

Swagat Tripathy

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SUMMARY

Generative AI-focused Software Engineer building production-grade AI systems on AWS. Designed and deployed RAG pipelines using AWS Bedrock to automate and accelerate security control development by mining AWS SDKs, codebases, and CloudFormation schemas. Built interactive LLM workflows to classify configurations, refine context, and generate Python-based security controls. Developed MCP servers to integrate AI agents with RAG applications, and built GenAI audit systems to analyze AWS service launch tickets and proactively flag security control impact.

EXPERIENCE

System Development Engineer II | Amazon | New York City, US | October 2021 - Present

- Designed and deployed a Generative AI-powered RAG system leveraging AWS Bedrock to accelerate security control development. Built an automated pipeline to crawl AWS SDKs, codebases, and CloudFormation schemas for contextual knowledge. Implemented an interactive SageMaker prompt workflow that classifies configuration items (compliant, non-compliant, not applicable) and iteratively refines context for LLM-driven Python control generation, streamlining and automating the security control lifecycle.
- Built Model Context Protocol (MCP) servers to enable seamless integration between AI agent and RAG Application, enhancing system interoperability and data retrieval capabilities.
- Built a GenAI Audit system which read the tickets for new launches for AWS Services and alerted on impact to existing security controls.
- Optimized the controls deployment platform by enhancing and automating the AWS deployment pipeline, reducing deployment time by 65% and minimizing human error across production releases for the Security Controls platform serving over 200,000 customers.
- Integrated AWS CloudWatch with custom metrics to enhance observability for security compliance platforms, streamlining rapid incident detection and resolution.
- Integrated platform integration for automating security controls testing increasing Time To Prod velocity by 30%.
- Built and deployed an automated pipeline for AWS RDS content delivery across 50+ environments, enabling migration from a legacy deployment system and saving over 400 software engineering hours annually.
- Designed and scaled fleet infrastructure to support high-traffic events such as Prime Day, Black Friday, and Cyber Monday, while enabling continuous TPS scaling using AWS services to ensure cost-efficient operation of tier 1 systems.
- Independently implemented a major Postgres version upgrade, transitioning 300+ RDS instances seamlessly from Postgres 10 to Postgres 12 without any downtime.
- Conducted an in-depth analysis and pinpointed various opportunities for cost savings within a tier-1 service. Implemented these initiatives, resulting in annual savings exceeding \$200,000.
- Directed incident response for major disruptions impacting tier-1 fleets by utilizing root cause analysis to identify software and system failure points and applying targeted resolutions, leveraging expertise in Java, Python, and Linux troubleshooting.

Senior Software Developer | Birlasoft Inc (End Client: Depository Trust and Clearing Corporation) | Jersey City, US

| June 2014 - October 2021

- Built an application leveraging Java and AWS services to transfer seven years of archived compliance data from Tape to AWS Glacier, driving annual cost savings of \$200,000.
- Created a web-based interface using AWS Elastic Beanstalk and AWS Athena to facilitate user requests for data retrieval, streamlining the report generation process which reduced the overall time to be able to view reports from 2 weeks to 2 hours.

Senior Systems Engineer | Infosys (End Client: American Express Technology) | India / Phoenix, US | June 2009 - May 2014

- Addressed production issues in a Tier-1 application to support uninterrupted distribution of paper and electronic mail to card members, applying Java and Python for troubleshooting and resolution.
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CERTIFICATIONS

Certified AI Practitioner | Amazon Web Services

Fundamentals of LLMs, AI Agents Fundamentals | Hugging Face

Certified Solutions Architect Associate | Amazon Web Services

Certified SysOps Administrator Associate | Amazon Web Services

Certified Developer Associate | Amazon Web Services

Design Patterns Thinking | Project Management Institute

SKILLS

Generative AI (RAG), LLM APIs, LangChain, MCP

Java, Python, Typescript, CDK, Shell, Linux, Git, Docker

AWS (Lambda, S3, EC2, VPC, RDS, CloudWatch, CDK, Cloud Formation, AWS Config, Security Hub, SSM, Athena, Glacier), Git, CI/CD Automation, Infrastructure Scaling, Observability & Monitoring

Problem Solving, Analytical Thinking, Automation Mindset, Cross-Functional Collaboration, Incident Management, Process Optimization, Communication

EDUCATION

B. Tech in Computer Science &Engineering | Biju Patnaik University of Technology | 8.88/10

2005-2009

PUBLICATIONS

Building MoonRAG: An End-to-End RAG Pipeline with AWS Bedrock and OpenSearch Serverless

<https://medium.com/@swagattripathy/building-moonrag-an-end-to-end-rag-pipeline-with-aws-bedrock-and-opensearch-serverless-992dcd00560a>

Installing Citrix Workspace App on Raspberry Pi 4

<https://medium.com/@swagattripathy/installing-citrix-workspace-app-on-raspberry-pi-4b-e14399d4b9f3>
