Karim Merhom

Interim Full Stack Team Lead · Node.js, React, Next.js, TypeScript

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LinkedIn | GitHub | Portfolio

PROFESSIONAL SUMMARY

Full Stack Engineer and interim team lead with over four years of experience building web, mobile, and backend systems in TypeScript, Node.js, React, and Next.js. Progressed at Cypod Solutions from Junior to Senior Full Stack Engineer, then stepped in as interim team lead, now leading an event-driven microservices platform built on gRPC, RabbitMQ, PostgreSQL, ClickHouse, and Docker that processes device messages in about 3 milliseconds on average. Experienced in REST API design, real-time data, multi-tenant systems, CI/CD, and shipping React Native apps to the App Store and Google Play.

PROFESSIONAL EXPERIENCE

Cypod Solutions

Website

Interim Team Lead

Mar 2025 – Present

- Stepped in after the team lead left and lead engineering for Cypod's IoT telematics platform, rebuilt as 15 event-driven Node.js and TypeScript microservices using gRPC, RabbitMQ, and Docker.
- Shaped the core REST API behind the platform, covering authentication, multi-tenant access, background jobs, and PDF and Excel reporting (Express, Prisma, PostgreSQL, Redis).
- Built the telemetry pipeline that ingests device data over MQTT into ClickHouse and InfluxDB, cutting message processing time to a 3–3.5 ms average (as low as 1–2.5 ms).
- Delivered the reporting, fleet map, storage, and notification services, including GPS trips with Arabic and English addresses and SMS, email, and push alerts.
- Built features in the Next.js dashboard, including live maps, camera streaming, and multilingual support (React, TypeScript, Tailwind CSS, TanStack Query).
- Introduced team-wide quality gates with automated tests, SonarQube scans, and CI pipelines (Vitest, Playwright, GitHub Actions, GitLab CI).

Pathfinder: navigation desktop app for GNSS-denied environments

Rust, Tauri, React, TypeScript, MapLibre, SQLite, MQTT

- Built an offline Windows and macOS app that processes 400+ navigation messages per second with live tracks, alarms, routes, and replay.
- Added reliable cloud sync to the Cypod platform over MQTT and automated installer builds in CI.

Senior Full Stack Engineer

Jan 2024 – Feb 2025

- Owned features end to end, from data model and API design to the React interface and production release.
- Made architecture decisions for the Node.js and Flask services, including data modeling and query performance.
- Reviewed code and mentored junior engineers on design and implementation.

Toll tags: plate security and toll subscriptions (co-led)

Hardware security module (HSM), RFID, Flask, Next.js, server-sent events

- Integrated a hardware security module and RFID readers to extract the plate number from each encrypted car tag, match it to the car, and check the toll subscription.
- Built the Flask middleware between the readers, the HSM, and platform services.
- Delivered a Next.js monitoring dashboard with live updates over server-sent events.

Junior Full Stack Engineer

Nov 2022 – Dec 2023

- Improved front-end performance by 35% on core screens with React, Next.js, and Redux.
- Built real-time operator dashboards using server-sent events, removing the need for manual refreshes.
- Designed database schemas and REST APIs, and built server-side features in Node.js and Flask.

EXALT Technologies Ltd. (Nokia)

Junior Software Engineer Jan 2022 – Nov 2022

Apache Kafka, SFTP, Docker, Kubernetes

- Contributed to Apache Kafka and SFTP producer and consumer services for Nokia's charging gateway records.
- Implemented mapping rules applied to records inside the charging gateway module.
- Supported the DevOps team in deploying services with Docker and Kubernetes.
- Wrote technical specifications and user guides for the development team.

Lirten Solutions

Full Stack Developer Intern Jul 2020 – Sep 2020

MongoDB, Express, React, Node.js, PostgreSQL

- Built and tested features for MERN and PERN stack web applications, including landing pages and dashboards.

PROJECTS

Darak · verified real estate, direct from owners Oct 2024 – Present

Website · Next.js, React Native, Expo, Node.js, Express, PostgreSQL, Sequelize, Elasticsearch, Redis, Socket.io, Docker

- Building a real estate platform end to end: a Next.js website, an Expo (React Native) mobile app, and an Express API. Property owners list directly, without brokers.
- Implemented search on Elasticsearch with filters, geo-distance, and Arabic and English support. PostgreSQL is the system of record, and Redis handles caching and live updates over Socket.io.
- Integrated Paymob for listing payments and promotions, JSON Web Token (JWT) authentication, Expo push notifications, and direct uploads through pre-signed storage URLs.
- Run the production stack on Docker with Prometheus and Grafana monitoring and Jest test suites.

InPlace · food ordering app Dec 2023 – Apr 2024

App links · React Native, Node.js, MongoDB, Paymob, WebSockets

- Built and published an iOS and Android app with a Node.js API and MongoDB, released on the App Store and Google Play.
- Integrated Paymob card payments, live order updates over WebSockets, and JWT authentication.

TECHNICAL SKILLS

Languages: TypeScript, JavaScript, SQL, Python, Rust, Java, Go
Frontend: React, Next.js, React Native, Expo, Tailwind CSS, TanStack Query, Redux, Zustand, React Hook Form, Radix UI, Storybook, HTML, CSS
Backend: Node.js, Express, NestJS, REST APIs, gRPC, Protocol Buffers, Prisma, Sequelize, BullMQ, OpenAPI (Swagger), Flask
Data and messaging: PostgreSQL, ClickHouse, MongoDB, Redis, InfluxDB, Elasticsearch, SQLite, RabbitMQ, Apache Kafka, MQTT
Cloud and DevOps: Docker, Docker Compose, GitHub Actions, GitLab CI/CD, SonarQube, AWS S3, MinIO, NGINX, Prometheus, Grafana, Kubernetes
Testing: Vitest, Jest, Playwright, Supertest, React Testing Library, JUnit
Architecture: Microservices, event-driven systems, multi-tenant SaaS, real-time data (WebSockets, server-sent events), JWT authentication

EDUCATION

B.Sc. Computer Science and Engineering Sep 2017 – Jun 2022

The German University in Cairo

- Bachelor thesis: a token-based code clone detector in Python that finds duplicated code within and across repositories.

LANGUAGES

Arabic: Native | **English:** Fluent