

KOMAL UPADHYAY

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EXPERIENCE

Mercedes-Benz Research & Development North America

Software Development Engineer Intern

Sunnyvale, CA, USA

May 2024 - Dec 2024

- Collaborated with a team of 6 engineers through all phases of the SDLC to design and scale 10+ Restful APIs in a microservices architecture using GoLang (GORM), REST, gRPC, and Protocol Buffers (protobufs).
- Employed advanced data structures (hash maps, queues) and algorithms (load-balancing) in ingestion pipelines, reducing drop rates to near zero under high traffic; achieved a 150x revenue increase by ensuring accurate, reliable data processing.
- Architected and implemented concurrent and parallel processing modules—using Go routines, thread pools, LRU caching data structures, Redis, and Apache Kafka—to maximize multi-core throughput, enable real-time Pub/Sub messaging across six topics, and prevent data loss in time-series and geospatial workloads.
- Managed AWS, Azure, Kubernetes, PostgreSQL (PostGIS & TimescaleDB) resources with automated Terraform provisioning; applied partitioning strategies, query-optimization algorithms, detailed design specs, and architecture diagrams.

Bank of New York Mellon

Database Developer

India

June 2021 - March 2022

- Led a team of 5 through full SDLC to implement Liquibase CI/CD for SQL Server, cutting deployments by 80% for 200+ users.
- Conducted security audits and threat modeling across four financial apps, remediating SQL injection vulnerabilities and boosting security by 70%.
- Optimized 500+ SQL queries with indexing and set-based algorithms, improving execution times by 20%.

Tata Consultancy Services

Software Engineer

India

Nov 2019 - May 2021

- Managed master data and customized five Infor CloudSuite Industrial ERP modules, boosting data consistency by 30% and operational efficiency by 20%. Engineered a three-level workflow approval utility with concurrent state machines and parallel processing, cutting PO/RFQ approval times by 40%.
- Executed SSIS data migrations with error-handling algorithms (99% accuracy) and built SSRS/VB.NET reports, accelerating decision-making by 25%.

PROJECTS

SkillMatchPro *Django, React, GPT4, MySql*

- Developed a full-stack bidding platform using React for the frontend and Django for the backend API.
- Achieved a responsive and mobile-friendly design through Bootstrap and CSS Grid.
- Deployed the platform on Google Cloud Platform App Engine, configuring load balancing and auto-scaling.
- Created Chatbot using GPT 4 for Natural Language Querying of MySQL Database.
- Integrated MySQL for relational database management and designed a normalized database schema.

Pawsome Pals *Social Media Android App Java, Android Development, Firebase, API, Camera, Location Features*

- Developed a Java-backed Android App using Firebase multi threading APIs to fetch and render data.
- Integrated Firebase Authentication for secure user authentication with Firebase Firestore for real-time storage.
- Asynchronous tasks handling and streamlining data flow with Google Maps API for location-based features.
- Employed deep linking techniques for seamless navigation within the app. Applied algorithm-based ranking using machine learning algorithms for personalized recipe posts.

AutoPurgeX: Event-Driven Object Lifecycle Orchestrator on AWS *AWS*

- Designed a serverless object lifecycle orchestration system using S3, SNS, SQS, and Lambda to enforce storage quotas in real-time.
- Integrated CloudWatch Logs metric filters, log parsing, and alarm-triggered compute flows to dynamically track and react to changes.
- Orchestrated a fault-tolerant fanout architecture with decoupled downstream consumers and conditional IAM policies for secure cross-service invocation.

EDUCATION

Northeastern University San Jose, CA, USA

Master's Computer Science - GPA 4.0

San Jose, CA, USA

Jan 2023 - April 2025

Algorithm, Data Structure, Database Management, Android Dev, Web Development, Distributed Systems, Cloud Computing

Dr. A. P. J. Abdul Kalam Technical University India

Bachelor's, Electrical Engineering - GPA 3.7

Computer Concepts and Programming in DBMS, Embedded Systems, Data Communication Networks

SKILLS

Programming Languages: Java, Go, Python, JavaScript, HTML, CSS, Kotlin

Cloud: AWS (S3, Lambda, Dynamodb, RedShift), Azure (DevOps, Data Lake, Key Vault, Event Hubs), GCP (Pub/Sub, FireStore)

Libraries and Tools: Android SDK, React, Django, Bootstrap, Node.js, Netlify, Git Version Control

Databases: MySQL, SQL Server, MongoDB, Firebase, PostgreSQL