Akshay Kumar

akshayma@gmail.com | linkedin.com/in/akshkumar | Seattle, WA

Summary

Software engineer with five years of experience building large-scale, highly available threat detection systems at Amazon. Recently focused on building a platform that uses agentic AI to automate parts of the detection engineering and incident response pipeline.

Experience

Amazon July 2021 – Present
Software Development Engineer II *Seattle, WA*

- Build core components of an AI-native platform that automates parts of the detection engineering and incident response pipeline, using custom multi-agent systems, MCP integrations, and automated workflows to reduce human-in-the-loop intervention for ~300 security engineers; targeting 10x detection coverage and up to 75% automation of routine incident response.
- Operate core infrastructure for a highly available, multi-tenant threat detection platform built on SQS and ECS Fargate for stream processing, ingesting 20PB+ of encrypted telemetry daily at 99.99% uptime, designing the auto-scaling systems and failure re-drive mechanism that let the platform absorb traffic spikes without alert gaps or data loss.
- Reduced detection rule validation time from 60 minutes to under 5 minutes by building a sandboxed testing environment and migrating rule authoring from JSON to a YAML-based DSL, improving detection accuracy and coverage speed.
- Improved signal to noise ratio for incident response teams by partnering with detection engineers and product stakeholders to integrate two internal Amazon services that enrich detection context, and building a centralized SLA observability dashboard that reduces irrelevant alert volume and gives on-call responders real-time visibility.

MathWorks May 2020 – Aug 2020
Cloud Software Engineering Intern *Natick, MA*

- Deployed 6 reference architectures for MATLAB and MATLAB Parallel Server on Google Cloud Platform, writing Python-based Deployment Manager templates (infrastructure as code) to provision Compute Engine instances, Managed Instance Groups, firewalls, and storage buckets.
- Built Packer-based image pipelines and shell automation to standardize MATLAB cluster setup across GCP deployments, reducing manual configuration for customer-facing architectures.

MathWorks July 2018 – July 2019
Software Engineer in Testing *Bangalore, India*

- Built a C++ benchmarking suite using Google Benchmark to measure performance across 16-core MATLAB file system APIs, increasing regression analysis coverage by 60% and surfacing performance regressions before release.
- Built an automated C++ unit testing framework using Google Test for MATLAB's file system APIs, increasing test coverage by 35% and reducing manual QA time by 25%.

Projects

Probabilistic Intrusion Detection System for Docker Containers *Published SSCC 2019, 44 citations*
Python, Docker, Strace, MongoDB

- Led a team of three to build a model that detects malicious applications running inside a Docker container with 87–97% accuracy, validated against system call datasets from the University of New Mexico.
- Developed an IDS that collects system call log streams from a containerized application, records deviations from normal behavior, and alerts the user on intrusion.

Technical Skills

Languages: Python, Java, TypeScript, C++
Platform & Infrastructure: Distributed Systems, Multi-tenant Platforms, Stream Processing, Auto-scaling, High Availability, Observability
Cloud & DevOps: AWS (SQS, ECS, S3, Lambda, DynamoDB, Kinesis, OpenSearch, CloudWatch), Infrastructure as Code (CDK, CloudFormation), Docker, CI/CD Pipelines, Git
Security & AI: Agentic AI, MCP, Security Automation, Threat Detection, Detection-as-Code, Incident Response, Identity & Access Management

Education

University of Southern California Los Angeles, CA
Master of Science in Computer Science; GPA: 3.62/4.0 *Aug 2019 – May 2021*

PES University Bangalore, India
Bachelor of Technology in Computer Science; GPA: 9.14/10 *Aug 2014 – May 2018*