

MD FAHIM FAISAL TANHA

Full-Stack & AI Engineer • Portfolio • Remote-First

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PROFESSIONAL SUMMARY

Founder-engineer who has shipped production systems end to end — a multi-tenant AI chatbot SaaS (Ziviq AI), a two-sided ride-share platform (Motswedi), a client e-commerce platform (Maryam Technology), and web and mobile products — and recently built IRoomsBD, an online travel agency platform; DineDeck, an all-in-one restaurant management platform; and CareDesk HMS, a multi-tenant hospital management SaaS. Alongside a **28-repository public portfolio** covering distributed systems, machine learning implemented from scratch, security infrastructure (Zanzibar-style authorization, envelope encryption, SCIM 2.0 provisioning), and Islamic fintech, I research LLM evaluation: author of a CRC Press book chapter and two Research Square papers on data contamination in Bengali LLM benchmarks. This is the complete portfolio edition of my resume: every portfolio project is public and verifiable at github.com/mdfahimfaisaltanha; client work is private and can be walked through on request. A 2-page summary version is available on request.

Note to reviewers: each repository README documents design decisions, benchmarks or evaluation metrics, and — deliberately — what is simplified relative to a production deployment.

EXPERIENCE

Founder & Lead Engineer • Innovera IT — Dhaka, Bangladesh (Remote-first) 2023 – Present

- Founded a Shariah-compliant technology company delivering web platforms, mobile apps, AI products, and digital marketing.
- Architected and shipped Ziviq AI — a multi-tenant, white-label AI chatbot SaaS: Next.js 14 frontend, Node.js/Express backend, Groq/Llama 3.3 generation, PostgreSQL + pgvector RAG, Redis caching, Supabase Auth, Stripe subscriptions, WhatsApp Business + Facebook Messenger channel integrations, Turborepo monorepo.
- Designed and built Motswedi — a two-sided ride-share platform for the Botswana market: separate rider and driver apps with real-time matching, trip tracking, and payments backend.
- Launched a three-tier AI Agent / Agentic Workflow service offering (Starter, Business, Enterprise) bringing custom automation agents to non-technical business clients.
- Managed end-to-end client delivery for healthcare, retail, and travel clients: requirements, architecture, build, deployment, handover documentation, and async communication across time zones.

Independent Developer • Freelance 2023 – Present

- DermisAI: built a Flutter release APK for an AI skin analysis app; Firebase-backed repository layer with clean mock/live swap.
- Flyorenda Travel: designed platform architecture and built a production monorepo for a Shariah-compliant OTA.
- Family Ramadan Tracker: Flutter mobile app for family-wide habit and worship tracking with shared progress views.
- Delivered additional websites, web apps, and mobile apps for agency and freelance clients across multiple industries.

Content & Video Editor • Hasanik English 2019 – 2020

- Produced and edited educational video content; developed content strategy and audience engagement skills.

RECENT CLIENT & PRODUCT WORK — INNOVERA IT (2026)

Commercial and client-owned projects delivered through Innovera IT. Source code is private; demos and walkthroughs are available on request.

IRoomsBD — Online travel agency (OTA) platform for a Dhaka travel company • 2026 • Live: iroomsbd.com

- Customer site for flights (one-way, round-trip, multi-city; Economy, Business, and First fare rules), hotels, tour packages with group-size limits, transport, and limited-time deals; Bangla/English interface, live currency converter, AI travel-assistant chat, notifications, and an interactive map of all 8 divisions of Bangladesh with weather and flight routes.
- Admin control center for flights, hotels, tours, transport, and campaigns; full booking lifecycle (pending → confirmed → ticketed, or cancelled) with payment tracking and cancel-and-refund; user and role management.

- B2B agent program: travel agencies register with a commission rate, and admins verify and approve them before they can sell. Built with Next.js.

DineDeck Enterprise — All-in-one restaurant management platform • 2026 • Live: dinedeck.innoverait.com

- One backend, database, and permission engine behind 12 modules: customer storefront with online ordering and reservations, QR dine-in ordering (scan → order → kitchen, waiter calls, bill requests), cashier POS, real-time kitchen display, inventory with auto-deduction and low-stock/expiry alerts, CRM, analytics, delivery hub with rider tracking, and multi-branch management.
- 9 roles from super admin to delivery rider; white-label deployments where each restaurant gets its own domain, private database, and branding; Bangladesh-first payments (bKash, Nagad, Rocket; Stripe and PayPal optional) with split bills across methods, and 80 mm thermal receipts with VAT, service charge, and a track-and-rate QR.
- Shipped six releases (v1.1–v1.6): table transfer/merge/split, kitchen prep-time analytics (average, p95, bottleneck dishes), floor-plan heatmap, ratings with low-score alerts and service-recovery coupons, email studio with a retryable delivery outbox, campaign attribution, and an installable offline-capable PWA. Built with Next.js; deployed on Railway.

CareDesk HMS — Multi-tenant hospital management SaaS, built with Famous Specialized Hospital (Dhaka) • Sep 2026

- Staff console for 9 roles (admin, clinician, reception, cashier, lab technician, lab reviewer, pharmacist, nurse, auditor), covering patients and MRNs, 15-minute appointment slots, and encounters with signed, amend-only clinical notes.
- Lab workflow (ordered → collected → received → entered → released) where a different reviewer must release each result; BDT billing on an immutable payment/refund ledger; pharmacy batches with expiry-aware dispensing; inpatient beds, transfers, and discharge.
- Security: TOTP MFA with one-use recovery codes, HttpOnly cookies + CSRF, idempotency keys, optimistic versioning, tenant-isolating composite foreign keys, an HMAC-chained audit log, and a verified backup/restore CLI.
- Node.js 24 built-ins + SQLite with zero runtime dependencies; accessible vanilla-JS console (light/dark, mobile); optional AI chart summaries are off by default, cite their sources, and stay drafts until a clinician reviews them; 25/25 backend tests passing.

Maryam Technology E-Commerce Platform — Online store for a POS hardware & consumables retailer in Bangladesh • Handed over Oct 2026

- Responsive storefront with catalog, search, filters, and product pages; customer accounts, quotation requests, orders, order tracking, and inquiries.
- Separate admin dashboard for products, orders, and store settings, with image uploads; built on Node.js 24 and native SQLite with no external packages.
- Premium redesign around the client's photography, including an interactive POS setup guide; deployed with domain, SSL, and business email, and handed over with documentation, a maintenance runbook, and 1-year support.

Famous Specialized Hospital — Patient Acquisition — Growth strategy & Meta advertising • Sep – Oct 2026

- Researched local competitors in Banasree, Dhaka, and built a patient-acquisition plan around the hospital's diagnostic and specialist services.
- Ran Meta click-to-Messenger campaigns (OPD specialists, 24-hour dengue testing) with Bangla ad copy, local radius targeting, and Messenger reply templates; reached about BDT 30 per conversation after passing 50 conversations.

RESEARCH & PUBLICATIONS

Sustainable Earthwork Practices through AI Optimization — Book chapter, CRC Press (Taylor & Francis), 2026

- Chapter 13 (pp. 220–247) in Applications of AI and IoT in Geotechnical Engineering for Sustainable Infrastructure, with Asiqur Rahman Abir. Synthesizes 112 journal papers on AI/ML for soil compaction, slope stability, and settlement modeling. doi.org/10.1201/9781003714125-13

Memory or Generalization? Temporal Probing of Data Contamination in Bengali LLM Benchmarks — Research Square, Aug 2026

- Introduces temporal probing: legacy benchmark items paired with difficulty-matched post-cutoff twins to measure contamination-driven score inflation; 84 matched pairs × 7 open-weight models. doi.org/10.21203/rs.3.rs-10845326/v1

How Reliable Are Bengali LLM Benchmarks? A Cross-Lingual Contamination and Robustness Audit of Open-Weight Language Models — Research Square, Aug 2026

- Audit framework for contamination and robustness in Bengali LLM benchmarks, with a completed pilot study.
doi.org/10.21203/rs.3.rs-10491036/v1

In progress: LLM reliability for Islamic guidance — a question bank that scores answer accuracy and whether models acknowledge legitimate differences between schools of thought.

COMPLETE PORTFOLIO — 28 PROJECTS (NEXT.JS 14 + TYPESCRIPT + POSTGRESQL, ALL PUBLIC ON GITHUB)

Self-directed portfolio built to master enterprise software patterns by implementing the hard parts from scratch — no domain libraries. Every project ships with a README, seed scripts, and benchmarks or evaluation metrics. Repo names shown with each project; all under github.com/mdfahimfaisaltanha.

Enterprise & Security Systems

Authorization Service (AuthZ) — Google Zanzibar-style relationship-based access control • 25-authz

- Relationship tuples (doc:readme#viewer@user:fahim) with a recursive graph-walk check engine, userset rewrites, and wildcard expansion.
- Namespace configs define relations and permissions; every authorization decision is recorded in a check log with its full resolution path.
- The pattern behind Google Drive and GitHub permissions — built with zero authorization libraries.

Secrets Management Platform (Vault) — Envelope encryption, Shamir secret sharing, seal/unseal lifecycle • 26-vault

- Envelope encryption: per-version DEKs wrapped by a memory-only KEK (AES-256-GCM); KEK rotation re-wraps DEKs without re-encrypting data.
- Shamir's Secret Sharing implemented from scratch over $GF(2^8)$ (5 shares, threshold 3) for the unseal ceremony — Node crypto built-ins only.
- Scoped access tokens (SHA-256 hashed, path-prefix policies), versioned secrets, and a tamper-evident audit log of every read.

SCIM 2.0 Identity Provisioning (DirSync) — Enterprise directory sync server for Okta / Azure AD • 27-dirsync

- Full RFC 7643/7644 implementation with zero SCIM libraries: Users/Groups CRUD, discovery endpoints, application/scim+json error semantics.
- Hand-written SCIM filter parser (tokenizer + recursive descent) compiling to parameterized SQL against a strict column allowlist.
- Handles both Okta and Azure AD PATCH dialects; 409 uniqueness conflict recovery; group→role mapping turns IdP groups into app access.

Zakat Calculation & Distribution (ZakatFlow) — Islamic fintech: multi-asset zakat engine + distribution ledger • 28-zakatflow

- Hawl (lunar-year) state machine per payer: starts when wealth reaches nisab, breaks when it falls below, restarts on recovery (≈ 354.37 days).
- Multi-asset valuation (metals by grams $\times$ live price, equities/crypto at market), configurable gold/silver nisab basis, liability deduction.
- Append-only distribution ledger constrained to the 8 Quranic categories via DB CHECK constraint; disbursements can never exceed the assessed pool.

Healthcare Appointments & Records (ClinicOS) — RBAC, audit logging, field-level encryption • 08-healthcare-records

- Hard audit rule: no access without a log entry (enforced in middleware, not trusted to callers).
- AES-256-GCM field encryption format `enc:v1:<iv>:<tag>:<data>`; admin role cannot read patient charts (explicit RBAC).

Internal Developer Platform / API Gateway — Service catalog, gateway, rate limiting • 20-internal-dev-platform

- API gateway with per-key rate limiting, service catalog with ownership metadata, and request routing.
- Platform-engineering patterns: golden-path service registration and centralized policy enforcement.

Distributed Systems & Infrastructure

Real-Time Analytics Dashboard (Pulse) — Event ingestion → worker → SSE live dashboard • 04-realtime-analytics

- Exactly-once aggregation via transactional cursor pattern; idempotent fold + ack in a single DB transaction.
- Load test: 100 events/sec $\times$ 60 s — p50 11 ms / p95 24 ms / p99 41 ms ingest; worker catch-up lag 1.8 s.

Distributed Task Scheduling (Conveyor) — Queue with DLQ, heartbeats, and recurring jobs • 11-task-scheduler

- FOR UPDATE SKIP LOCKED claim, visibility-timeout reaper, exponential back-off (cap 60 s), idempotency keys.
- Load test: 1,000 jobs dispatched; succeeded + dead = 1,000 (zero job loss); 46.7 jobs/s throughput, p99 127 ms.

Background Job Platform (JobQueue) — Priorities, rate limits, cron schedules, visibility timeouts • 24-jobqueue

- Priority scheduling with per-queue rate limits, cron-based recurring jobs, and idempotency keys.
- Visibility-timeout claim semantics with dead-letter queue and retry budgets — zero-loss accounting under load.

Transactional Outbox & Event Relay (EventMesh) — At-least-once delivery without dual-write bugs • 23-eventmesh

- Transactional outbox pattern: business write + event insert in one transaction; relay publishes with at-least-once semantics.
- Consumer groups with retries, exponential backoff, and DLQ; delivery accounting proves no event loss.

Observability Stack (Lumen) — Ingest, error grouping, alerting, trace waterfall • 22-observability

- Error grouping by stack fingerprint (Sentry pattern); alert rules with threshold + time-window evaluation.
- Trace waterfall visualization and structured log search over ingested events.

Feature Flags & Experimentation (FlagForge) — Deterministic bucketing, kill switches, exposure events • 21-flagforge

- Deterministic hash bucketing for percentage rollouts and A/B assignment — same user, same variant, no storage lookup.
- Kill switches, targeting rules, and exposure-event logging for experiment analysis.

AI & Machine Learning

AI Document Intelligence (DocMind) — Production RAG pipeline with hybrid retrieval and re-ranking • 01-doc-intelligence

- Heading-aware chunking (1,100 chars, 300 overlap), hybrid retrieval (RRF k=60, vector K=12 + keyword K=12), heuristic re-ranker.
- 12-question golden eval suite + 2 adversarial refusal probes; citation extraction with [n] inline references.

Fraud / Anomaly Detection (Tripwire) — Isolation forest + explainable rule engine • 14-fraud-detection

- Isolation forest built from scratch (100 trees, subsample 256); transparent rule engine (6 features, plain-English reasons).
- At threshold 60: precision 87.1 % / recall 80.7 % / F1 83.8 %; account-takeover recall 100 %.

Manufacturing Quality Control (QualityGuard) — Defect-detection ML + SPC charts from scratch • 19-quality-control

- 50-tree random forest (Gini split, bootstrap bags) trained in Node.js; SHAP-style perturbation attribution.
- X-bar SPC charts with Shewhart A_2 constants and 4 Western Electric rules (catches slow drift within control limits).

Supply Chain Forecasting (StockSense) — Holt-Winters forecasting + reorder points • 16-inventory-forecasting

- Rolling-origin backtest: 4 folds × 14 days; parameters grid-searched on training folds only; fold-4 WAPE 9–12 % on steady SKUs.
- Reorder point = lead-time demand + $z \cdot \sigma_L$ — safety stock from forecast errors, not demand variance.

AI Code Review Bot (ReviewBot) — GitHub App with GPT-4o-mini inline PR comments • 06-code-review-bot

- HMAC-SHA256 webhook verification (timing-safe); two-tier review with structured-JSON LLM prompt + heuristic fallback, fail-closed.
- Posts batched inline GitHub review comments; per-repo .reviewbot.yml config (severity, ignore paths, focus areas).

Autonomous Customer Support Agent — Tool-calling agent with escalation policy • 03-support-agent

- Tool-calling loop grounded in a knowledge base; explicit escalation policy hands off to humans on low confidence or sensitive intents.

Multi-Agent Research Assistant — Planner / searcher / writer agents • 07-multi-agent-research

- Coordinated multi-agent pipeline with shared memory: planning, parallel search, synthesis with source attribution.

Content Moderation Pipeline — Multi-stage classification + human review • 15-content-moderation

- Staged pipeline (rules → classifier → LLM) with human review queue, appeals flow, and audit trail.

Multi-Language Feedback Analyzer — Sentiment, themes, and trends • 18-feedback-analyzer

- Cross-language sentiment and theme extraction with trend reporting across time windows.

E-Commerce Recommendation Engine — Hybrid collaborative + content-based • 09-ecommerce-recs

- Hybrid recommender with evaluation metrics; cold-start handling via content features.

Voice-Driven BI Tool — Natural language → governed SQL • 10-voice-bi-tool

- NL-to-SQL over a governed semantic layer — generated queries constrained to approved measures and dimensions.

Video / Podcast Transcription & Search — Semantic search over transcripts • 17-video-transcription

- Transcription pipeline with speaker segments and semantic search over embedded transcript chunks.

ATS Resume Optimizer — Keyword gap analysis against job descriptions • 12-ats-resume-optimizer

- Scores resumes against job descriptions: keyword coverage, gap analysis, and targeted suggestions.

Product Platforms

Multi-Tenant SaaS Billing (MeterBill) — Metered billing, dunning engine, HMAC-signed webhooks • 02-saas-billing

- Three plans with per-1k overage; usage rounded up; suspension on dunning exhaustion.
- Idempotent HMAC-SHA256 webhook handling; event-sourced MRR movements (new/expansion/contraction/churn).

Job / Freelance Marketplace (GigLance) — Stripe Connect escrow, 8-state contract FSM • 05-job-marketplace

- Separate charges & transfers (Stripe Connect); 8-state contract FSM with 409 guards against invalid transitions.
- Admin dispute desk (release / refund / split); reviews gated on terminal contract state only.

Property Management Platform — Leases, maintenance workflows, rent ledger • 13-property-management

- Lease lifecycle management, maintenance request workflows, and a rent ledger with balance tracking.

TECHNICAL SKILLS

Languages: TypeScript / JavaScript, Python, SQL, Dart

Frontend: Next.js 14 (App Router), React, Tailwind CSS, Flutter

Backend: Node.js (incl. Node 24 built-ins: node:sqlite, zero-dependency HTTP servers), Express, REST APIs, WebSockets, Server-Sent Events

AI / ML: LLM integration (GPT-4o, Groq/Llama 3.3), RAG pipelines (pgvector, hybrid retrieval, re-ranking), agentic workflow design, prompt engineering, random forest & time-series from scratch

Databases: PostgreSQL, pgvector, Redis, Firebase, SQLite

Infra & DevOps: Vercel, Neon/Supabase, CI/CD basics, Turborepo monorepos, GitHub Actions

Integrations: Stripe (Connect, metered billing, webhooks), GitHub Apps/Webhooks, WhatsApp Business API, Facebook Messenger API, OpenAI API

Practices: HMAC webhook verification, session auth (scrypt), RBAC, field-level encryption (AES-256-GCM), idempotent APIs, load testing, rolling-origin backtesting, envelope encryption (KEK/DEK), Shamir secret sharing, SCIM 2.0 provisioning, Zanzibar-style ReBAC, recursive-descent parsers, TOTP MFA, CSRF protection, HMAC-chained audit logs, optimistic concurrency

Research: LLM evaluation, benchmark contamination analysis (temporal probing), cross-lingual Bengali–English evaluation, Python/Kaggle experiment pipelines

Marketing: Meta Ads Manager (click-to-Messenger campaigns), Bangla ad copy, local patient-acquisition strategy

EDUCATION

B.Sc. in Computer Science & Engineering (CSE) • University of Liberal Arts Bangladesh (ULAB)*Dhaka, Bangladesh*

LANGUAGES & WORK STYLE

Languages: Bengali, English, Hindi (fluent); Arabic, Spanish (intermediate). **Work style:** Async-first (GitHub PRs, Loom, written docs); full-time remote or fixed-price milestone contracts. **Ethics:** Prefer EdTech, HealthTech, SaaS, or Shariah-compliant products.