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Profile

Full Stack & AI Systems Architect with about 2 years of experience independently designing and shipping complex, multi-system applications — spanning MERN stack, blockchain (ZK proofs, ERC-721), real-time IoT pipelines, graph databases, and AI-integrated platforms. Comfortable owning the full lifecycle from system architecture to AWS production deployment

Professional Experience

03/2025 – present
Trivandrum, India

Associate Consultant (Full stack developer)

kottackal Business Solutions [↗](#)

ZKIP-CLINICAL — Clinical Decision Support Platform

- Designed and built a full-stack clinical decision support system combining on-chain patient credentialing, a graph database of drug-disease-allergen relationships, and an AI risk retrieval layer seeded from RxNorm, MED-RT, PharmGKB, SNOMED CT, and ICD-10-CM across 300,000+ records.
- Engineered a custom vector-based clinical memory service that retrieves patient risk profiles using semantic similarity search across pharmacological, therapeutic, and demographic signals.
- Integrated Corti AI for clinical NLP automated PDF to diagnosis coding, real time drug contraindication detection, and guardrail enforcement.
- Implemented zero-knowledge proof circuits for privacy-preserving identity and prescription verification, and ERC-721 smart contracts for tamper-proof on-chain credentialing.
- Demonstrated interpretable AI behaviour: removing a single patient allergy record causally shifted the system's risk classification, proving traceable, auditable AI decisions.

TradeTrip — Autonomous Trade Finance Platform

- Built a multi-party trade finance platform covering the full Letter of Credit lifecycle across eight actor types and Marketplace.
- Automated the entire 7 phase workflow LC issuance, document compliance, freight coordination, port clearance, and settlement using a LangGraph ReAct agent with Groq and OpenRouter LLMs, requiring zero manual intervention end to end.
- Used smart contracts on Ethereum (Sepolia) for on-chain verification at each pipeline phase, and IPFS for tamper-proof trade document storage with a full audit trail.

GreenPoint — EV Fleet Management Platform

- Built Driver and Fleet Manager portals using the MERN stack; integrated OpenRouteService for real time route planning and dynamic rerouting to charging stations.
- Implemented live vehicle telemetry via MQTT and geospatial proximity queries using MongoDB 2D Sphere indexing.
- Configured full AWS production environment: EC2, Nginx reverse proxy, PM2 process management, SSL/TLS, and Security Group firewall rules

09/2024 – 03/2025
Trivandrum, India

Associate Consultant Trainee

kottackal Business Solutions [↗](#)

- Built the EV Driver Portal — interactive maps, OCPP 1.6 charging simulation, Razorpay payment integration, and real-time dashboards using Socket.IO and Recharts.

Projects

05/2026 – 06/2026

LearnSpace-Edtech [↗](#)

Next.js 14 · MongoDB Atlas · NextAuth v5 · Cloudinary · OpenRouter · Vercel

- Built a production-grade learning platform with role-based portals for Students, Instructors, and Admins; features include video delivery, live sessions, attendance tracking, and course management.
- Integrated and optimised an AI course assistant using free tier LLM models to keep running costs at zero for the client; architected for Vercel deployment.

Secure Mqtt Server [↗](#)

A microservice-based MQTT communication system ensuring confidentiality and reliability through PKI encryption and automated key rotation.

- Built a **PKI-based MQTT system** with **RSA encryption** and automated key rotation every 2 minutes.
- Designed a **microservice architecture** with **Node.js, Mosquitto, Redis (BullMQ)** for high reliability.
- Implemented a **dual-key fallback mechanism** to prevent message loss during key rotation.
- Integrated **IPFS (Pinata)** for decentralized key storage ensuring tamper-proof certificate access.

Skills

Frontend Development

React.js, Next.js, Tailwind CSS, Material UI, React-Leaflet, Recharts

Real-Time Systems

MQTT, Socket.IO, OCPP 1.6, AWS IoT Core

Security/Cryptography

JWT, PKI, RSA Encryption, Key Rotation, Zero-Knowledge Proofs, Bcrypt

Databases

MongoDB Atlas, Neo4j, Vector Search, Geospatial Queries, Postgres

Backend Development

Node.js, Express.js, REST APIs, Redis, BullMQ, Socket.IO

Cloud & DevOps

AWS EC2, AWS S3, AWS IAM, Nginx, PM2, SSL/TLS, Vercel, Netlify, Render

AI and Agents

LangGraph, ReAct agents, OpenRouter, Vector embeddings, Corti AI

Blockchain

Solidity, Ethers.js, ERC-721, ZK Proofs, IPFS, Hardhat

Education

09/2020 – 06/2024

B.Tech in Computer Science Engineering (8.19 cgpa)

Vimal jyothi engineering college

Certificates

- React, NodeJS, Express & MongoDB - The MERN Fullstack Guide. [↗](#)
- Google Cloud Career-Cloud Engineer Track. [↗](#)
- The Complete Full-Stack Web Development Bootcamp. [↗](#)
- AWS Certified Solutions Architect – Associate (SAA-C03) – Preparing.