

Sanam Pakuwal

Senior Software Engineer / Technical Lead · .NET, Distributed Systems, AI

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SUMMARY

Senior software engineer and technical lead with 7 years across software engineering, database administration and QA management, 6 of them building .NET systems. Led a Singapore e-commerce platform from single region to multi-region in production, and cut search and reporting latency from seconds to under 100 milliseconds. Now own technical direction for that platform including its AI adoption, and came into development through DBA and QA work, so I own systems end to end rather than just the code.

SKILLS

Languages and frameworks: C#, .NET 10, .NET Framework 4.x, ASP.NET Core, ASP.NET MVC, minimal APIs, Dapper, Entity Framework (EF6), NopCommerce, JavaScript, T-SQL

Databases: SQL Server, PostgreSQL, query tuning, index design, execution plans, stored procedures, transactional replication, Change Data Capture (CDC), read replicas

Search, caching and messaging: OpenSearch, Elasticsearch, full-text and vector search, Garnet, Redis, multi-layer caching, cross-region invalidation, RabbitMQ, outbox and inbox patterns

Architecture: distributed systems, multi-region design, event-driven architecture, API design and versioning, OAuth 2.0 and JWT, rate limiting, feature flags, system modernisation

AI engineering: retrieval-augmented generation (RAG), Model Context Protocol (MCP), vector search, agent frameworks, LLM integration, evaluation

Observability and quality: OpenTelemetry (OTel), Grafana stack, Elastic APM, health checks, alerting, incident response, Playwright, end-to-end test automation, xUnit, test strategy

Leadership: technical direction, architecture and code review, engineering standards, technical documentation, mentoring

Platform: IIS, Windows Server, Azure DevOps, Git, CI/CD

EXPERIENCE

Singapore Ecommerce App Pte. Ltd. , Remote (Singapore) · April 2023 to Present

Technical Lead · August 2026 to Present

- Own technical direction for the platform: architecture decisions, critical code review, engineering standards, and support for developers on complex problems.
- Lead the platform's AI adoption, from use cases and data access design through to security model, pilot selection and how results get measured.
- Set the modernisation roadmap: background service consolidation, async migration, automated end-to-end testing, and technical documentation that updates itself from the code.

Senior Software Developer · May 2025 to August 2026

- Led architecture and delivery of the platform's move from single region to multi-region, now in production: central write authority, SQL Server transactional replication to regional read replicas, cross-region distributed cache invalidation, OpenSearch cross-cluster replication, and an asynchronous order queue with outbox and inbox idempotency. Did around 90% of the research, design and implementation.
- Cut product search latency from 1 to 2 seconds down to under 100 ms, and a second endpoint from 5 to 20 seconds down to under 80 ms, by moving search off full-table wildcard scans and onto OpenSearch. Released behind feature flags, so rollback is a config change rather than a deployment.
- Moved the public API to .NET 10 (minimal APIs, Dapper-only data access with no ORM dependency, channel-based eventing, hosted services, health checks, interactive docs), and built a second API from scratch as the team's reference implementation for authentication, rate limiting and versioning.
- Built the streaming and messaging layer the platform runs on: a SQL Server Change Data Capture pipeline that keeps the search index in sync in near real time, and a RabbitMQ backbone with outbox and inbox tables, dead-letter handling and idempotent consumers. Removed the need for a separate streaming platform such as Kafka.
- Designed a three-layer cache (per-request, in-process, distributed) with cross-region invalidation, halving homepage warm-path latency from about 1.2 seconds to about 600 ms.

- Rolled out OpenTelemetry and Grafana across every service, with dashboards and alerting covering APIs, SQL replication, cache, search and hosts, replacing production debugging by guesswork.
- Largest contributor to the platform over the last 12 months at around 37% of commits, wrote the architecture record the team, QA and ops work from, and resolved three production incidents in the cache and replication layers with documented fixes and rollback paths.

Software Developer · April 2023 to May 2025

- Rewrote the public product API as a new service, replacing legacy endpoints while keeping the on-the-wire contract identical: client and key management, rate limiting and versioned endpoints.
- Cut the CRM pricing and enquiry reports from around 2 seconds to around 200 ms, and optimised storefront hot paths by moving tier pricing off Entity Framework onto Dapper, adding full-text search on product lookup and converting the slowest call chains to async.
- Built and ran a partner-facing product API: tier pricing, pricing rules, category filtering, centralised logging and APM instrumentation.
- Delivered subscription and discount features on a second product (renewals, coupon rules, messaging templates), optimised the nightly renewal job, and handled index design and query tuning alongside development.

Pratham IT System Pvt. Ltd. , Birtamod, Nepal

Software Developer · May 2020 to April 2023

- Designed and built FinAstra, a cooperative core banking platform on .NET and SQL Server covering member accounts, deposits, loans and regulatory reporting, deployed to over 450 cooperative institutions.
- Refactored the interest computation procedure with the senior developer, cutting batch runtime by around 70%.
- Modernised legacy modules and rewrote slow reporting queries, cutting month-end report runtimes and removing timeout failures.
- Published two open-source .NET libraries out of internal work, and contributed to NepDate, a Nepali date library now past 28,000 NuGet downloads.

Quality Assurance Manager · March 2019 to April 2023

- Built the QA function from scratch: test strategy, test plans, defect tracking, release criteria and sign-off.
- Introduced Playwright end-to-end automation for regression suites, replacing manual pre-release testing.
- Managed and mentored the QA team, moved QA into the development cycle instead of the end of it, and reported quality metrics that drove process changes.

Database Administrator · September 2019 to January 2023

- Ran SQL Server and PostgreSQL in production: backups, availability, monitoring, index design and query tuning.
- Executed cross-platform data migrations between PostgreSQL and SQL Server with no data loss, and open-sourced the migration tool built for it.

PROJECTS AND OPEN SOURCE

- **postgresql-to-mssql** (26 stars). Streams data from PostgreSQL into SQL Server on the fly. C#.
- **DotNetMapper** (8 stars). Lightweight, fast object mapper for .NET with a small API surface. C#.
- **mcp-nuget**. Model Context Protocol server packaged and published as a NuGet tool. C#.
- **NepDate** (contributor). Zero-dependency Bikram Sambat date library for .NET, 28,000+ NuGet downloads.
- **GymHub** and **Rs Service** (co-author). Gym management platform (members, attendance, admin workflows) and a service-centre management platform, both .NET and SQL Server.

CERTIFICATIONS

Stripe Certified Professional Developer, Stripe, 2023 · SQL (Advanced), HackerRank, 2022 · From Zero to Hero: REST APIs in .NET, Dometrain

EDUCATION

Bachelor of Computer Applications, Manipal University Jaipur, 2022 to 2026

AWARDS AND LANGUAGES

Outstanding Performance Award, Pratham IT System Pvt. Ltd., 2023 (company 10th anniversary) · Nepali (native), English (professional), Hindi (working)