NIHAL MANOJ

SOFTWARE ENGINEER | AI ENGINEER | AUTOMATION DEVELOPER

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PROFESSIONAL SUMMARY

Software Engineer with 3+ years at **Zoho** building scalable automation architectures, high-throughput API pipelines, and production full-stack systems. Engineered Java testing frameworks for 1,000+ scenarios and introduced HAR-to-YAML definitions that cut manual QA by **60%**. Architected multi-tenant SaaS platforms using **Next.js, Supabase (PostgreSQL), and MongoDB**, optimizing database latency by **92%**. Experienced in building AI-powered native macOS agents using **Swift, Anthropic API, and Model Context Protocol (MCP)**. Strong expertise in system isolation, RBAC security, REST APIs, and applying LLMs to solve real-world engineering challenges.

TECHNICAL SKILLS

Languages: Java, Python, SQL, Swift
Automation & Testing: Selenium, API Testing, Postman, Test Automation, Playwright
Development: Spring Boot, Next.js, SwiftUI, AppKit, Maven, Git,REST API, FastAPI, Node.js
Databases & Cloud: MySQL, PostgreSQL, MongoDB, Supabase, Vercel, Pagination, Query Optimization
AI & Engineering: RAG, Agentic AI, MCP, LLM-assisted Development, WebLLM, Ollama, Claude
Engineering Practices: SOLID, OOP/OOD, Design Patterns, Clean Architecture, Multithreading & Async Programming, Full-Text Search, Unit & Regression Testing, Code Review, Root-cause Analysis, Performance Profiling, SDLC

WORK EXPERIENCE

Quality Analyst - Automation Developer — Zoho Corporation
Nov 2022 – Present

- **Architected and scaled automated testing pipelines** for 1,000+ CRM regression and integration scenarios using Java and Selenium, cutting manual QA overhead by **60%**.
- **Optimized automation execution performance** by replacing fragile polling mechanisms with API-based synchronization, significantly mitigating flaky runs caused by network latency and backend scheduler delays.
- **Accelerated execution speed by converting 30% of UI test suites** into fast API workflows by generating declarative YAML test definitions directly from HAR network captures.
- **Engineered robust automation handling** for dynamic CRM architectures, complex single-page apps (SPAs), nested components, and multi-layered iFrames.
- **Automated REST API verification** using Postman and Java frameworks while integrating structured exception capturing and real-time execution reporting to streamline root-cause analysis.
- **Led end-to-end defect triage and release validation** across application logs, backend API responses, and front-end state failures to guarantee release stability.
- **Applied SOLID design principles** to maintain modular, scalable test utilities and elevated team engineering standards through structured peer code reviews and cross-functional collaboration.

PROJECTS

ShadowBot — AI-Powered QA Verification Tool
Tech Stack: Swift, SwiftUI, AppKit, ScreenCaptureKit, Anthropic API | GitHub | Apr 2026 – May 2026

- **Engineered a native macOS AI verification agent** using Swift, SwiftUI, and ScreenCaptureKit for real-time visual context extraction and multi-modal QA automation.
- **Architected an AI action parsing and execution engine** that translates raw LLM outputs into automated UI interactions, achieving an **84% task completion rate** across 50 multi-step test workflows.
- **Designed stateful UI validation pipelines** that evaluate dynamic visual states and complex multi-step workflows beyond traditional, static assertion testing.
- **Implemented Server-Sent Events (SSE) streaming** for instant model response rendering, maintaining low-latency interactions (**3–5 second execution loops**).

Client Task Tracker – Tsan Technologies

Tech Stack: Next.js, Supabase, Vercel, MCP | May 2026 – Aug 2026

- **Architected a multi-tenant data access layer** using a reusable database abstraction with 4 tenant-scoping primitives, strictly enforcing isolation and authorization boundaries across 8 relational tables.
- **Engineered robust authentication & RBAC** via NextAuth, incorporating fail-closed security middleware, granular API access controls, forced password-reset flows, bcrypt hashing, and audit logging for sensitive role mutations.
- **Optimized PostgreSQL query performance** by deploying 6 `pg_trgm` GIN indexes for fast fuzzy search and implementing cursor-based pagination (100 records/page) to minimize memory overhead and payload size.
- **Managed schema evolution and continuous integration** across 15 additive SQL migrations via Supabase CLI, implementing environment-gated Vercel deployment pipelines for zero-downtime schema updates.
- **Enforced end-to-end data integrity and contract testing** using Zod schema validation alongside automated regression checklists covering auth flows, RBAC enforcement, payload verification, and REST APIs.

Client Task Tracker – Corazon Technologies

Tech Stack: Next.js, MongoDB, Vercel | Jan 2026 – Apr 2026

- **Architected a multi-tenant SaaS platform** featuring 11+ relational data models and organization-scoped data isolation, using compound MongoDB indexing to reduce query latency by **92%** (2.3s to 180ms) for 1,000+ active users and 10,000+ time logs.
- **Engineered robust application security** by implementing JWT authentication, `AsyncLocalStorage` request context, middleware authorization, and 4-role RBAC (Super-Admin, Admin, Lead, Employee) to strictly enforce row-level tenant access controls.
- **Built an automated time-tracking & attendance engine** with stateful timer controls, server-side validation, partial unique indexes, and automated Vercel Cron midnight (IST) closeout pipelines for precise billing hour calculations.
- **Streamlined operational reporting & analytics** by building multi-filter client dashboards and automated PDF/Excel export tools, cutting manual reporting time from 30 minutes to one click while shipping 50+ feature releases under zero-cost serverless limits.

SYNC VJ — Android Contact Management Application

Tech Stack: Android Studio, Java | 2020

- **Engineered the core UI/UX and client application** for a centralized staff directory app deployed to 300+ college faculty and administration members.
- **Developed interactive directory and profile features** with dynamic department filtering, real-time search, and native Android intent workflows for direct phone and email communication.
- **Integrated remote application data syncing** with custom college server endpoints and managed end-to-end deployment to the Google Play Store.

EDUCATION

B.Tech in Computer Science | Vimal Jyothi Engineering College (KTU) | 2018 – 2022 | CGPA: 7.6 / 10

LEADERSHIP & CERTS

Chairperson — ACM Student Chapter (2021–2022)

Certifications:

- Introduction to MCP – Anthropic
- IBM RAG and Agentic AI – Coursera
- Data Analysis – Udemy