

Harsh Makwana

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PROFESSIONAL SUMMARY

Senior Backend / Systems Engineer with 6+ years of experience building real-time, GPU-accelerated streaming platforms and large-scale backend systems. Built on-demand cloud infrastructure for low-latency video streaming (sub-200ms) using AWS GPU instances and FFmpeg pipelines. Strong expertise in event-driven architectures using Temporal, gRPC, and RabbitMQ, with a focus on reliability, scalability, and cost optimization.

TECHNICAL SKILLS

Languages & Frameworks: Node.js, TypeScript (Primary), NestJS, Python (Secondary)
Distributed Systems: Temporal.io, RabbitMQ, gRPC, Event-driven architecture, CQRS, SAGA, Microservices Architecture
Infrastructure & Cloud: AWS (EC2, ECS, Lambda, S3, IVS), Docker, GitHub Actions CI/CD
Databases & Observability: PostgreSQL, Redis, MongoDB, Prisma, Grafana Stack
Streaming: FFmpeg, NVENC, RTMP/SRT/WebRTC, Low-Latency Video Orchestration

EXPERIENCE

Senior Software Engineer

Jan. 2023 – Present

Simform Solutions

Ahmedabad, GJ

- Architected a real-time GPU-based video streaming platform using Amazon EC2, FFmpeg (NVENC), and AWS IVS, achieving sub-200ms latency for 1080p/60fps streaming while enabling automated provisioning and reducing manual operational overhead.
- Architected event-driven microservices using RabbitMQ and Python, reducing manual intervention and improving reliability for stream lifecycle orchestration with auto-recovery and failover.
- Led architecture of a multi-tenant delegation system using NestJS, gRPC, and Temporal, supporting complex multi-step workflows across services and improving system scalability and maintainability.
- Engineered Temporal workflows handling 1M+ executions, implementing retry policies and rate limiting to improve reliability of notification delivery and third-party integrations.
- Optimized GraphQL APIs with geolocation queries using spatial indexing, geo-fencing, and caching, reducing response latency and improving query efficiency for high-traffic endpoints.
- Drove team adoption of Temporal by delivering hands-on sessions with real-world workflow demonstrations, improving consistency in workflow implementation across services.

Software Engineer

Jan. 2020 – Dec. 2022

Simform Solutions

Ahmedabad, GJ

- Built backend APIs using Node.js and GraphQL for data aggregation workflows, web crawlers (Puppeteer), and third-party API integrations across production systems.
- Led hands-on workshop on microservices, improving team adoption of service decomposition principles and scalable systems practices.
- Introduced asynchronous job processing using RabbitMQ and BullMQ for background tasks and integration workflows, improving system reliability and execution consistency.
- Automated CI/CD pipelines using AWS CodePipeline, EC2, and S3, along with GitHub and Bitbucket, reducing deployment time from manual multi-step processes to minutes and improving release reliability.

Junior Software Engineer

June 2019 – Jan. 2020

Simform Solutions

Ahmedabad, GJ

- Developed desktop applications using Electron.js and Angular, supporting 1000+ users with consistent UI, performance optimization, and API integration.

KEY PROJECTS & OPEN SOURCE

nestjs-temporal-core / nestjs-grpc | *Node.js, TypeScript, NestJS*

2023 – Present

- Developed and maintained production-grade libraries for Temporal and gRPC integration within NestJS, enabling type-safe microservices communication and workflow orchestration across decoupled services.

Delegation & Authority System | *NestJS, Temporal, gRPC*

2024

- Developed backend architecture for an enterprise delegation system using microservices and Temporal workflows to manage complex state transitions across interconnected services.

Streaming Infrastructure | *Python, FFmpeg, AWS EC2*

2025

- Engineered real-time video streaming architecture using GPU-based encoding pipelines with FFmpeg and AWS EC2 for low-latency streaming systems.

EDUCATION

LDRP Institute of Technology & Research

Bachelor of Technology in Computer Engineering

Gandhinagar, GJ

Aug. 2015 – June 2019