Nivekithan

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SUMMARY

Backend Engineer passionate about distributed systems, systems programming, and building robust production systems. Experience delivering enterprise-grade scheduling, fintech, and funding platforms with focus on concurrency control, fault tolerance, and performance optimization.

WORK EXPERIENCE

Backend Engineer — Aug 2022 – Present
EPYC — *Delhi, India*

- Delivered production systems for clients across scheduling, fintech, and funding platforms

Scheduling System | *TypeScript, React Router v7, Cloudflare Workers, PostgreSQL*

- Achieved zero double bookings through proper concurrency control mechanisms
- Integrated Razorpay payment gateway with duplicate payment prevention logic
- Implemented Google Calendar sync to prevent scheduling conflicts
- Built custom mentor availability management system

Shopify Credits System for Airlines | *TypeScript, Next.js, Cloudflare Workers, PostgreSQL*

- Designed system ensuring balances never go negative by handling all concurrency edge cases
- Implemented accurate accounting across refunds, cancellations, and returns
- Integrated custom tax software for precise sales tax calculations
- Built analytics dashboards for vendors and airline management

Funding Application Platform | *TypeScript, React Router v7, Cloudflare Workers, PostgreSQL*

- Implemented application reconciliation across Algolia and multiple internal APIs
- Built fault-tolerant architecture with graceful degradation when APIs fail
- Developed duplicate detection and missing application recovery mechanisms

Additional Achievements

- Built bulk Slack DM system sending 10,000+ messages with rate limit handling using Bull queue
- Decomposed monolith into microservices, slashing memory/CPU usage during high job loads
- Developed Stripe payment gateway integration for events platform
- Migrated services from Digital Ocean to AWS, improving performance and reliability
- Created dev environment CLI reducing setup time from 2+ days to minutes
- Led JavaScript to JSDoc migration resulting in fewer runtime errors with zero delivery slowdown

FEATURED PROJECTS

Levenshtein Automata | *Kotlin* | GitHub — 2025

- Fast fuzzy string search using finite automata achieving 10,727 queries/sec on 370K-word dictionary
- 38% faster than runtime construction at distance 3 using precomputed DFA + Trie-based dictionary
- Implemented 7 progressive optimization versions (v1-v7) from Schulz & Mihov paper

Go Raft | *Go* | GitHub — 2024

- Raft consensus algorithm implementation with formal verification using P-lang model checking
- Minimal mutex usage for performance optimization while maintaining correctness guarantees
- Verified safety and liveness properties before writing implementation code

Protohackers Network Programming | *Go* | GitHub — 2025

- Solved 7 network programming challenges including custom LRCP protocol (UDP + acks + retransmission)
- Implemented binary TCP protocol for speed cameras, TCP proxy with address rewriting
- Built multi-user chat server and asset tracking system with binary protocol + SQLite

Tango Programming Language | *Go* | GitHub   2025
- Full compiler pipeline: Lexer → Parser → AST → Compiler → VM with bytecode execution
- Supports variables, arithmetic, boolean operations, and interactive REPL

Blender Render Farm | *Go, Docker, AWS* | GitHub   2024
- Serverless distributed rendering distributing animation frames across AWS Fargate containers
- S3 upload events trigger Lambda orchestration for parallel rendering with automatic frame consolidation
- Infrastructure as Code using Pulumi (AWS Batch + Lambda + S3)

TypeScript Compiler | *TypeScript, LLVM* | GitHub   2022
- TypeScript to native code compiler using LLVM backend with full test coverage
- Supports variables, control flow, functions, and operators with native code output

LIVE PRODUCTION PROJECTS

Maailit | *Next.js 14, Cloudflare Workers, Durable Objects, D1* | maailit.com | GitHub   2024
- Temporary email service for developers to test OTPs and password resets without inbox clutter
- Real-time WebSocket updates, AI-powered code extraction (GPT-4o-mini), 15-min auto-cleanup, zero registration

Fireside Events | *React Router v7, WebRTC, XState v5* | calls.nivekithan.com | GitHub   2024
- Real-time video broadcasting with XState state machines for complex UI flows
- Multi-participant calls, screen sharing, WebSocket signaling using Cloudflare Durable Objects

Chat with JSON | *Remix, Vercel AI SDK* | chat-with-json.nivekithan.com | GitHub   2024
- Query JSON files with natural language using GPT-4, with all data processing client-side in browser
- Auto schema generation and streaming responses for optimal user experience

pg-cluster (WIP) | *TypeScript, Effect-TS, Kubernetes, PostgreSQL 17* | GitHub   2025
- Kubernetes operator for PostgreSQL clusters with backups, PITR, and on-demand DB provisioning for PR previews

TECHNICAL SKILLS

Languages: TypeScript, Go, Kotlin, JavaScript
Backend: Node.js, Cloudflare Workers, Hono, Express.js
Cloud & Infrastructure: AWS (Batch, Lambda, S3), Cloudflare, Pulumi, Kubernetes
Databases: PostgreSQL, SQLite, D1
Frontend: React, Next.js, Remix, React Router, Vite
Other: WebRTC, WebSockets, Distributed Systems, Compiler Design, Network Programming

EDUCATION

University of Petroleum and Energy Studies (UPES)   Dehradun, India
B.Tech