

AKASHDIP MAHAPATRA

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DevOps Engineer with hands-on AWS cloud infrastructure experience, specializing in automation, observability, and GenAI-powered tooling. Proven track record of reducing operational toil by up to 96% through custom-engineered workflows, for a global enterprise client. I also have hands-on experience designing and deploying production-grade GenAI applications.

TOOLS & SERVICES

- Cloud & IaC: Very good in - AWS, GCP, Azure, Terraform.
- AWS Services: Hands on experience on Lambda, S3, ECS, ECR, EventBridge, MSK (Kafka), EC2, DynamoDB.
- AI & GenAI: Projects on - LangGraph, RAG Pipelines, Vector Stores (Qdrant), Graph Databases (Neo4j), mem0.
- LLM Tooling: Hands on & good understanding Ollama, Hugging Face, Redis/Valkey queues, FastAPI deployment.
- DevOps & Monitoring: GitHub Actions, Jenkins, Docker, Datadog, AWS CloudWatch.
- OS & Networking: Linux (Ubuntu/RHEL), TCP/IP, DNS, Nginx, Wireshark, tcpdump.
- Programming: Good experience on Python (Boto3), Bash, C, SQL.

PROFESSIONAL EXPERIENCE

1. Tata Consultancy Services (TCS) | Onsite *Data Engineer (DevOps & Infrastructure Focus under Global Aviation Client)* | Aug 2025 - Present
 - Manage large scale AWS cloud infrastructure created by Terraform (IaC) and Docker (ECR). Our team is responsible for total 14 GitHub repos. Update/ fix code, new feature adds, all Datadog dashboards & monitor, Incident management; all those serverless execution for multiple environments (with Production) is my daily task.
 - Manage both secure internal event-driven pipelines and public-facing APIs too, ensure reliable data delivery for enterprise clients. Every day generated all flight & ground activities data around 100 GB process and showing output. Always ready for DLQ, clients 4xx 5xx problems.
 - Although I am part of L3 (DevOps team) but connect with other teams like L2 (Platform) team for update problems & sync up current situations and help each other. Indian team has active 60+ Datadog monitors across 5 environments, ensuring strict SLAs, support and maintain near-zero deployment downtime.
 - I am responsible for executing advanced production troubleshooting via SSH or Cloud console, utilizing deep Linux OS administration and log extraction techniques to rapidly resolve live infrastructure anomalies, complex routing issues, and DNS failures.
 - Engineered & deployed four major automation workflows within a 6-month timeframe (since I joined), reducing complex manual operational toil by up to 96% (transforming multi-hour cross-team tasks into sub-5-minute automated scripts). All Automation projects are explained below.
 - Below I explain an OS/Python Vulnerability Remediation Project – we have a option to use already developed native tool called GitHub dependabot, because Our Lambda created on Python 3.11 & dependabot suggest and create a PR to update the lambda itself create a Huge problem, So I developed our own custom tool/workflow according to our preference.
2. ILP at Tata Consultancy Services (TCS) | Remote *Network & DevOps Trainee (Global Technology Client)*
 - Hands-on troubleshooting deep Linux OS and networking issues, analysing **system calls** and network traffic using tcpdump and Wireshark.
 - I also deployed and configured Nginx reverse proxies and load balancers, successfully resolving HTTP 403/404 errors and DNS routing failures.
 - Hardened server security by implementing strict file permissions, also writing custom Bash scripts for system automation, & configuring network firewalls (UFW, iptables, AWS Security Groups).

SYSTEMS ENGINEERING & AUTOMATION PROJECTS

ENTERPRISE ENGINEERING PROJECTS (Tata Consultancy Services)

1. Post-Deployment Infrastructure Validation Engine

- Engineered a Python and Boto3 engine from scratch to auto-discover AWS resources (Lambda, SNS, API Gateway) and validate & compare before Vs after condition, also display the exact errors. And currently our team use this report as evidence, before this we must manually go all services, run commands & validate manually and create a report.
 - Impact:** Automated a 30-minute manual deployment checklist into a 5-minute zero-error pipeline, scan all services in Dev/UAT/Prod and generating audit-ready performance reports for DevOps team.

2. UAT Data Pipeline & Health-Check Automation

- Built a workflow can send API calls using boto3 manage by paginator and validate all Lambdas, topics, DLQs, end points (SNS/SQS) with all connectors. And update in Confluence page with colour coding graphs and maintain history.
 - Impact:** Reduced complex UAT validation from 1.5 hours of skilled engineering effort down to a 5-minute automated execution.

3. DevSecOps & OS/Python Vulnerability Remediation

- Engineered an automated vulnerability remediation workflow to patch critical CVEs in containerized Python Lambdas and optimize multi-stage Docker builds. Already explain the problem (need of this tool) above.
 - Impact:** Transformed a full-day manual process (involving environment setup, terminal coding, and manual deployment) into a 30-minute, zero-touch monitored execution, achieving a 42% Docker image size reduction.

4. Automated Data Extraction (Automated S3 Dumps)

- Developed Python-based solutions utilizing Boto3 to bridge legacy Oracle SQL databases with AWS S3 cloud storage for downstream analytics.
 - Impact:** Eliminated the need for manual data extraction, reducing a 30-minute cross-functional task requiring deep SQL/AWS expertise into a 2-minute automated event-driven trigger.

AI Engineering Projects (Independent)

5. Scalable RAG Knowledge Pipeline: Built a Retrieval-Augmented Generation pipeline utilizing LangGraph, Qdrant (vector store), and Redis/Valkey (async queues) for scalable, non-blocking document ingestion and meaning-based cosine similarity search.

6. Multi-Agent Memory System: Engineered agentic workflows with hybrid persistent memory (Semantic/Episodic via Qdrant, Relational via Neo4j & mem0) and integrated a chained voice-interface layer for natural language interaction.

7. Local LLM API Service: Deployed a local LLM (Ollama/Gemma) behind a FastAPI service, enabling private, low-latency inference utilizing structured JSON outputs and Hugging Face model integration.

ACADEMIC & INDEPENDENT PROJECTS

1. Lightweight Python Web Server (OSI Layer 4/7)

- Bypassed standard web frameworks and build my own raw HTTP server from scratch using basic Python TCP Socket Programming, handling low-level GET/POST request parsing.

2. Network Security & Packet Forensics

- Engineered a Python-based wireless penetration testing system to scan 802.11 traffic, capture handshakes, and test access point vulnerabilities around all nearby active devices.

PUBLICATIONS & APPLIED RESEARCH (Data Science & Machine Learning)

Modeling and Optimization of Surface Roughness of Electrodeposited Nickel Coating using Taguchi and Bonobo Optimizer | *Jadavpur University Press (ISBN: 978-81-993635-8-8)*

- Applied the Bonobo Optimizer (a meta-heuristic optimization algorithm) and Taguchi design of experiments to model, predict, and optimize complex physical processes.
- Demonstrated advanced capability in data-driven mathematical modeling, statistical analysis, and implementing optimization algorithms to solve multi-variable engineering challenges.

EDUCATION

Academy of Technology Engineering College | Hooghly, West Bengal *Bachelor of Technology in Mechanical Engineering* | Sep 2021 - 2025

- Applied mechanical systems-design principles and analytical problem-solving skills to complex cloud infrastructure and software architecture.
- **Mechanical Capabilities & Projects:** AutoCAD, SolidWorks (Advanced CAD, Sheet-Metal, Weldments), Ansys, MATLAB | **Key Focus:** Thermodynamics, Solid/Fluid Mechanics | **Applied Work:** 3D-printed working drone, fully functional V8 engine design, published academic research.

CERTIFICATIONS & QUALIFICATIONS

1. AWS Certified Cloud Practitioner (**Perfect Score: 1000/1000**)
2. Microsoft Certified: Azure Network Engineer Associate
3. Microsoft Certified: Azure AI Fundamentals
4. Google Cloud Certified Professional (Cloud Digital Leader)
5. Oracle Cloud Infrastructure 2024 Certified Foundations Associate
6. Oracle Cloud Infrastructure 2025 Certified AI Foundations Associate
7. Oracle AI Vector Search Certified Professional
8. FinOps Certified Engineer (The Linux Foundation)
9. GitHub Certifications: Advanced Security, Actions, Administration & Copilot
10. Prompt Engineering for AI Bootcamp (Udemy, 2026)
11. Full Stack Generative & Agentic AI with Python (Udemy, 2026)
12. Postman Student Expert
13. NASA Open Science 101 Qualification.

AWARDS & RECOGNITION

- TCS Gems - **Star of the Month Award** | **Tata Consultancy Services** | July 2026
Recognized for outstanding contribution to the global aviation client's data platform.
- **National Award** for Exceptional Achievement | **Government of India** | 2012
Awarded directly by the President of India (Pranab Mukherjee) in recognition of exceptional national-level illustration and design skills.