

MILAN PRAJAPATI

Backend Engineer · Distributed Systems · Real-Time & IoT Systems
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PROFESSIONAL SUMMARY

Backend Engineer with 3+ years building distributed, event-driven systems in .NET 8 and C#. Delivered production systems across real-time IoT middleware, AI-integrated enterprise applications, and live market data pipelines. Diagnosed and resolved .NET runtime issues including Gen 2 GC pressure and heap allocation bottlenecks in high-throughput SignalR workloads. Specializes in ASP.NET Core microservices, Redis caching, RabbitMQ messaging, and SignalR real-time delivery.

TECHNICAL SKILLS

Backend: C#, ASP.NET Core, .NET 8, REST APIs, Entity Framework Core
Architecture: Microservices, Distributed Systems, Event-Driven Architecture
Real-Time & Messaging: SignalR, WebSockets, RabbitMQ, Redis Pub/Sub
Databases: SQL Server, PostgreSQL, MySQL, Query Optimization, Indexing
DevOps: Docker, Docker Compose, GitHub Actions, Git, Hangfire, Swagger, Postman
Security: JWT Authentication, Role-Based Access Control (RBAC)
Other Exposure: Angular, Blazor, .NET MAUI, Flutter, Python (CSnakes interop)

PROFESSIONAL EXPERIENCE

.NET Developer — Moon Technolabs Pvt. Ltd.

Ahmedabad, Gujarat | January 2023 – Present

- ▶ Designed real-time RFID telemetry middleware connecting hardware readers to a .NET backend via SignalR, supporting 6+ concurrent gate deployments with live dashboard updates across multiple warehouse sites.
- ▶ Eliminated N+1 query patterns and disabled unnecessary EF Core change tracking on read-heavy endpoints; introduced in-memory caching — reducing API response times from ~2 minutes to ~360ms for a 500+ user platform.
- ▶ Resolved Gen 2 garbage collector pressure in a high-frequency SignalR workload by replacing heap-allocating data paths with Span<T>, eliminating periodic GC pause spikes under sustained load.
- ▶ Introduced RabbitMQ event-driven messaging to replace direct synchronous service calls, decoupling 8 services and improving fault isolation across deployments.
- ▶ Integrated GPT-4 APIs into a UWP document reader, enabling contextual document querying and AI-assisted workflows for enterprise users.
- ▶ Implemented JWT authentication and role-based access control (RBAC) across multiple enterprise APIs.

ENTERPRISE PROJECTS

Bepco RFID — IoT Telemetry & Middleware Platform

.NET · ASP.NET Core · SignalR · Hangfire · Redis · MySQL · Entity Framework Core · RFID Hardware · AI Camera

Real-time IoT platform connecting RFID hardware readers to a .NET middleware layer and a centralized web application. Evolved from a single device manager into a multi-warehouse telemetry platform over 1.5 years of continuous development, supporting 6+ concurrent gates across multiple sites.

- ▶ Diagnosed a throughput bottleneck in a legacy MVC architecture where a single controller managed all gate read events via AJAX updates; SignalR delivery was serialized and degraded under concurrent reads.
- ▶ Implemented parallel execution in .NET to process concurrent gate reads simultaneously, eliminating sequential queuing and reducing per-read latency across all active gates.
- ▶ Replaced heap-allocating data processing paths with Span<T>, resolving Gen 2 GC pauses that caused periodic SignalR delivery delays under sustained high-frequency read load.
- ▶ Optimized EF Core query patterns and MySQL data access; layered Redis caching to maintain throughput as the platform scaled from 6 gates to multiple warehouse deployments under a single centralized web application.

- Implemented Hangfire background jobs for scheduled telemetry processing and retry logic; integrated an AI camera system alongside RFID reads for dual-source event verification.

YourMap — Enterprise Backend API Platform

ASP.NET Core · SQL Server · Redis · Entity Framework Core · Microservices

Multi-service backend platform supporting KPI reporting and operational workflows for a 500+ user enterprise client.

- Eliminated N+1 query patterns and reduced EF Core change tracking overhead on read-heavy reporting endpoints, then introduced in-memory caching — reducing API response times from ~2 minutes to ~360ms.
- Built microservices backend APIs handling concurrent reporting queries across multiple business domains for 500+ active users.

Halfbit UWP — AI-Assisted Document Reader

UWP · .NET · GPT-4 API · Syncfusion

Enterprise UWP document reader with an integrated GPT-4 assistant for in-context document querying and workflow automation.

- Integrated GPT-4 APIs into a UWP document reader using Syncfusion controls, enabling contextual document querying and AI-assisted workflows without leaving the reader.
- Implemented document parsing and content processing pipelines to supply relevant context to the GPT-4 API for accurate, in-document responses.

Halfbit Android — Cross-Platform File Manager

.NET MAUI · Windows APIs · Android

Cross-platform Android file management app built with .NET MAUI for enterprise Windows-to-Android sync workflows.

- Built cross-platform file management for Android in .NET MAUI with real-time background file synchronization via Windows APIs.

PERSONAL PROJECTS

Real-Time Trading Intelligence Platform (in progress)

.NET 8 · C# · Python (CSnakes) · RabbitMQ · Redis · PostgreSQL · SignalR · Flutter · Docker · Docker Compose · GitHub Actions · Angel One SmartAPI

Distributed market data analysis system built to learn and apply CSnakes — embedding CPython directly inside a .NET 8 host — using live NIFTY, BANKNIFTY, and SENSEX options data as the engineering problem domain.

- Embedded CPython inside the .NET 8 process using CSnakes, enabling direct C#-to-Python interop for signal analysis functions (VWAP, EMA, ATR, candlestick pattern detection) without spawning a separate process.
- Designed event-driven service architecture with RabbitMQ, decoupling data ingestion, signal analysis, and push notification services.
- Implemented Redis hot-caching for high-frequency market data and SignalR-based live delivery to a Flutter mobile client.
- Designed and maintained a self-hosted CI/CD pipeline using GitHub Actions, Docker, and Docker Compose — automatically building and deploying services to a Linux home server on every push to main.
- Optimized the Docker Compose stack to run within ~1GB RAM on a resource-constrained home server, tuning container memory limits and service startup ordering.

EDUCATION

Master of Computer Applications (MCA) — Sardar Patel University, Vidyanagar | 2021 – 2023 | CGPA: 8.32 / 10

Bachelor of Computer Applications (BCA) — Sardar Patel University, Vidyanagar | 2018 – 2021 | CGPA: 9.07 / 10