Khurram Farooq

Technical Lead – Full Stack Engineering

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PROFESSIONAL SUMMARY

Technical lead with 8+ years of experience building and modernizing business-critical web platforms, and 5+ years leading engineering teams of up to 16 people, including as a CTO. Has led several projects that moved ageing systems onto modern technology without disrupting the people who rely on them every day. Plans for speed, reliability, security and stability from the start of every project, and proves them before release. Experience spans media, healthcare, public safety, finance and e-learning, most recently bringing AI responsibly into a mission-critical public service. Works closely with product, QA, security and infrastructure teams, and enjoys mentoring engineers as they grow.

CORE COMPETENCIES

Leadership & Architecture: Modernization roadmaps, incremental migration and coexistence, architecture decision records, design reviews, spikes and PoCs, estimation and task breakdown, mentoring

NFRs & Performance: Load, stress, soak and resilience testing (Locust, SIPp), bottleneck analysis, capacity planning, caching, query and API optimization, Redis Sentinel failover

Observability: ELK (Elasticsearch, Winston log shipping), Elastic APM, Prometheus, OpenTelemetry, structured logging with PII redaction, correlation IDs, health checks, Sentry, Google Analytics

Security: OAuth2/OIDC (Auth0), JWT, RBAC, MFA, token rotation, secrets management (HashiCorp Vault), keyless CI auth (Workload Identity Federation), tamper-evident audit logs

AI / LLM: Claude API, self-hosted Qwen on vLLM, Whisper and Qwen3-ASR speech-to-text, OpenAI-compatible APIs, model evaluation and CI eval gates

TECHNICAL SKILLS

Frontend: Angular (TypeScript, RxJS), AngularJS 1.x, React, Next.js (SSR), Redux Toolkit, TanStack Query, React Native (Expo), Handlebars, SCSS, Tailwind, Material UI, Kendo React, responsive UI

Backend: Node.js, NestJS, Express, Python (FastAPI, Tornado, Django), Golang, PHP, REST, gRPC / gRPC-Web, WebSockets, SSE, microservices

.NET (upskilling): C#, .NET 8, ASP.NET Core Web API, Entity Framework Core; building on NestJS experience, which follows the same module, dependency-injection and middleware patterns

Messaging & Data: Kafka, BullMQ, Redis Streams, transactional outbox, event-driven design; PostgreSQL, PostGIS, MySQL, MongoDB, Redis, Elasticsearch

DevOps & Cloud: Docker, Kubernetes, GitHub Actions, Jenkins, Bitbucket Pipelines, Cloud Build, GCP Cloud Run, Cloudflare Workers, AWS, Azure (Blob Storage), Terraform, Ansible, Nginx

CMS, Payments & Web3: Brightspot, Zephr, WordPress, Stripe, Auth0; Solana, Solidity, Web3.js, ethers.js, Ethereum, BNB Chain, Polygon, Tron, Bitcoin, XRP, Ledger

PROFESSIONAL EXPERIENCE

Principal Consultant – Development

Aug 2023 – Present

Visionet Systems Inc.

Islamabad, Pakistan

US News Platform | *High-traffic digital news platform for a leading US media organization*

- Lead frontend engineering on the Brightspot CMS, owning frontend architecture, standards, code reviews and delivery, and mentoring the frontend team.
- **Legacy-to-modern migration:** Leading the move from legacy Handlebars templates to a Next.js (SSR) application, delivered incrementally so legacy and modern pages coexist behind Cloudflare edge routing on the same domain.
- Rebuilding the Zephr-hosted Svelte user flows as a self-hosted Next.js app driven by CMS configuration, starting with the donate page and followed by login and account, to remove a third-party hosting dependency.
- Built the delivery pipeline: GitHub Actions and Cloud Build to GCP Cloud Run with keyless Workload Identity auth, digest-pinned images, automated smoke and release checks, and separate UAT and production projects.
- Drove technical SEO (structured data, meta and Open Graph tags, canonical URLs, Core Web Vitals) and led integration of advertising, analytics, video, consent and payment (Stripe) services without degrading page performance.

Stack: *Next.js, React, TypeScript, Brightspot, Handlebars, Zephr, Stripe, Cloudflare Workers, GCP Cloud Run, GitHub Actions*

Content Portal | *Enterprise content management and activation platform*

- Led frontend development of enterprise applications in Next.js, React and Angular, using Atomic Design and composable components shared through Bit.dev.
- Designed a dynamic portal system that generates the entire frontend from JSON configuration, integrated with backend services over gRPC-Web.
- Implemented Auth0 authentication and role-based access control, and integrated Box and Instagram.
- Improved performance with SSR, code splitting, lazy loading, React Virtual for large galleries, and TanStack Query for caching and data fetching.

  Stack: *Next.js, React, Angular, TypeScript, gRPC-Web, Auth0, Bit.dev, PostgreSQL, AWS, Terraform, Docker*

Team Lead

Mar 2022 – Aug 2023

GenesisLab (formerly RNS Solutions)

Islamabad, Pakistan

- Led and mentored frontend and backend engineers (Angular, Next.js, NestJS, Golang, Python) across 8 projects in public safety, fintech, healthcare, e-learning and blockchain, owning architecture, ERDs, estimates and delivery.

Emergency Call Platform | *Next-generation police emergency call-taking and dispatch platform*

- Core engineer on a mission-critical platform taking calls over voice (Asterisk, WebRTC), SMS, WhatsApp and a citizen app, with dispatch to field officers through a React Native app and live vehicle tracking.
- **AI / LLM integration:** Built a pluggable advisory layer where self-hosted Qwen (vLLM) or Claude proposes, never decides, case type, nature, hoax likelihood and distress, each with confidence scores, model cards and a recorded human verdict.
- Integrated Urdu speech-to-text (Whisper, Qwen3-ASR) with per-speaker labelling, a realtime voice agent and a WhatsApp chatbot that hand callers to a human, and post-call extraction that proposes form fields with the caller's own quote.
- Kept AI safe for production: models run on premises so no audio leaves the deployment, simulated output is labelled everywhere, and an evaluation framework with a frozen holdout set gates changes in CI.
- **NFRs & resilience:** Ran load, stress, 20-minute soak and failover tests (1,000 concurrent callers, 100 agents, 5,000 vehicles), then fixed the faults found: zero failed calls, portal p95 down from 2.8 s to 1.4 s, and an outage backlog filed in 20 s instead of 10 minutes.
- Added Redis Sentinel failover with zero lost live updates, a hash-chained audit log, transactional outbox, idempotency keys, RBAC with MFA gating, Prometheus metrics, OpenTelemetry tracing and correlation IDs.

  Stack: *Python, FastAPI, Next.js, React Native, PostgreSQL, PostGIS, Redis, Asterisk, vLLM, Qwen, Claude, Whisper, Docker, Kubernetes*

Meme Coin Trading | *On-chain leverage and spot trading platform for meme coins on Solana and BNB Chain*

- Led full stack development across 6 NestJS services (core API, indexer, real-time socket, webhooks, spot market and notifier bot), Next.js web apps for Solana and BNB Chain, a Next.js admin panel and a Flutter mobile app.
- Integrated Lavarage for leveraged positions, Jupiter and Raydium for swap routing, 0x for EVM swaps, Wormhole for cross-chain transfers, and Birdeye, Helius and Shyft for market data and on-chain events.
- Built limit orders, copy trading, wallet monitoring, staking, rewards, referrals, trading competitions and fiat on/off-ramps, with Privy embedded wallets and Solana wallet-adapter sign-in.
- Processed chain events through Helius webhooks and BullMQ queues, pushed live prices and positions over WebSockets with Redis caching, and sent alerts through a Telegram bot and Firebase.

  Stack: *NestJS, Next.js, React, TanStack Query, Flutter, PostgreSQL, Redis, BullMQ, Socket.io, Solana web3.js, Anchor, ethers.js*

Crypto Payments | *Regulated custodian crypto wallet and payments platform for Indonesia*

- Delivered 12 Go microservices (auth, account, wallet, payment, swap, verification, search, notifier, fan-out, admin) behind an Nginx gateway, using Gin for REST and gRPC between services.
- Designed event-driven flows on Kafka, including a search service that indexes events into Elasticsearch, with PostgreSQL, Redis and Firestore for state and caching.
- Integrated OKX for trading, Iluma for KYC with server-side image processing, and Xendit for IDR deposits, withdrawals and payments; secured admin access with TOTP two-factor auth.
- Set up unit and BDD testing with gomock, Ginkgo and Gomega, golangci-lint, and Docker Compose for the full stack; built the Angular web and admin portals.

  Stack: *Golang, Gin, gRPC, Kafka, Elasticsearch, PostgreSQL, MySQL, Redis, Firestore, Angular, Docker, Nginx*

Custody Wallet API | *Custodial Wallet as a Service for exchanges and fintechs*

- Built a multi-chain custody API in NestJS supporting Bitcoin, Dogecoin, Ethereum and EVM chains, Solana, Tron and XRP, with HD wallet generation (BIP32/BIP39) per client.

- Wrote per-chain syncer services for real-time deposit and transaction tracking, delivered to clients through API keys and signed webhooks, and designed a BullMQ queueing mechanism handling 8,000+ transactions per second.
- Secured key material in HashiCorp Vault, added TOTP two-factor auth, and built Ledger hardware-wallet signing (BTC, ETH, SOL, TRX, XRP) over WebUSB/WebHID for cold-storage withdrawals.
- Published developer documentation as a Next.js site, deployed through Jenkins.

  Stack: *NestJS, TypeORM, PostgreSQL, Redis, BullMQ, HashiCorp Vault, bitcoinjs, ethers.js, Solana web3.js, TronWeb, xrpl, Ledger SDK*

Pathology Viewer | *Digital pathology viewer for whole-slide biopsy images*

- Architected a viewer for gigapixel slide images: a Python Flask DeepZoom service with Celery workers generates image pyramids, and a tile server streams AI-generated overlays converted from GeoJSON to MBTiles.
- Built the Next.js and OpenLayers viewer with manual annotation, measurement and PDF export, and a NestJS backend with Bull queues, Redis caching and two-factor auth.
- Shipped logs to Elasticsearch through Winston, monitored errors with Sentry, tracked usage with Google Analytics, and deployed each service through Jenkins and Bitbucket Pipelines with Jest tests.

  Stack: *Next.js, OpenLayers, NestJS, Python, Flask, Celery, OpenSlide, PostgreSQL, Redis, Elasticsearch, Docker, Jenkins*

Liquidity Manager | *Automated liquidity management, DEX aggregation and forecasting for Uniswap v3 pools*

- Designed the system from scratch: a NestJS indexer pulls pools, pairs, tokens, transactions and hourly history from The Graph subgraphs, with webhooks and archival for long-range data.
- Built a Python (pandas, NumPy) analytics service and backtest engine that forecasts the best APR for a liquidity position within a given volatility range, and wrote Solidity contracts to route trades across exchanges.
- Delivered the Next.js frontend, admin panel and a live conference demo, packaged as a Docker Compose monorepo with Jenkins and Bitbucket CI.

  Stack: *NestJS, Next.js, Python, Flask, pandas, NumPy, The Graph, Solidity, PostgreSQL, Redis, Docker, Jenkins*

Course Marketplace | *Financial literacy e-learning marketplace for students and instructors*

- Built the NestJS backend for courses, lectures, quizzes, certificates, learning goals, one-to-one sessions, carts, orders and instructor payouts with IBAN validation.
- Integrated HyperPay payments, Elasticsearch course search and recommendations, a chatbot service, Azure Blob and S3 storage, SendGrid email, Socket.io notifications and two-factor auth.
- Delivered the React student and instructor portals (multi-language with right-to-left support, Kendo React PDF certificates) and a Next.js admin panel with Redux Toolkit.

  Stack: *NestJS, TypeORM, MySQL, Elasticsearch, Socket.io, Azure Blob Storage, React, Next.js, Material UI, Kendo React*

Survey Rewards | *Location-based, token-rewarded research and survey platform*

- Led the backend and admin-panel teams, and designed the architecture and ERD for surveys, rewards, an avatar marketplace, events and customer service.
- Built map-based survey spots on PostGIS, linked to on-chain assets on BSC and Polygon through a block-processing job that syncs contract events into the database.
- Used Bull queues and scheduled workers, Redis caching, TOTP two-factor auth, MessageBird SMS, CoinGecko pricing, and Winston logging to Elasticsearch; built the Next.js admin with i18n and Redux Toolkit.

  Stack: *NestJS, TypeORM, PostgreSQL, PostGIS, Redis, Bull, Elasticsearch, Web3.js, Next.js, MUI*

Chief Technology Officer (CTO)

Sep 2018 – Mar 2022

Heuristify

Islamabad, Pakistan

- Led a 16-person engineering team across web, mobile and backend, owning technology choices, architecture, estimates and delivery for the full product portfolio.
- Designed and launched 8 products across healthcare, mobility, fintech and SaaS; set up Agile/Scrum, sprint planning and code-review practices.

Hospital System | *Cloud hospital platform: clinic, IPD, lab, pharmacy, radiology, inventory and billing*

- **Legacy-to-modern migration:** Led the migration from a legacy MEAN.js stack (AngularJS 1.4, Node.js 0.10, MongoDB, Grunt/Bower) to an Angular 10 workspace with a shared component library, Python Tornado services, MySQL and Redis.
- Split the backend into Dockerized internal and external services (reporting and sessions vs. web, lab, pharmacy and radiology) behind Nginx, with per-module builds and Docker Compose deployments.
- Delivered the complete in-patient (IPD) feature set, appointments, billing and a patient portal, with Urdu/Arabic PDF reports and SendGrid email notifications.

- Integrated medical devices and ML features: a TCP server for HMS6500 patient monitors, ECG signal analysis, face recognition for patient identification, and voice-activated medication ordering using phonetic and fuzzy matching.
  Stack: *Angular 10, AngularJS, RxJS, Angular Material, Python, Tornado, SQLAlchemy, MySQL, MongoDB, Redis, Docker, Nginx*

Ride-Hailing | *Ride-hailing platform with ~5,000 drivers and 250+ rides per day*

- **Legacy-to-modern migration:** Led the rebuild of the platform off its legacy PHP stack onto a Node.js and PostgreSQL API with a React admin panel, while keeping the live service running.
- Led the backend, admin and Android (driver and rider apps) teams; designed real-time ride matching, driver tracking and in-app chat with Socket.io, Google Maps APIs and Firebase push notifications.
- Built wallet and Easypaisa payments, promotions, driver targets, cancellations, reviews and multi-city vehicle and fare settings, with OTP sign-in and JWT authentication.
- Added production observability with Elastic APM and structured logging, secured the API with Helmet, and stored media on AWS S3.
  Stack: *Node.js, Express, PostgreSQL, Socket.io, React, Material UI, Kotlin/Android, Firebase, Google Maps, Elastic APM, AWS S3*

Invoicing App | *Invoicing and estimates SaaS on web, Android and iOS*

- Designed and built the NestJS backend with TypeORM and PostgreSQL, covering invoices, estimates, clients, products, payments, purchase receipts and reports, documented with Swagger.
- Implemented Stripe subscriptions on web and server-side Google Play purchase verification for mobile, with JWT plus Google and Facebook OAuth sign-in.
- Generated branded invoice PDFs with Puppeteer, emailed them with tracked history, and added CSV exports, Firebase push notifications and rotating Winston logs.
- Built the React/Redux web app and admin dashboard, and worked with the Kotlin Android team on the shared API.
  Stack: *NestJS, TypeORM, PostgreSQL, Stripe, Google Play Billing, Puppeteer, React, Redux, Material UI, Kotlin, Firebase*

Other Products

- Delivered counterfeit-detection, care-coordination, stock-alert and other apps, and developed Solidity smart contracts integrated with Node.js on Ethereum, Polygon and Celo.

Freelance Developer
Jan 2016 – Dec 2017

Fiverr
Remote

- Built a native Android app integrated with WordPress APIs, and customized WordPress themes and plugins to fix errors and improve performance.

EDUCATION

Bachelor of Computer Science
2014 – 2018

UIIT, PMAS-Arid Agriculture University, Rawalpindi
Languages: English (Advanced), Urdu (Native)