ABHISHEK KUMAR SINGH

Cloud & AIOps Engineer | DevSecOps Specialist | India (Open to Remote/Relocation)
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Cloud & AIOps Engineer with a Master of Science in Computer Science (Cybersecurity) and a background in Data Science. Specializing in **Self-Healing Infrastructure,** I combine "Shift-Left" security with event-driven automation to build resilient cloud platforms. Expert in architecting production-grade clusters using **Terraform, AWS EKS, and Kubernetes,** with a focus on reducing MTTR through automated remediation workflows. Available for contract or remote engagements to architect secure, self-healing cloud ecosystems.

TECHNICAL SKILLS

- **Infrastructure & Cloud:** AWS (EKS, EC2, VPC, IAM, S3, Eventbridge), Terraform (IaC), Linux, Docker, Kubernetes.
- **DevSecOps & CI/CD:** Git, GitHub Actions, Jenkins, SonarQube, Trivy, Snyk, OIDC Federation, Helm, Prometheus, Grafana.
- **AIOps & Automation:** CloudWatch Anomaly Detection, AWS Lambda (Boto3), Systems Manager (SSM), Python.
- **Data Science:** Pandas, Scikit-Learn, Jupyter, Statistical Analysis (IIIT Bangalore Certified).

KEY TECHNICAL PROJECTS

Self-Healing EKS Remediation Engine | AIOps, AWS Lambda, EventBridge, Python

- Designed an **event-driven AIOps framework** to automate incident response for Kubernetes clusters, aiming to reduce Mean Time to Recovery (MTTR) from 20 minutes to <60 seconds.
- Implemented **CloudWatch Anomaly Detection** to identify irregular CPU/Memory spikes deviating from baseline historical trends, minimizing false positives.
- Engineered automated remediation workflows using **EventBridge and Lambda** to gracefully restart stuck pods and scale node groups without human intervention.
- Integrated Prometheus AlertManager to trigger "self-healing" scripts for specific application error codes (5xx), ensuring high availability.

Infrastructure EKS Provisioner | Terraform, AWS EKS, VPC, IAM

- **Architected and provisioned** a production-grade Kubernetes cluster on AWS using modular Terraform to deploy VPCs, Private Subnets, and Managed Node Groups.
- Implemented precise IAM roles using **IRSA (IAM Roles for Service Accounts)** to enforce least-privilege access policies for pods, eliminating the need for long-term credentials.
- Designed a secure network topology with NAT Gateways and private subnets to isolate worker nodes from public internet access.

DevSecOps CI/CD Pipeline | GitHub Actions, Trivy, Docker, Snyk

- Engineered a secure CI/CD pipeline integrating **Trivy and Snyk** for automated container image scanning and static code analysis (SAST).
- Automated the build-and-push workflow for Docker images to ECR, implementing a **Quality Gate** that blocks deployments if critical vulnerabilities are detected.
- Configured OIDC (OpenID Connect) for secure, password-less authentication between GitHub Actions and AWS.

Scalable Data Management API | Python, FastAPI, MongoDB, Docker

- Developed a high-throughput REST API using **FastAPI (Asynchronous)** to handle non-blocking I/O, optimized for concurrent data ingestion.
- Implemented **Docker Multi-Stage Builds** to minimize attack surface and reduce image size by **60%,** accelerating CI/CD deployment times.
- Designed a robust data layer with **MongoDB** and **Pydantic** for strict schema validation, ensuring data integrity before persistence.

EDUCATION

Master of Science in Computer Science (Specialization in Cybersecurity)

Troy University, Alabama, USA | Jan 2024 – Jun 2025

- **Research Thesis:** Smart Contract Measurement Methodology: Extracting & Analyzing KPIs.
    - Developed a structured taxonomy for evaluating smart contract robustness, focusing on **Gas-Security Scores** and **Formal Verification** metrics.
    - Proposed a methodology integrating **Static Analysis** (Slither), **Dynamic Profiling** (Tenderly), and **Formal Verification** (Certora) to quantify the trade-off between execution efficiency and security vulnerabilities.

Advanced Certification in Data Science

IIIT Bangalore, India | Mar 2023 – Nov 2023

- **GPA:** 3.7/4.0
- **Focus:** Machine Learning, Predictive Analytics, and Python for Data Analysis.

Bachelor of Science (Electronics)

Guru Ghasidas Central University, India | Jun 2018 – Sep 2021

- **Capstone Project:** Greenhouse Control & Management System.
    - Engineered an automated environmental control system using **PIC Microcontrollers** and a sensor network to optimize temperature and humidity in real-time.

PROFESSIONAL EXPERIENCE

Graduate Administrative Assistant Troy University | May 2024 – Jun 2025

- **Operational Management:** Managed the **WC Online Portal** system to oversee scheduling and timesheet data for tutor payroll, ensuring operational accuracy for the Learning Center.
- **Technical Leadership:** Organized and facilitated workshops on emerging technologies, including **Artificial Intelligence** trends, for the university community.
- **Mentorship:** Provided technical tutoring to Computer Science undergraduates, reinforcing core concepts in programming and algorithms.

ACHIEVEMENTS

- **Winner (1st Position), TroyHack 2024:** Secured 1st position in a 24-hour hackathon by rapid-prototyping a 3D simulation game on education theme using Unity & C#.
- **International Olympiad of Mathematics:** Secured **1st Position in School** (2016) & **5th Rank in State** (2017).
- **HashiCorp Certified: Terraform Associate (004):** *[In Progress]*
- **Certified Kubernetes Administrator (CKA):** *[planned]*
- **AWS Certified SysOps Administrator:** *[planned]*