

MANIKANTA GOPI

Senior Software Engineer — Backend & Platform Engineering

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PROFESSIONAL SUMMARY

Senior Software Engineer with 4+ years building, operating, and scaling production backend and cloud platforms. Ship and own services in Ruby on Rails, NestJS/TypeScript, and Go, backed by MySQL, MongoDB, Redis, and queue-driven workers on AWS EKS. Own the GitOps configuration for a 24-service production fleet and cut infrastructure cost by ~90% on the largest workload. Comfortable debugging end to end — API to database to queue to Kubernetes to cloud — and validating every change with production measurements.

TECHNICAL SKILLS

Languages: Ruby, TypeScript, Go, Python, SQL, Dart

Backend: Ruby on Rails, NestJS, Node.js, Gin, GORM, REST APIs, WebSockets, Socket.IO, Distributed Systems, Event-Driven Architecture

Async & Messaging: Sidekiq, BullMQ, Async, Redis Pub/Sub, NATS JetStream, Queue-Driven Workers, Idempotency, Retries

Databases & Storage: MySQL, PostgreSQL, MongoDB, Redis, Dragonfly, OpenSearch, Elasticsearch, Amazon S3

Cloud: AWS (EKS, RDS, Lambda, S3, CloudFront, Route 53, IAM, VPC), Azure (AKS, Front Door, Log Analytics), GCP (GPU/ML workloads)

Kubernetes & IaC: Kubernetes, Amazon EKS, Azure AKS, Helm, Terraform, KEDA, Karpenter, Docker, Flux, ArgoCD, APISIX, Velero, GitOps

CI/CD: GitHub Actions, CircleCI, Docker, Automated Image Promotion, Infrastructure as Code

Observability: Prometheus, Grafana, Loki, New Relic, Application and Infrastructure Metrics, Centralized Logging

ML / Computer Vision: PyTorch, ONNX Runtime, OpenCV, BiRefNet, SCRFD, GPU Inference

AI-Assisted Development: Cursor, Claude Code, CodeRabbit (daily use for development and PR review)

PROFESSIONAL EXPERIENCE

Circleapp Online Services (Praja) — Hyderabad, India

Senior Software Engineer | April 2025 – Present

- Own the GitOps repository that deploys and operates ~24 production services on AWS EKS, covering Helm charts, multi-environment configuration, automated image promotion, releases, and rollbacks.
- Re-architected video processing from AWS Lambda + FFmpeg to queue-driven Kubernetes workers autoscaled with KEDA, reducing cost from ~\$18,000/month to ~\$1,800/month (~90%) while preserving processing capability.
- Introduced Karpenter with mixed Spot and On-Demand capacity and right-sized workload resource requests, reducing Kubernetes compute spend by ~\$400/month.
- Optimized resource-intensive database workloads and the application behaviour driving them, cutting database cost by ~\$500/month.
- Added S3 lifecycle and expiry policies for ephemeral media, saving ~\$800 in the first month by preventing unnecessary object accumulation.
- Migrated production queue and cache infrastructure from Redis to Dragonfly with zero downtime.
- Replaced a paid third-party vision API with a self-hosted background-removal service (Python, ONNX Runtime, BiRefNet, SCRFD, OpenCV) on GPU-backed Kubernetes nodes; validated the face-detector replacement against ~200 production images before rollout.
- Lead production troubleshooting across APIs, Rails services, MySQL, Redis/Dragonfly, background workers, Kubernetes workloads, networking, and third-party dependencies, using Prometheus, Grafana, Loki, and New Relic to separate symptoms from root cause.

Software Engineer | May 2022 – March 2025

- Led the migration of production workloads from Azure AKS to AWS EKS with no planned maintenance window, using Terraform and an incremental service-by-service cutover across Kubernetes workloads, DNS (Route 53), CDN (CloudFront), deployments, traffic migration, validation, and decommissioning of legacy infrastructure.
- Built and owned a real-time messaging service (NestJS, TypeScript, Socket.IO, Redis Pub/Sub, MongoDB, BullMQ) that moved WebSocket traffic off the primary Rails application and distributed events across horizontally scaled instances.

- Delivered backend features across a large Rails application of ~185 models, 211 background workers, and 28 Sidekiq queues, spanning APIs, business logic, permissions, search (OpenSearch), and third-party integrations.
- Implemented subscription and payment lifecycle workflows including charge scheduling, grace periods, refunds, and state transitions, with idempotent handling of duplicate payment-gateway callbacks arriving out of order.
- Built asynchronous poster and video generation for paid features (NestJS, FFmpeg, Puppeteer, Redis, S3) with job status tracking and failure handling, keeping expensive media work off the API request path.
- Built a Go notification service (Gin, GORM, Redis, Async, Firebase Cloud Messaging) supporting targeted push delivery by district, state, party, and circle.
- Maintained CI/CD across CircleCI, GitHub Actions, Docker, Helm, Terraform, and Flux, and standardized GitOps practices so every production change was traceable in version control.
- Evaluated self-hosted Loki-based logging to reduce dependence on expensive managed logging infrastructure.

Software Engineer Intern | November 2021 – April 2022

- Built Flutter features for the messaging experience, including conversation types, message deletion, link and post previews, and member lists.
- Implemented and integrated the supporting Rails API endpoints, working across mobile UI and backend layers to ship complete features.

Continual Engine — **Machine Learning Intern** | 2021

- Built image-to-text models in PyTorch for structured scientific and chemical content, using autoencoders for feature extraction and representation learning.
- Handled preprocessing, training, evaluation, and supporting Python tooling around model outputs.

SELECTED PROJECTS

sidekiq-assured-jobs — Ruby, Sidekiq, Redis, RSpec

Open-source Ruby gem that prevents loss of in-flight Sidekiq work. Tracks running jobs, detects work interrupted by unexpected worker termination, and re-enqueues it. Published with an RSpec test suite.

github.com/praja/sidekiq-assured-jobs

rails2x — Go, tree-sitter, Goravel, GORM

AST-based Rails-to-Go migration engine: parses a Rails codebase with tree-sitter and generates Goravel Go code for models, CRUD controllers, Sidekiq workers, Pundit policies and RSpec scaffolds, with a strict mode that refuses partial output.

github.com/ItsManikantaGopi/rails2x

Seeker: Search Engine from First Principles — TypeScript

Built an inverted index, BM25 ranking, Levenshtein automata, FSTs, BKD trees and a byte-level segment format in ~20,000 lines of TypeScript, documented in a 43-chapter book.

Production GitOps Platform — Kubernetes, AWS EKS, Helm, Flux, ArgoCD, Terraform, KEDA, Karpenter

GitOps-managed platform for ~24 services with environment-specific configuration, automated image updates, queue-driven autoscaling, node provisioning, Prometheus/Grafana monitoring, and Loki centralized logging.

Queue-Driven Video Processing Platform — NestJS, FFmpeg, Kubernetes, KEDA, Redis, S3

Asynchronous media pipeline using queue depth as the worker scaling signal, replacing Lambda + FFmpeg execution and reducing cost by ~90%.

EDUCATION

B.Tech, Computer Science — Rajiv Gandhi University of Knowledge Technologies, Nuzvid | 2022 | GPA: 9.3 / 10