

# Akash Shanmuganathan

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## PROFESSIONAL SUMMARY

AWS certified GenAI & Data Engineer with 5+ years architecting production agentic AI systems and multimodal voice interfaces. Pioneered conversational analytics platform using Amazon Nova Sonic, AWS Bedrock, MCP, and AgentCore from POC to production, reducing dashboard creation from hours to minutes and delivering insights in seconds. Delivered \$180K+ in savings, migrated 200+ workloads, and orchestrated multi agent systems using LangChain and LangGraph across cross functional teams.

## CERTIFICATIONS

- AWS Certified Data Engineer – Associate (DEA-C01)
- AWS Certified Gen AI Developer – Professional (In Progress)

## TECHNICAL SKILLS

**Agentic AI & LLM Systems:** Claude, AWS Bedrock (Agents, Guardrails, Knowledge Bases), LangChain, LangGraph, CrewAI, Model Context Protocol (MCP), AgentCore Framework, Multi-Agent Systems, RAG, Prompt Engineering, Conversational AI, AWS Quick Suite

**Vector Databases & Semantic Search:** Pinecone, ChromaDB, FAISS, OpenSearch, Embeddings (OpenAI, Bedrock Titan), S3 Vector

**Programming & Development:** Python, TypeScript, JavaScript, Node.js, React, FastAPI, Express.js, SQL, Cursor, GitHub Copilot

**Data Engineering:** AWS Glue, AppFlow, Real-Time Streaming, ETL/ELT Pipelines, PySpark, Medallion Architecture

**Cloud Infrastructure & DevOps:** AWS CDK, Infrastructure as Code, CI/CD, GitHub Actions, Docker, RDS, DynamoDB, S3, SNS, SQS

## PROFESSIONAL EXPERIENCE

**Agentic AI Engineer** | Onedata Software Solutions [Advanced Tier AWS Partner], *Fort Mill, SC, US*

**Sep 2025 – Present**

- Conceptualized and architected full-stack conversational analytics platform from POC to production using AWS Bedrock, QuickSight, and S3 data lake with multimodal voice AI, reducing dashboard creation from 15 minutes to under 10 seconds for marketing team
- Engineered bi-directional voice interface with Nova Sonic implementing real-time audio streaming via SocketIO architecture, achieving sub-800ms latency supporting concurrent voice sessions for hands-free dashboard creation and natural language data exploration
- Engineered multimodal chatbot leveraging 4-agent orchestration system (query planner, data retriever, insight generator, visualization agent) built with AgentCore framework and shared memory state management, implementing conditional routing for complex workflow
- Developed prompt engineering framework with chain-of-thought reasoning and few-shot learning achieving 85% accuracy in AI-generated insights, implementing guardrails and validation workflows to ensure production-grade reliability
- Engineered Model Context Protocol (MCP) server with 5 specialized tools for schema discovery, query generation, and data retrieval, enabling agents to autonomously explore and analyze multi-platform marketing data through natural language interactions
- Architected observability infrastructure with custom CloudWatch dashboards monitoring multi-agent system performance across daily workflows, implementing real-time tracking for token consumption, agent latencies, and custom metrics for inter-agent communication
- Implemented RAG system with Bedrock Titan Embeddings and S3 vector database to semantically search and retrieve relevant context from proprietary data, enabling AI responses grounded in real-time marketing analytics

**Data Engineer** | Hexaware Technologies, *Chennai, India*

**Jan 2021 – Jul 2023**

- Delivered \$180K annual savings migrating 200+ SQL workloads from on-premises MySQL to AWS (RDS, Glue, Redshift), achieving 30% cost reduction and 45% performance improvement through optimized data partitioning and query rewriting
- Architected event-driven pipelines processing 10M+ daily records of corporate actions using Python, Lambda, and Glue with automated data quality checks, improving SLA adherence and reducing data incidents by 60%
- Accelerated financial reporting by 60% through SQL query optimization and ETL redesign, reducing end-of-quarter processing from 5 hours to 2 hours and enabling faster business decisions
- Built automated Tableau dashboards for 21 QA teams tracking defect lifecycle metrics across 15+ projects, conducting 15+ client-facing technical presentations

**Data Analyst Intern** | Neo Technologies, *Chennai, India*

**Sep 2019 – Jan 2021**

- Engineered SQL queries, Excel macros, and data validation frameworks (Python) that eliminated 200+ recurring errors, ensuring accurate COVID-19 reporting while collaborating with analysts to deliver real-time dashboards for pandemic response and decision-making

## EDUCATION

**Master of Science in Engineering Management** (AI Product Management) | Northeastern University, Boston, MA

**Sep 2023 – May 2025**

**Bachelor of Engineering in Electrical and Electronics Engineering** | Anna University, Chennai, TN, India

**Jun 2017 – May 2021**

## PERSONAL PROJECTS

**Agentic Data Engineering Platform** | <https://github.com/akashs101199/agentic-data-engineering-platform>

- Built open-source multi-agent ETL platform with LangGraph StateGraph orchestrating 3 autonomous agents using conditional routing, parallel execution, checkpointing, and MemorySaver for fault-tolerant self-healing pipelines

**AI Scheduler Chat Bot** | <https://github.com/akashs101199/Ai-Scheduler-Chat-Bot>

- Built intelligent scheduling assistant with LangChain, FastAPI supporting multi-model switching (Mistral/Gemini), Calendar integration via OAuth, automated email notifications, and prompt-engineered business rules for natural language appointment management