

Akhilesh Babu Tumati

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PROFESSIONAL EXPERIENCE

Full Stack Developer (Part-time) | Virginia Tech

June 2025 – December 2025

- Developed a scalable **academic content platform** using **Next.js 15 (React 19)** and **Express.js**, reducing initial FCP from approximately **2.4s to 1.4s (40%)** and supporting sub-second search across 10+ domains.
- Implemented a **serverless cloud infrastructure** on AWS (S3, CloudFront) via **CloudFormation**, selecting serverless to minimize operational overhead and pair cleanly with **MongoDB Atlas**, cutting operational costs by **25%** versus the EC2 baseline.
- Optimized **AWS Lambda** backends and **MongoDB connection pooling**, reducing cold-start latency from **980ms to 540ms (45%)** to handle peak concurrent usage during ingestion windows.
- Hardened auth and access control with **MFA**, **5-tier RBAC**, and **JWT token blacklisting**, securing user sessions across the platform.

Full-Stack AI-Engineer | Sponsored Capstone – Virginia Tech IPD, Marine Corps Community Services

Sep 2024 – May 2025

- Built a real-time **ML fraud detection** pipeline (**Python, XGBoost**) for the MCCS e-commerce platform, using **GAN-augmented synthetic** data to counter class imbalance and deliver **sub-second risk scoring on 15,000+ daily transactions**.
- Achieved **95% accuracy** and **98% recall** through model tuning and comparative evaluation of multiple classification algorithms, improving early identification of suspicious transactions.
- Engineered a **RAG assistant (Google Gemini, LangChain, FAISS, embeddings)** to ground **Explainable AI (XAI)** audit reports in fraud context, producing **150+ monthly reports** and cutting the sponsor's manual PDF prep by **~12 hours/week**.
- Implemented a **real-time monitoring dashboard (React, Node.js, Tremor, Recharts)** to track fraud patterns and support **seamless model retraining**, enabling scalable integration with the existing e-commerce infrastructure.

Software Engineer | UPS

August 2023 – August 2024

- Orchestrated **20+ monthly zero-downtime releases** for high-traffic address-analytics and logistics microservices through **Jenkins** CI/CD into **OpenShift/Kubernetes**, cutting deployment errors by **30%** across UPS's global delivery network.
- Maintained **99.99%** system availability for distributed **Java** microservices by authoring **Grafana** and **Dynatrace** alert rules on **Couchbase** NoSQL cluster health, proactively detecting and resolving P1 SLA incidents before customer impact.
- Owned schema design and data integrity for production **Couchbase** NoSQL databases backing **10M+ daily address lookup operations**, optimizing NoSQL query patterns and index strategies to cut average query latency by **35%**.
- Executed global migrations across **APAC/EU/US** using **Red Hat AMQ Streams (Kafka)** and **MirrorMaker 2**, ensuring synchronized production data and automated backups to **Azure** for disaster recovery.

Software Developer Engineer | Honeywell

January 2023 – July 2023

- Shipped full-stack features for **ASDS (Aerospace Data Services)**, a customer-facing **B2B e-commerce platform** serving **500+ enterprise aviation clients**, enabling online ordering of aerospace parts and real-time flight data with **Angular** and **Java Spring Boot**.
- Built **15+ reusable Angular UI components** backed by **Java Spring Boot** REST controllers with **JPA ORM**, reducing frontend development time by **25%** and eliminating code duplication across 3 modules.
- Wrote **200+ end-to-end automation test cases** for payment gateway integrations and revenue-critical workflows using **Java Selenium** and **Katalon Studio**, achieving **85% regression coverage** and reducing QA cycle time by **40%**.
- Managed **CI/CD pipelines** via **Bamboo** and **Bitbucket** with **Coverity** and **Blackduck** security scans integrated into every build, reducing security vulnerabilities by **60%** and ensuring **zero critical-CVE** deployments to production.

TECHNICAL SKILLS

Languages: Java, JavaScript (ES6+), TypeScript, Python, SQL, Node.js, Data Structures & Algorithms

Frameworks & Libraries: React 19, Next.js 15, Angular, Express.js, FastAPI, Spring Boot, Socket.io, Tailwind CSS, Tremor UI, Recharts

AI & GenAI: RAG, LangChain, FAISS, Embeddings, Prompt Engineering, Explainable AI (XAI), XGBoost, GANs, Claude code, Cursor, MCP, Fal.ai.

Cloud & DevOps: AWS (Lambda, EC2, S3, CloudFront, CloudFormation, Route53, Sagemaker, Amplify), Azure, Docker, Kubernetes, Kafka, OpenShift, Jenkins, Bamboo, CI/CD, Grafana, Dynatrace

Databases: MongoDB, PostgreSQL (Prisma ORM), MySQL, Oracle SQL Developer, DynamoDB, Couchbase, NoSQL

Tools, APIs & Testing: Git, Bitbucket, REST APIs, GraphQL, JWT, Selenium, Katalon Studio, Coverity, Blackduck

EDUCATION

Virginia Tech — Master of Engineering in Computer Science

GPA: 4.0/4.0

August 2024 – May 2026

PROJECTS

Evol Jewels: AI-Powered Virtual Try-On Kiosk

- Engineered a high-impact retail kiosk using **Next.js 15** and **TypeScript**; integrated **fal.ai** generative workflows to improve virtual try-on image quality by 30% using reasoning-guided generation.
- Awarded 2nd place at Fountane hackathon**; orchestrated dynamic catalog data using **Prisma ORM** and **PostgreSQL** with secure lead capture via QR-code integration and automated email notifications.

PUBLICATIONS

- Tumati, A. B.**, “Face Invariant Classification and Detection of Mythological Characters (ClaDeMuC-CD).” **2023 IEEE ICAECT**.
- Tumati, A.B.**, “Hybrid ML and DL models for flood level prediction.” **International Journal of Health Sciences**.