

# Vatsal Kirtikumar Gandhi

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## About

Detail-oriented software engineer pursuing an MS in Software Engineering at San Jose State University, with a strong focus on backend development, distributed systems, and cloud-native architectures. Experienced in designing and optimizing scalable, fault-tolerant, high-concurrency microservices and event-driven workflows, with an emphasis on system reliability, automation, and performance. Skilled in applying testing best practices and known for adaptability, ownership, and collaborative problem-solving in Agile environments.

## Education

- MS in Software Engineering

San Jose State University, San Jose, CA

Jan 2025 – Dec 2026 (Expected)  
GPA: 3.85

Coursework: Enterprise Software Platforms, Software Systems Engineering, Enterprise Distributed Systems, Enterprise Application Development, Data Mining, Machine Learning
- B. Tech in Computer Science and Engineering

Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, India

Oct 2020 – May 2024  
GPA: 3.94 (9.31/10)

Coursework: Computer Programming, Data Structures, Design and Analysis of Algorithms, Object-Oriented Programming, Compiler Design, High Performance Computing, Operating Systems, Database Management Systems, Web Development, Computer Networks, Cloud Computing, Big Data, Artificial Intelligence, Data Analytics, Statistics

## Skills

- Programming Languages: Python, Java, JavaScript, TypeScript, C++, Go, Bash
- Backend Systems: Distributed Systems, Microservices, Event-Driven Architecture, API Design, Scalable & High Availability Systems
- Frameworks & Libraries: FastAPI, Spring Boot, Node.js, Express.js, Flask, React.js
- Databases: MySQL, PostgreSQL, MongoDB, DynamoDB
- Cloud & DevOps: AWS (ECS, ECR, Fargate, EC2, Lambda, S3, CDK, IAM), Docker, CI/CD (GitHub Actions, AWS CodePipeline), Infrastructure as Code (AWS CDK, CloudFormation), Kubernetes (exposure), Swagger/OpenAPI, Jenkins
- Observability: AWS CloudWatch (metrics, alerts), Logging, Tracing, Dashboards
- Development & Testing Tools: Git, JUnit, PyTest, Postman, IntelliJ, JIRA, Encryption, REST APIs, GraphQL, gRPC
- Other Skills: Linux, Agile Development, System Design, Debugging, Problem Solving, Collaboration, Ownership, CLI

## Experience

- Software Engineering Intern

Equal Identity Pvt. Ltd.

Hyderabad, India  
Sept 2023 – Nov 2024

Developed and maintained scalable, production-grade, **microservices-based** backend services using **Python (FastAPI)**, delivering modular RESTful APIs for high-traffic, business-critical workflows.

Built and deployed containerized services with **Docker** → **Amazon ECR** → **ECS Fargate**, integrated into automated CI/CD pipelines with **AWS CodePipeline**.

Designed and deployed distributed, **event-driven data pipelines** using **AWS (SNS → Firehose → S3, Glue, Athena, Lambda)**, reducing manual reporting effort by **90%** and enabling near real-time observability.

Provisioned multi-environment cloud infrastructure with **Java + AWS CDK**, improving deployment consistency and scalability.

Set up monitoring and alerting with **AWS CloudWatch**, enhancing reliability and reducing incident response times by **50%**.

Boosted **face-matching ML model** F1 score from **70% → 93%** through algorithm refinement and data optimization; developed a 1:N retrieval proof-of-concept using **Vector Databases (Pinecone)**.

Refactored a latency-sensitive **Bank Statement Analytics API** in **Node.js** for multi-provider integration, applying OOP and modular design principles to cut average response time by **43%** and reduce onboarding time for new providers by **66%**.

Collaborated in Agile sprints through planning, code reviews, and iterative releases; documented APIs for cross-team integration.

## Projects

- TravelSwarm – AI-Powered Travel Planning Assistant

Developed a **distributed, microservices-based backend** enabling intelligent travel itinerary planning.

Integrated **CrewAI** and **Google Vertex AI (Gemini)** for LLM-driven itinerary generation; used **RabbitMQ** for async communication and **PostgreSQL** for persistent state.

Containerized services with **Docker** and automated deployments through CI/CD pipelines, improving iteration speed and reliability.
- BookTable – Cloud-Native Restaurant Booking System

Built a **cloud-native, microservices-based booking system** with **Java (Spring Boot)**, **ReactJS**, and **MongoDB**, supporting search, reservations, real-time availability, and role-based access (**Customer, Manager, Admin**).

Developed secure **REST APIs** with **OAuth2**, **JWT**, and **RBAC** for authentication, restaurant management, and reviews; added dashboards, notifications, and Google Maps integration for enhanced usability.

Automated deployments with **CI/CD pipelines** (GitHub Actions) on **AWS (EC2, ALB)** with autoscaling under variable workloads.
- SJ Hopes – Real-Time Shelter Coordination Platform

Built a **full-stack, microservices-based platform** for shelters and support staff using **Java (Spring Boot)** and **MySQL**, enabling live task workflows, geolocation-based availability, and analytics dashboards.

Delivered a user-centric solution recognized for **impact and scalability**, winning **2nd Prize at SJ Hacks Hackathon**.

Enhanced reliability with **application logging and performance metrics**, improving debugging and operational monitoring.

## Academic Experience

- Instructional Student Assistant (TA/ISA) – CMPE 138 & CMPE 148

Aug 2025 – Present

Assist in teaching **Database Systems** and **Computer Networks** at San Jose State University.

Guide students on **SQL**, **schema design**, **query optimization**, **TCP/IP**, **routing**, and **socket programming**.

Conduct office hours, deliver occasional lectures, grade assignments, and mentor **60+ students** to reinforce core CS concepts.