KARAN KUMAR

Full Stack Developer | MERN & Next.js | Real-Time Communication Systems | WebRTC | Asterisk PBX
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Professional Summary

Performance-driven Full Stack Developer specializing in scalable web applications, real-time communication architectures, and multi-tenant systems. Proven track record architecting healthcare telephony infrastructure scaling to 30,000+ calls per month. Expert in React, Next.js, Node.js, TypeScript, WebRTC, and Redis, with a core focus on sub-100ms low-latency state delivery, production-grade security layers, and scalable system engineering.

Technical Skills

Languages: JavaScript (ES2022+), TypeScript, C++, SQL
Frontend: React.js, Next.js 14/15, Tailwind CSS, Redux Toolkit, RTK Query, Component Design
Backend: Node.js, Express.js, RESTful APIs, Mongoose, Sequelize ORM, Microservices, MVC Architecture
Databases: MongoDB, MySQL, PostgreSQL, Redis (Pub/Sub, Caching, Cluster Session Management)
Real-Time Systems: WebRTC, WebSockets, Socket.IO, Event-Driven Architecture, Live Synchronization
Telephony: Asterisk PBX, JsSIP, SIP Trunking, STUN/TURN, IVR Engines, ACD Queues, Call Controls
Security: JWT Authentication (Access/Refresh cycles), Two-Factor Authentication, Account Lockout, Hierarchical RBAC
DevOps & Tools: Cloudinary, VdoCipher Secure Streaming, Git, GitHub Actions, Postman

Professional Experience

Full Stack Developer — OD3X / CX Assist Ltd *Apr 2025 – Present*
AI-Powered Healthcare Communication Platform | London, UK (Remote)

- High-Scale Architecture: Scaled a mission-critical healthcare telephony engine from zero to 30,000+ monthly calls, maintaining sub-100ms client UI responsiveness and 99.9% uptime under peak load.
- WebRTC Telephony: Engineered an enterprise-grade browser softphone using JsSIP, WebRTC, and Asterisk PBX, supporting SIP signaling, STUN/TURN traversal, secure IVR workflows, call transfers, and encrypted server-side recordings.
- Data Isolation & Security: Architected a secure multi-tenant, multi-brand SaaS database matrix ensuring isolated clinic sandboxing alongside a granular, multi-level Role-Based Access Control (RBAC) layout.
- Real-Time State Sync: Eliminated costly HTTP polling by writing a low-overhead Redis Pub/Sub plus WebSocket layer, broadcasting instant system events and call states to 20+ active clinic setups simultaneously.
- Business Automation: Integrated a Vapi AI orchestration pipeline into clinical workflows, reducing agent overhead via intelligent automated call routing and real-time structured medical documentation summaries.
- Feature Delivery: Built and maintained 16+ clinical micro-modules (Appointments, Medical Records, Insurance, Ledgers), coupled with an analytics suite tracking core SLA metrics and missed-call trends.

Projects

Learning Management System (LMS) — Full Stack Hub Live Demo
Next.js, TypeScript, Node.js, MongoDB, Mongoose, VdoCipher, Cloudinary, 2FA

- Built a platform allowing instructors to publish courses with real-time multi-level commenting, nested replies, rating systems, and a dynamic "See Also" resource discovery layout.
- Integrated an AI-powered mock interview practice module alongside a community-driven peer interview experience sharing matrix to optimize user placement preparation.
- Implemented server-side VdoCipher streaming integration, embedding secure, encrypted video streaming parameters to eliminate unauthorized content scraping.
- Deployed multi-layered defense using Two-Factor Authentication (2FA), automated transactional notification systems, and optimized media pipelines leveraging Cloudinary asset isolation.

NextGen System — High-Availability Secure Backend Frontend / Backend
Node.js, Express.js, MySQL, PostgreSQL, Sequelize ORM, Redis, Socket.IO, JWT

- Engineered an enterprise authentication workflow using cryptographic JWT Access/Refresh token loops, defensive strict endpoint rate-limiting, and comprehensive Audit Logs.
- Built a defensive Multi-Device Session Management layer with active Account Lockout Protection to reliably mitigate brute-force vector threats.
- Developed standalone coding rooms driven by Socket.IO and Redis, integrating live multi-user code synchronization, real-time chat, snapshot version tracking, and active session history metrics.

Achievements

- Algorithmic Excellence: Solved 500+ Data Structures & Algorithms (DSA) problems on LeetCode, with a heavy focus on Advanced Graphs, Dynamic Programming, and Low-Level System Design patterns.
- Product Ownership: Acted as a core engineer building and delivering production-level real-time tooling used by professional endpoints daily to handle high-volume business configurations.

Education

B.Tech in Computer Science & Engineering *2022 – 2026*
Dr. A.P.J. Abdul Kalam Technical University (AKTU), Uttar Pradesh, India