BIPLAB MAL

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Professional Summary

Backend & Distributed Systems Engineer with production experience designing high-throughput microservices, real-time collaboration engines, and offline-first mobile systems. Proven track record of turning complex business bottlenecks into resilient code: scaled healthcare prescription pipelines for **25k+ MAU** at ScriptAssist and architected **Nerd'sHive**, a real-time developer hackathon platform serving live WebRTC audio/video and algorithmic teammate matching.

Technical Skills

Core Languages: TypeScript, JavaScript, Python, C++, SQL
Backend Systems: Node.js, NestJS (Microservices), Express.js, Event-Driven Architecture, Redis (Pub/Sub & Streams), REST, gRPC, TCP, WebSockets, Socket.IO, WebRTC
Databases & Caching: PostgreSQL, MongoDB (Compound Indexing, Lean Queries), Redis, WatermelonDB, SQLite
Cloud, DevOps & Edge: AWS (S3 Pre-signed Uploads), Cloudflare (Edge Caching & Rules), Docker, GitHub Actions CI/CD
Frontend & Mobile: React.js, Next.js 14 (App Router), React Native, Expo, Tailwind CSS
Architecture & Compliance: System Design, RBAC, OAuth 2.0, JWT, Stateless Nodes, 180-Day Retention Compliance

Professional Experience

ScriptAssist — United Kingdom (Remote) July 2025 – December 2025
Backend Engineering Intern *Focus: High-concurrency healthcare SaaS & logistics pipelines*

- **Monolith Migration:** Decomposed a monolithic pharmacy platform serving **25,000+ MAU** into modular **NestJS microservices**, decoupling user authentication, prescription processing, and courier dispatch.
- **Event-Driven Resilience:** Built inter-service event communication via **TCP transport and Redis**, eliminating cascading service failures and maintaining **99.9% system uptime**.
- **Logistics Automation:** Integrated Royal Mail and DPD carrier REST APIs into automated background fulfillment queues, slashing manual dispatch handling time by **40%**.
- **Security & Compliance:** Enforced role-based access control (**RBAC**) on clinical records and payment flows, ensuring strict regulatory data isolation between patients, doctors, and pharmacies.

Featured Production Projects

Nerd'sHive — Real-Time Developer Network & Hackathon OS **Live: nerdshive.online**
Next.js 14, Node.js, TypeScript, Redis Streams, WebRTC, MongoDB, AWS S3, Cloudflare

- **The Problem Solved:** Developers face high friction assembling hackathon squads across fragmented tools (Discord, Devpost, Zoom). Built a unified real-time arena combining talent scouting, persistent team voice, and project submission.
- **Algorithmic Matchmaking (Radar):** Engineered a skill-complementarity matching engine that pairs free agents with squads based on tech stack gaps, automating seat offers with countdown SLA timers.
- **Real-Time Voice & Arenas:** Implemented low-latency text channels and WebRTC mesh video/audio rooms using **Socket.IO with Redis adapters**, enabling $< 50ms$ latency for remote pair-programming and squad vetting.
- **High-Velocity Performance:** Slashed server RAM consumption by **85%** via direct **AWS S3 pre-signed upload URLs**, cached global assets via **Cloudflare Edge Rules**, and indexed high-traffic tournament leaderboards with **MongoDB compound indexes**.

Zen — Android Distraction-Free Home Launcher & Focus Engine **GitHub: github.com/bips241/zen**
React Native, Expo, TypeScript, Android Native Bridge, WatermelonDB, SQLite

- **The Problem Solved:** Standard smartphone home screens are engineered for doom-scrolling. Engineered a full Android home screen replacement that physically deters compulsive app-switching via intentional friction barriers.
- **Native Interventions:** Hooked into Android's **UsageStats API** to monitor active application foreground cycles, automatically injecting a 5-second breathing barrier and hard-blocking distracting apps during scheduled sprints.
- **Offline-First Architecture:** Designed a reactive local data store with **WatermelonDB and SQLite**, ensuring instant $< 16ms$ (60 FPS) launcher rendering with **zero network latency** and complete on-device privacy.

Education

B.Tech in Information Technology June 2025
JIS College of Engineering **CGPA: 7.88**
Higher Secondary (Science) • WBCHSE 2021 **75.4%**
Secondary Examination (Madhyamik) • WBBSE 2019 **80.0%**