

RANJAN BHATTARAI

Senior Full-Stack Engineer | Node.js, TypeScript, React | Distributed Systems & AI

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PROFESSIONAL SUMMARY

Full-Stack Engineer with 5+ years of experience building production systems with Node.js, TypeScript, React, Next.js, PostgreSQL, MongoDB, Redis, Kafka, and AWS. Experienced in owning features end-to-end across system design, API development, data modeling, frontend implementation, distributed workflows, deployment, and production debugging. Strong background in scalable backend systems, real-time applications, payment infrastructure, and AI-integrated platforms.

TECHNICAL SKILLS

- **Backend & APIs:** Node.js, TypeScript, JavaScript (ES6+), Express.js, NestJS, REST APIs, Microservices, Event-Driven Architecture
- **Frontend & Full-Stack:** React.js, Next.js (App Router), Server/Client Components, Server Actions, TanStack Query
- **Databases:** PostgreSQL, MongoDB, Redis, Prisma, Sequelize, Schema Design, Query Optimization, Indexing
- **Distributed Systems:** Apache Kafka, Message Queues, Event Streaming, Socket.io, WebSockets, Distributed System Design
- **Cloud & DevOps:** AWS (EC2, S3, Lambda, RDS, ECS), Docker, GitHub Actions, Linux, PM2, CI/CD, Kubernetes (familiar)
- **AI & Observability:** OpenTelemetry, LLM APIs, OpenRouter, Zod, Metrics/Trace Pipelines, Time-Series Data
- **Security:** JWT, OAuth 2.0, RBAC, Rate Limiting, Input Validation

PROFESSIONAL EXPERIENCE

Backend Developer — *Unibird, Tokyo, Japan (Remote)*

Dec 2020 – Feb 2026

Backend Architecture & Distributed Systems

- Designed modular Node.js/TypeScript backend services separating business logic, API, and infrastructure layers, and built event-driven workflows on Apache Kafka with consumer groups, retry topics, offset management, and dead-letter queues for reliable async processing.
- Designed REST APIs with centralized error handling, request validation, and idempotent request handling; implemented graceful shutdown and connection cleanup to avoid dropped work during deploys.

Payments & Business Systems

- Built Stripe payment workflows (PaymentIntents, Checkout subscriptions, invoices, refunds) end-to-end, including webhook signature verification and event-driven payment-state updates — migrating the system from synchronous, request-blocking payment checks to asynchronous, webhook-driven processing.
- Implemented application-level and Stripe idempotency keys to prevent duplicate order/payment processing on retries, and designed compensating workflows (order rollback, async refunds) for cases where downstream inventory fulfillment failed after payment succeeded.

Database & Performance Optimization

- Diagnosed PostgreSQL sequential scans via EXPLAIN ANALYZE and resolved them with targeted indexing; restructured conversation/messaging queries to eliminate N+1 patterns.
- Designed the relational schema for users, products, orders, payments, and messaging, and introduced Redis (with TTL-based invalidation) for high-frequency state — OTPs, rate limiting, unread-message counts, and cross-service idempotency keys.

Real-Time Systems

- Built JWT-authenticated real-time chat with Socket.io, using Postgres as source of truth, Redis for volatile unread-state, and Kafka for downstream async processing — a pattern chosen specifically to keep the hot path fast without sacrificing durability.
- Diagnosed and fixed a Node.js memory leak from stale Socket.io connections accumulating across conversation switches, restoring stable long-running socket lifecycle behavior in production.

Cloud, Full-Stack Delivery & Leadership

- Ran production Node.js services on AWS EC2 and built an S3 + Lambda event-driven pipeline to move CPU-intensive image processing off the main application process.
- Delivered end-to-end features spanning Node.js APIs and React/Next.js UI (Server/Client Components, Server Actions, TanStack Query); mentored junior developers on backend architecture and debugging, and led code reviews focused on correctness and maintainability.

Stack: Node.js, TypeScript, Express.js, React, Next.js, PostgreSQL, MongoDB, Redis, Apache Kafka, Socket.io, Stripe, AWS, Docker, Sequelize

Backend Developer Intern — *Defactori, Kathmandu*

Apr 2020 – Nov 2020

- Built modular NestJS/Node.js backend services following SOLID principles and REST API conventions.
- Implemented JWT/OAuth 2.0 authentication flows and third-party integrations within an Agile development cycle.

SELECTED PROJECTS

IncidentLens — **AI-Grounded Incident Correlation & Observability Platform**

In Development

Tech: NestJS, Next.js, PostgreSQL (Prisma), Apache Kafka, OpenTelemetry Collector, Redis, OpenRouter, Zod, Docker

- Built a multi-tenant observability platform that ingests OpenTelemetry traces through Kafka and processes telemetry in real time using NestJS.

- Designed correlation and metrics pipelines that transform raw telemetry into structured incidents, timelines, latency, error-rate, and request-volume data.
- Built an evidence-first AI reasoning layer that structures telemetry before sending bounded context to an LLM and validates responses with Zod.
- Added Slack-based incident updates, automated post-mortem generation, and anomaly detection that can automatically open incidents based on metric thresholds.
- Implementing historical-baseline analysis to ground AI-generated incident hypotheses in observed system behavior.

In progress: production deployment hardening — multi-stage Dockerfile and docker-compose.prod.yml targeting AWS ECS/Render.

AI Workspace — Multi-Model LLM Application Platform
In Development

Tech: Next.js (App Router), TypeScript, OpenRouter, PostgreSQL, Prisma, Redis

- Building a full-stack AI application with a provider-abstraction layer that decouples application-level conversation workflows from any single LLM provider's API, enabling model switching without downstream code changes.
- Implemented token-level streaming for real-time conversational responses, and designed the Postgres/Prisma schema for conversation persistence and message-history retrieval.

Skysales — E-Commerce Platform
Production

skysales.jp/app

Tech: Node.js, Socket.io, PostgreSQL, MongoDB, AWS, Stripe

- Built backend APIs for auth, product management, webinar hosting, and real-time features, including a Socket.io-based real-time inventory synchronization workflow across services to prevent stock-state drift.
- Integrated Stripe payment and subscription workflows with secure, webhook-driven transaction handling in a live customer-facing production system.

MBN Torihiki – Electronic Billing, CRM & Business Operations Platform
Production

mbn-torihiki.com | chat.mbn-torihiki.com | crm.mbn-torihiki.com

Tech: Node.js, React 19, PostgreSQL, WebSockets – Integrated with a Laravel/PHP core platform

- Owned cross-project implementation of the CRM and real-time chat modules as Bide.React services integrated into a larger Laravel-based business platform(invoicing, quotations, orders, delivery slips).
- Built the real-time chat system(chat.mbn-torihiki.com) – Node.js backend with websocket-based messaging, file uploads, and mentions integrated with a React frontend.
- Built the CRM/deals module(crm.mbn-torihiki.com) – Node.js/React implementation covering deal, lead, meetup and contract tracking across the sales pipeline.
- Designed and managed a dedicated PostgreSQL database for the CRM and chat services, kept independent from the core Laravel platform’s database and integrated only at the shared-login boundary.

EDUCATION

Bachelor of Science in Computer Science & Information Technology

Ambition College, Tribhuvan University

2017 – 2021

ADDITIONAL INFORMATION

Languages: Nepali (Native), English (Professional), Japanese (Basic)

Availability: Immediately available

Work Preference: Remote / Hybrid