

ADITYA RAJ

Bengaluru, Karnataka, IN

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Technical Skills

Languages: Java, C++, JavaScript, TypeScript

CS Fundamentals: Data Structures & Algorithms, OOP, DBMS, Computer Networks, System Design

Backend: Node.js, Express.js, REST API Design, Socket.IO, WebRTC, JWT Authentication

Frontend: React.js, Next.js, Redux Toolkit, TypeScript, Tailwind CSS

Databases: MongoDB, MySQL, Mongoose ODM

Tools: Git, GitHub, Postman, Vercel, Render, Cloudinary

Experience

SAM Softech

Jun 2025 – Aug 2025

Full Stack Web Developer Intern

Patna, Bihar

- Designed and delivered **3 client applications** end-to-end within a **2-month window** — requirement analysis, API design, implementation, testing, and deployment.
- Diagnosed and resolved **8+ critical bugs** across 2 legacy systems, tracing root causes through React component trees and Express middleware chains.
- Authored **20+ REST API endpoints** consumed by frontend clients, with request validation, error handling, and consistent response schema across all routes.
- Maintained **zero production rollbacks** on assigned deliverables across 10 weeks using Git branch strategy, peer code review, and pre-deployment smoke testing.

Projects

SiteBuilder | *React.js, TypeScript, Node.js, Express.js, MongoDB, DND Kit, Redux Toolkit*

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- Designed a **recursive JSON component tree** as the core data model — supports arbitrary nesting, serialization to MongoDB, and deterministic HTML/CSS code generation from any tree state.
- Implemented a **Redux-based state machine** for the editor: **6 distinct interaction modes** (select, drag, resize, type, preview, export) with mode-specific event handlers and state transitions.
- Engineered the **code generation pipeline** as a depth-first tree traversal that maps component nodes to HTML/CSS tokens — output passes W3C validation with no post-processing.
- Integrated DND Kit with **collision detection algorithms** for nested droppables, resolving ambiguous drop targets across overlapping component boundaries.

WorkSphere | *React.js, TypeScript, Node.js, Express.js, MongoDB, JWT, Geolocation API*

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- Architected **5 normalized MongoDB collections** (employees, attendance, leaves, payroll, recruitment) with cross-collection aggregation pipelines for payroll and reporting queries.
- Implemented **geofence validation** using the Haversine formula server-side — computes distance from **3 registered office coordinates** and rejects check-ins outside a configurable radius.
- Secured **20+ API routes** with JWT middleware, role-based guards, account lockout after **5 failed attempts**, and first-login forced password reset.
- Automated payroll: aggregation pipeline computes net salary for **50 employees** from attendance and leave data in **under 500ms**, then generates PDF payslips via server-side rendering.

AayuMed | *React.js, TypeScript, Node.js, Express.js, MongoDB, Socket.IO, WebRTC*

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- Implemented **WebRTC signaling server** using Socket.IO — handles offer/answer exchange, ICE candidate relay, and room management for **1-to-1 peer sessions**.
- Modeled appointment workflow as a **6-state finite state machine** with server-enforced transitions, preventing invalid state jumps (e.g. completing an unstarted consultation).
- Stored and indexed **Socket.IO messages in MongoDB** with sender, timestamp, and roomId fields — chat history query returns in **under 100ms** for sessions up to 500 messages.
- Covered **4 Mongoose schemas** (User, Appointment, Prescription, Message) with referential integrity enforced at application layer across all write operations.

Coding & Problem Solving

Solved **175+ DSA problems** in Java and C++ on LeetCode — Arrays, Strings, Linked Lists, Trees, Graphs, Dynamic Programming, and Greedy algorithms.

Applied core CS concepts directly in projects: Haversine formula in WorkSphere, tree traversal in SiteBuilder's code generator, state machine design in AayuMed's appointment system.

Education

Bengal College of Engineering & Technology
Bachelor of Technology in Computer Science & Engineering

Sep 2022 – July 2026
Durgapur, West Bengal