoder reranker → Agent Orchestration.
- Developed self-service AI copilot for Spark job submission and tuning (NLP → agent orchestration → submit workflows) to reduce operational overhead and improve developer velocity (DAD score uplift).
- Built agentic patching orchestration: automated CVE ingestion, validation via secure toolchains, and coordinated Helm upgrades across distributed Airflow clusters.
- Architect an Airflow upgrade and patching framework for over 300 instances, ensuring seamless and efficient updates.
- Customize Docker image builds and integrates storage with Harbor to enhance security and operational efficiency
- Design microservices for Dell Digital Cloud, enabling self-service capabilities for Airflow and Spark through a Helm Chart framework.
- Develop custom broker services compliant with the Open Service Broker specification, ensuring seamless communication with Super Broker.
- Developed self-service AI copilot for Spark job submission and tuning (NLP → agent orchestration → submit workflows) to reduce operational overhead and improve developer velocity (DAD score uplift).
- Implement BYOC methodologies to support complex business use cases with scalable Celery and Kubernetes executor options.
- Build robust microservices for Dell EMC integration, strengthening a global support portal with Spring Cloud Stream and PostgreSQL.
- Direct the TEJAS DLCI Integration for Microsoft SCVM, developing a stand-alone web application for efficient Dell server management using Spring, Hibernate, and MongoDB.
- Create a generic REST API for seamless integration with a Repository Manager, leveraging Spring REST and security frameworks.
- Define the high-level architecture for Tejas++, merging SCCM and SCVMM consoles while implementing multi-console support.
- Outline the architecture of an enterprise-grade Airflow application on Kubernetes, integrating disaster recovery protocols on PostgreSQL and GTM load balancing to enhance system resilience.
- Introduce Bring-Your-Own-Compute (BYOC) methodologies, enabling seamless execution of complex business workflows with scalable Celery and Kubernetes executor configurations, enhancing operational efficiency.
- Mentored cross-functional teams in best practices for MLOps, model governance and production readiness.

PROJECTS HANDLED

Developer Copilot Platform

- Technologies:** Python, FastAPI, CrewAI, MCP-secured APIs, AWS Lambda, Qdrant, OpenSearch, Terraform, AWS EKS, Prometheus, Grafana.
- Overview:** Built an **AI-augmented Developer Copilot** integrated with VS Code and IntelliJ to assist developers with contextual build insights, log analysis, and API discovery using Agentic RAG, CAG + CrewAI orchestration.
- Responsibilities:** Engineered Lambda-powered CrewAI services for contextual retrieval and intelligent code assistance—reducing developer MTTR by 50% and improving productivity through self-service debugging automation.

ERP Connector Sync Framework

- Technologies:** Python 3.10+, FastAPI, AWS Tech Stack, Java, Spring Boot, REST/SOAP APIs, PostgreSQL, QBO, Intacct, NetSuite, Xero, CrewAI, RAG, OpenSearch, Terraform, Kubernetes, Prometheus, Grafana.
- Overview:** Developed and maintained a **multi-ERP synchronization framework** enabling seamless financial data exchange between MineralTree and connected ERP systems. Integrated lightweight **GenAI intelligence** for error summarization, sync anomaly detection, and schema mapping insights..
- Responsibilities:** Implemented Initial, Ongoing, and Historical Sync workflows using Java-based APIs with audit-safe reconciliation logic; enhanced observability and support efficiency by integrating a RAG + CrewAI agent that analyzed sync logs, summarized failures, and surfaced probable root causes—reducing manual triage time and improving sync reliability.

GenAI Incident Management Platform

- Technologies:** Python 3.10+, FastAPI, AWS Lambda, CrewAI, Qdrant, OpenSearch, AWS Step Functions, CDK, Prometheus, Grafana, Evidently AI, Bedrock Claude.

- **Overview:** Developed a **serverless GenAI-powered incident management platform** on AWS, leveraging RAG pipelines, CrewAI agents, and observability intelligence for autonomous incident triage, RCA, and self-healing automation.
- **Responsibilities:** Engineered Lambda + Step Functions–based orchestration integrating RAG retrieval (OpenSearch) and CrewAI-driven remediation workflows—reducing MTTR by 60% and improving reliability across cloud operations.

Spark & Airflow Patching Copilot

- **Technologies:** Python, CrewAI, RAG, OpenSearch, Helm, Kubernetes, Airflow, Prometheus, Grafana, Terraform.
- **Overview:** Developed an **Agentic AI–driven patching copilot** automating CVE advisory retrieval, validation, and version upgrades for Spark and Airflow clusters using RAG intelligence and CrewAI orchestration.
- **Responsibilities:** Implemented CrewAI-based automation for CVE scanning and Helm-driven upgrades on Kubernetes clusters—reducing patch cycles from 3 weeks to 2 days and significantly improving platform reliability.

Event-Driven Log Intelligence Framework

- **Technologies:** Java, Spring Boot, Kafka, Logstash, Elasticsearch, Kibana, REST APIs, Python (CrewAI/RAG enhancement), Docker, Kubernetes.
- **Overview:** Architected a **centralized event-driven log processing framework** that ingests and visualizes integration telemetry (success, error, and exception logs) across multiple enterprise systems. Designed as a reusable library or REST API, enabling any application to publish logs to Kafka and visualize pipeline health through Kibana or a custom UI.
- **Responsibilities:** Built an ACTMON(Activity Monitoring) framework using Kafka, Logstash, Elasticsearch, and Kibana for real-time observability across distributed integrations; enhanced it with a RAG-based GenAI layer to summarize recurring failures, surface RCA insights, and accelerate troubleshooting.

Data Science Platform – Spark Ecosystem

- **Technologies:** Python 3.7+, FastAPI, Jupyter Notebook, Apache Spark on PKS, PostgreSQL, Docker, Kubernetes, Airflow, ECS Storage.
- **Overview:** Developed a cloud-native big data platform enabling teams to seamlessly acquire, develop, and deploy Spark-based data jobs.
- **Responsibilities:** Designed and built Python-based data science packages and command-line tools. Developed and maintained Python FastAPI microservices to facilitate remote job submission and monitoring.

Enterprise Integration Services (EIS) – Application Integration Cloud (AIC)

- **Technologies:** Spring Cloud Microservices, Spring Boot, Spring Batch, JPA, Java 1.8, PostgreSQL, Oracle DB, REST, Pivotal Cloud Foundry, Redis, Gemfire, ElasticSearch, Kafka, RabbitMQ, Logstash, Kibana.
- **Overview:** Architected a cloud-native integration system to streamline business flow across Dell EMC.
- **Responsibilities:** Led the core engineering team in designing, developing, and transforming key system components. Mentored team members and ensured end-to-end delivery using Agile methodologies.

MyServices 360

- **Technologies:** Spring Cloud Microservices, Spring Batch, Spring Cloud Stream, Spring Boot, MyBatis, Java 1.8, PostgreSQL, REST, MongoDB, Cloud Foundry.
- **Overview:** Developed a cloud-based, service-centric dashboard providing deep visibility into EMC environments and actionable insights.
- **Responsibilities:** Conducted analysis, design, and coding for critical modules related to user management and persistence.

Dell EMC Integration Microservices

- **Technologies:** Spring Cloud Microservices, Spring Cloud Stream, Spring Boot, MyBatis, Java 1.8, PostgreSQL, Oracle DB, REST, Pivotal Cloud Foundry, Redis.
- **Overview:** Engineered microservices to merge Dell and EMC support portals, creating a unified point of contact for global customers.
- **Responsibilities:** Designed and developed microservices for interacting with EMC infrastructure and cloud systems.

Assets and Entitlement Migration from Monolithic to Microservices

- **Technologies:** Spring Cloud Microservices, Spring Boot, MyBatis, Java 1.8, PostgreSQL, REST, Oracle DB, Pivotal Cloud Foundry, Redis.
- **Overview:** Migrated legacy SOAP-based systems to a modern, cloud-native microservices architecture, integrating Dell and EMC asset data into a unified PostgreSQL database.
- **Responsibilities:** Led system integration, defined bounded contexts, and designed Mapper/Service/Controller layers for seamless migration.

TEJAS – DLCI Integration for Microsoft SCVM

- **Technologies:** Spring-based components, REST services, Java, and related frameworks.
- **Overview:** Developed a standalone web application for efficient Dell server management by integrating with Microsoft's System Center Virtual Machine Manager (SCVMM).
- **Responsibilities:** Led analysis, design, and development of REST-based services to integrate Dell products. Recognized with multiple awards (including “**On the Spot**” and “**Silver awards**”). Reduced critical microservice response times from **6–8 seconds to approximately 1 second**.

Linux OS Integration & Repository Manager API

- **Technologies:** Spring REST, Spring Security, Tomcat, PostgreSQL, Hibernate, MongoDB.
- **Overview:** Delivered system management solutions leveraging Linux and web technologies to facilitate hardware virtualization.
- **Responsibilities:** Developed critical components for user management and persistence. Designed and implemented a generic REST API for integration with a Repository Manager, consumed by .NET-based clients.

Tejas++ – Multi-console Integration for SCCM and SCVMM

- **Technologies:** Spring DI, MongoDB, PostgreSQL, Hibernate, Spring JAX-WS (SOAP) Services, Java 8, Maven, Spring Boot, Spring Data REST, Spring Data MongoDB.
- **Overview:** Designed and implemented a Master Profile feature to manage a group of servers across multiple consoles.
- **Responsibilities:** Created high-level and low-level designs and developed SOAP services, controllers, and DAO/business layers. Delivered key features including multi-console discovery/enrollment, connectivity testing, and lifecycle template creation.

Key Deliverables:

- Transformed XML data to Java objects using JAXB and developed web services with Apache Axis2 for Apple's IQE project, facilitating the virtualization and performance testing of Unibox applications.
- Engineered the iCAS Regression Framework for Apple Computers by assuming end-to-end responsibility for solution architecture, design, coding, and delivery—enhancing an existing automation framework with Jasper Reports to validate fee calculations accurately.
- Redesigned the iTunesiRecon testing framework for Apple Accounts by evaluating multiple proof-of-concepts and integrating innovative solutions (e.g., Java with HSQLDB, JAXB, and Selenium WebDriver) to optimize test case prioritization and reporting.
- Developed end-to-end web solutions for MasterCard under the Web Solutions Center (WSC) project by:
 - ✓ Designing & coding MC Merchant Acquirer plugin to optimize data loading using Hibernate & enhancing SOAP web service functionality.
 - ✓ Architecting the Offer Upload to process zipped XML files & populate the metabase database via reverse engineered Hibernate strategies.
 - ✓ Implementing the Web Transformation plugin using XML DOM parsing, Apache POI, and Core Java.

EDUCATION**Master of Data Science** | [Deakin University](#) | Pursuing**Post Graduate Program in Artificial Intelligence & Machine Learning** | [The University of Texas at Austin](#) | Feb 2026**Post Graduate Program in Artificial Intelligence & Machine Learning** | [Great Lakes Institute of Management](#) | Feb 2026**MCA** | [SRM Institute of Science & Technology, Chennai](#) | 2011**B.Sc. (H) Mathematics** | [St. Columba's College, Hazaribag](#) | 2007**Certifications:** CKAD (Certified Kubernetes Application Developer - [Link](#)) | Advanced Kubernetes Training | Pivotal Cloud Native Integration Architect | Big Data & Hadoop Administrator/Developer | Apache Spark & Scala Developer