

Akashdeep Majumder

Software Engineer

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SUMMARY

Software Engineer with 3 years across React frontend and FastAPI backend development, now building full-stack expertise with MERN and system design.

Highlights

- Diagnosed a real-time rendering problem as two independent issues — migrated the LiDAR visualizer to React Three Fiber for GPU-accelerated spatial rendering, then separately reduced data bandwidth by **93%** (1.5 MB → 100 KB per frame) through WebSocket compression, taking throughput from **5 FPS to 50+ FPS**.
- Engineered an Immer patch-based undo-redo system that cut client-side memory overhead by **roughly 90%** on complex warehouse maps by tracking state diffs rather than storing full snapshots after every operation.
- Digitized a manual warehouse picking process for the Indian Army within a **14-day deadline**, delivering a robot + Pick-to-Light system that reduced retrieval time by **roughly 50%** — packaged as an air-gapped offline desktop app for factory-floor deployment.

WORK EXPERIENCE

Software Engineer | Thedush Robotics

Mar 2023 - Apr 2026

Software Engineer for 3 years, owning both frontend and backend architecture at Thedush Robotics.

ONIX — Robot Telemetry & Visualization

- Identified the initial route-based architecture as unmaintainable at scale after 1.5 years of feature growth. Redesigned the entire codebase to a **feature-based architecture** in **3 weeks** using AI-assisted development — each feature encapsulates its own logic and only exposes what other features consume, resulting in significant code reduction through reusability.
- Designed a centralized map management system after noticing every feature was independently maintaining its own map state — causing recurring, hard-to-trace inconsistencies. Normalizing into a single source of truth eliminated map-related errors by 100%.
- Wrote custom transformation math to align **3 independent coordinate systems** — canvas origin, map origin, and merge space — recalculating final coordinates on every rotation and save.
- Built a reusable WebSocket hook library managing 5+ live subsystem connections each with independent reconnect logic, and an **Immer patch-based undo-redo** system to handle complex map editing states.

WMS + Robot Integration

- Architected and delivered a complete Warehouse Management System integrating robots and Pick-to-Light guidance for the Indian Army in 14 days. Packaged as an air-gapped Electron desktop app for LAN-only factory-floor deployment.

Mentored 5-6 interns through code reviews and pair programming over 3 years.

PROJECTS

TestAI — AI-Powered Test Generation

Apr 2026 - Present

- Built a tool that generates **Playwright E2E scripts** from source code using LLM APIs. Deterministic output enforced through structured response schemas rather than prompt wording alone.
- Hands-on experience working with multiple LLM providers, prompt constraint design, and structured output validation — reflects the AI-assisted development workflow applied in production contexts.

Adda — Full-Stack Social Platform

2026

- Next.js 16 App Router, TypeScript, Redux Toolkit, MongoDB. SSR, SSG, JWT in HTTP-only cookies, optimistic UI with silent rollback, code splitting, lazy loading, Core Web Vitals optimized to green.

More projects — Robot Config Builder, Network Strength Visualizer, Cricket Scoring App: akashdeep-majumder.github.io

SKILLS

Frontend & React: React.js (v18/v19), Next.js (SSR, SSG), JavaScript (ES6+), TypeScript, React Hooks, Redux Toolkit, React Context API, state management, HTML5, CSS3, responsive design

Visualization & UI: Three.js, React Three Fiber, Recharts, Material UI, Tailwind CSS, Styled Components, component architecture

APIs, Real-time & Performance: REST APIs, WebSocket, JWT, Axios, performance optimization, Core Web Vitals, accessibility, WCAG, cross-browser compatibility

Dev Tools & Testing: Git, ESLint, Vite, Webpack, Docker, CI/CD, Jest, Vitest, React Testing Library, code reviews, agile

Backend & DB: Node.js, Express.js, FastAPI, Python, MongoDB, MySQL, Claude Code, LLM APIs

EDUCATION

Bachelor of Science (Graduate) | Tripura University | 2019 - 2022