

Deependra Kumar

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EXPERIENCE

Software Engineer | Bangalore/Remote

NeuralHQ Technologies

May 2024-Present

Agentic framework for customer support

Nov 2024- Present

Built and deployed a real-time AI-driven customer support framework to enable automated, context-aware conversations at enterprise scale.

- **Objective & Impact** – Designed to deliver instant, AI-assisted responses, reducing customer query resolution time by **~60%** and improving operational efficiency for support teams.
- **Scale** – Backend optimized to handle **2000+ RPM** with thousands of concurrent WebSocket connections across microservices.
- **Architecture** – Developed from scratch using **FastAPI, PostgreSQL, Redis, and Redis Streams**, implementing modular service layers for complex business logic and high-throughput DB queries.
- **Cloud & Deployment** – Deployed on **Google Kubernetes Engine (GKE)** using **Docker** and **Kubernetes**, configured **Nginx Ingress Controller** for scalable WebSocket handling.
- **Monitoring & Optimization** – Implemented **HPA, custom HPA** scaling based on active connections via **Prometheus**, enabled **distributed tracing with OpenTelemetry**, and set up **GCP Alerts** for proactive anomaly detection.
- **Collaboration** – Partnered with **frontend engineers** to align API contracts and with **DevOps teams** for Kubernetes networking optimization.
- **CI/CD** – Automated pipelines using **GitHub Actions** for build, test, and deploy workflows.

ML inference Pipeline on AWS

May 2024-Nov 2024

Architected a fully serverless, on-demand ML inference pipeline to process large-scale datasets and deliver AI-driven categorisation within minutes.

- **Objective & Impact** – Automated processing of CSV data into ML predictions, reducing manual data handling from **2–3 days to under 30 minutes**.
- **Scale** – Concurrently processed **thousands of records per batch** across **7 ONNX models (each 110–250M parameters)**, each trained to extract an attribute from data.
- **Architecture** – Event-driven design using **Amazon S3, AWS Lambda, and Step Functions** for ingestion, transformation, model inference, and results aggregation.
- **Concurrency Management** – Controlled parallelism to **2 active branches**, each processing 500 records simultaneously per model to balance speed and cost.
- **Cost Optimization & Reliability** – Implemented automatic teardown of SageMaker endpoints post-inference, with robust failure handling.
- **Collaboration** – Worked closely with **ML engineers** to integrate ONNX models and with **data engineers** for preprocessing and schema validation.
- **Monitoring & Logging** – Added centralized logging in **CloudWatch** and update/error alerts for pipeline health tracking on **slack**.

PROJECTS

Dynamic Blog Website I

Built a Flask-based web app with user accounts, secure login, and tools to create, edit, and delete blog posts.

Employee Management System I

Designed a class-based Python program to manage employee data, including database setup and full CRUD operations.

Countdown Timer Application I

Developed a Python timer that displays live countdowns in HH:MM:SS format with real-time updates.

EDUCATION

Shri Vaishnav Institute of Technology and Science

B.E. in Electrical Engineering

CGPA 8.1/10

Indore (M.P), India

SKILLS

Backend Technologies:

Python • FastAPI • PostgreSQL • REST APIs • Redis • Redis Streams • Microservices

DevOps & Infrastructure:

Docker • Kubernetes • Git • CI/CD • Logging & Monitoring • GCP Alerts

Cloud Platforms:

AWS (SageMaker, Lambda, Step Functions, ECS) • Google Cloud Platform (GKE, Monitoring, Logging, Alerting)

Operating Systems:

Linux • Windows

Tools & Miscellaneous:

GitHub • SQL • Cursor • Vscode

ACHIEVEMENTS

- Python Gold Badge (*HackerRank*)
- Problem Solving Gold Badge (*HackerRank*)
- SQL Silver Badge (*HackerRank*)

HONORS AND AWARDS

BEST TEAM AWARD I

Helped Team achieve Best Team Award **once** attracting client appreciation.

K VASUDEVAN AWARD I

Received K Vasudevan Award for being among the top 1000 final year students. SVITS, Indore I 2019