

# Suryapratap Singh

**Solutions Architect | Engineering Lead (Cloud, SaaS & AI Systems)**

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Master Portfolio: <https://profile.networktopology.online>

## Professional Summary

AWS Certified Solutions Architect and Full-Stack Engineering Leader with 15+ years of experience designing, implementing, and deploying high-performance SaaS, real-time communication, and AI-powered distributed systems. Expert in writing production-grade code (Node.js, React, TypeScript, FastAPI) while architecting resilient cloud infrastructure (AWS) following the Well-Architected Framework. Proven track record in microservices topology, multi-tenant database isolation, API strategy, cost optimization, and multi-agent system design.

## Core Technical & Architectural Skills

- **Cloud Infrastructure & Architecture:** AWS (EC2, Lightsail, S3, CloudFront, VPC, NAT Gateway, IAM, Route 53), Cloud-Native Architecture, Well-Architected Framework, Cost Management
- **Full-Stack Engineering:** Node.js, React, TypeScript, JavaScript, FastAPI, Python, RESTful APIs, WebRTC, HTML5/CSS3
- **System Design & Multi-Tenancy:** Microservices Architecture, Event-Driven Systems, Reverse Proxies (Nginx), Load Balancing, High Availability, Row-Level Security (RLS)
- **AI & Emerging Tech:** LLM Orchestration (Bedrock, OpenAI), Retrieval-Augmented Generation (RAG), Custom Multi-Agent Frameworks, LangGraph, Pinecone Vector Databases
- **Data Architecture:** PostgreSQL, MySQL, Data Modeling, Caching Strategies (Redis/LRU), Indexing Optimization
- **DevOps & Security:** Docker Containerization, CI/CD Pipelines (GitHub Actions), Client VPN Configuration, OpenTelemetry, Infrastructure Monitoring

## Professional Experience

**Rooms (gobuildrooms.com) | Engineering Lead – Cloud & AI Systems**

*Sep 2025 – May 2026*

- **Architected and deployed** the cloud-native infrastructure for an AI-powered collaborative workspace on AWS, ensuring high availability, fault tolerance, and security boundaries.
- **Hands-on engineered scalable microservices** utilizing React, Node.js, and FastAPI, blending heavy full-stack implementation with advanced system layout.
- **Designed and developed a custom, typed multi-agent DAG runner** in native TypeScript to handle LLM orchestration and vector store scaling (Pinecone namespaces) without external framework dependencies.
- **Led AWS architectural strategy** with a strict focus on the AWS Well-Architected framework pillars: scalability, cost optimization, and operational excellence.

- **Established robust CI/CD pipelines** using GitHub Actions for automated building, testing, and zero-downtime deployments via S3 sync and CloudFront invalidation.
- **Supervised a cross-functional team of 2–4 engineers**, driving architecture reviews, system design documentation, and engineering best practices.

### **Forgeahead Solutions (Echo360) | Senior Full-Stack & Systems Engineer**

*Sep 2021 – Aug 2025*

- **Drove platform modernization initiatives**, refactoring legacy software layers into highly reliable, scalable React and Node.js enterprise applications.
- **Designed high-throughput RESTful APIs** and optimized backend data-authoring workflows serving global enterprise and university customers.
- **Identified architectural bottlenecks** in data-intensive system layers, materially improving platform reliability, database queries, and front-end user experience.
- **Facilitated cross-functional technical alignment** across distributed engineering, product management, design, and QA teams.

### **Ola | Software Development Engineer 3**

*Jun 2021 – Sep 2021*

- **Contributed to technical and architectural reviews** for a massive-scale consumer mobility and payment ecosystem.
- **Hands-on engineered reliable payment integration modules** optimized for low-latency transaction handling on Ola's PWA platform using JavaScript/TypeScript.

### **Glim Classes | Founder & Solutions Engineer**

*Jun 2020 – Jun 2021*

- **End-to-end architected and implemented** a real-time online learning system from scratch using React, Node.js, and AWS.
- **Designed live-classroom infrastructure** managing WebRTC media streams, active screen sharing, automated session recordings, and content delivery networks (CDNs).
- **Managed full operational support**, implementing automated infrastructure monitoring, user administration services, and cloud cost management.

### **Impartus Innovations (UpGrad Campus) | Senior Software Engineer**

*Jul 2016 – Jun 2020*

- **Designed and coded cloud-hosted video-learning systems** using AngularJS, React, Node.js, and MySQL while integrating WebRTC-based virtual classroom capabilities.

### **Innominds (Deloitte) | Senior Software Engineer – UI & Systems Visuals**

*Jun 2015 – Jul 2016*

- **Led front-end architecture and visualization strategy** for a data-intensive Marketing Operations analytics dashboard using Angular and D3.js.

### **Vizury / Fastenal India / Dassault Systèmes | Engineering Roles Jul 2010 – Jun 2015**

- **Engineered core analytics components, enterprise product management tools**, and heavy manufacturing software features using diverse tech stacks (Java, AngularJS, C++, CAA Architecture).

## Technical Portfolio & Live Labs

### Enterprise Cloud Control (ECC) Dashboard | Architect & Developer

Live Link: <https://ecc.networktopology.online/dashboard>

- **Architected and built an operations-focused dashboard** displaying microservices topologies, multi-tenant database connection pools, dynamic ingress routing rules, and real-time system metrics.
- **Engineered a tiered model routing engine** (Claude Haiku/Sonnet, GPT-4o-mini) achieving a 50-70% reduction in LLM inference costs by separating quick query rewrites from final synthesis steps.
- **Designed a production-ready security framework** outlining Cognito/Auth0 gateway integration, tenant isolation via Postgres Row-Level Security (RLS), and PII masking within the ingestion pipeline.
- **Drafted complete infrastructure scaling strategies** utilizing SQS queues to buffer ingestion bursts and mapped Terraform configurations for ECS service topologies.

### Technical Leadership & Impact

- **Cross-Functional Bridge:** Proven capability to act as the technical translator between business executives, founders, and engineering development teams.
- **Governance & Mentorship:** Experienced in driving system design workshops, standardizing API guidelines, and running comprehensive code and architecture reviews.

### Education & Certifications

- **AWS Certified Solutions Architect** | Amazon Web Services
- **B.Tech, Chemical Engineering (GPA: 8.9/10)** | Indian Institute of Technology (IIT), Guwahati
- **Machine Learning: From Data to Decisions** | Massachusetts Institute of Technology (MIT)

### Awards & Recognition

- **All India Rank (AIR) 2324** – IIT-JEE
- **High Achiever Awards (2016, 2018, 2019)** – Impartus Innovations
- **Brand Excellence & Kudos Award** – Dassault Systèmes
- **Star Performer Awards** – Innominds and Fastenal