Amrit Raj

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Education

Indian Institute of Information Technology (IIIT)   Ranchi, Jharkhand
Bachelor of Technology (B.Tech.) in Electronics and Communication Engineering   Nov. 2021 – Apr. 2025
- **Programming Coursework:** Algorithms & Data Structures, Database Systems, Computer Architecture & Vision
- **ECE Coursework:** Embedded Systems, Circuits, Logic Design, VLSI Design, Signal Processing

Skills

- **Software Development:** Full-stack application design, system architecture, scalable solutions
- **Programming Languages:** C++, Python, JavaScript, TypeScript, HTML, CSS
- **Frontend:** React, Next.js, Redux, Material-UI, Bootstrap, Tailwind CSS
- **Backend:** Node.js, Express.js, REST APIs, WebSockets
- **Databases & Caching:** PostgreSQL, MongoDB, Redis, Kafka
- **Cloud & DevOps:** AWS, Docker, Kubernetes, CI/CD, Prometheus, Grafana
- **Tools & Technologies:** Git, JWT, OAuth
- **Soft Skills:** Problem-solving, team collaboration, technical communication, time management

Projects

Pen & Pulse   Oct. 2024 – Oct. 2024
Social Journalism and Blog Hosting Platform

GitHub: github.com/pen-pulse **Live:** LiveLink/pen-pulse

- Designed a scalable social journalism and blogging platform using React, offering seamless content creation features.
- Integrated Cloudflare Workers to ensure low-latency, efficient backend operations.
- Validated data integrity using Zod runtime validation and type-safe TypeScript code.
- Engineered fast and scalable database interactions by integrating Prisma ORM with PostgreSQL.
- Implemented secure JWT authentication with cookies to provide a user-friendly and secure experience.

Custom NPM Package Development   Oct. 2024 – Oct. 2024
Tailored for the Pen & Pulse project, ensuring compatibility with React and TypeScript ecosystems.
- Developed and published the reusable TypeScript package @amritraj/common-app on npm (npmjs.com/amrit_16).
- Created modular Zod-based input validation schemas for authentication and blog management, ensuring type safety.
- Configured TypeScript with tsconfig.json, declaration files, and namespace setup for seamless integration.
- Systematized runtime validation for user inputs like SignupInput and CreatePostInput.
- Published the package with optimized configurations for public usage in projects like Pen Pulse.

EcoTracker   Nov. 2024 - Nov 2024
Carbon Footprint and Environmental Impact Monitoring Platform

GitHub: github.com/eco-tracker **Live:** LiveLink/eco-tracker
- Devised a platform to monitor carbon footprints, air quality, and environmental challenges with real-time data integration.
- Built a responsive, user-friendly interface using React, TypeScript, and Tailwind CSS.
- Integrated Firebase Authentication and Firestore for secure login and persistent data storage.
- Extracted real-time air quality data through API integrations, enriching the platform's ecological features.
- Managed state efficiently with Zustand, minimizing re-renders and ensuring optimal performance.

Universe Explorer 3D   Nov. 2024 - Nov. 2024
Interactive 3D Solar System Exploration Platform

GitHub: github.com/universe-explorer-3d **Live:** LiveLink/universe-explorer
- Engineered an immersive 3D solar system simulation with realistic planets and orbits using Three.js.
- Constructed modular components for planets, orbits, and interactive UI elements like info panels and controls.
- Integrated smooth camera controls for an intuitive navigation experience.
- Illustrated planetary details dynamically via interactive info panels, enhancing user engagement.
- Enhanced UI with Tailwind CSS and Framer Motion, ensuring a responsive and accessible design.
- Ensured cross-device compatibility, with a clean and accessible UI for desktop and mobile devices.

Ongoing Projects

Automation-and-Workflow-Integration-Tool   Nov. 2024
Automates repetitive tasks by linking apps and services seamlessly.
- Conceptualized a platform to automate workflows across diverse apps and services.
- Implemented real-time webhooks and asynchronous backend communication for efficient task execution.
- Structured reliable data consistency using the transactional outbox pattern.
- Built with Node.js (backend), React/Next.js (frontend), and PostgreSQL with Prisma.
- Leveraged Kafka and Redis to ensure high throughput and low latency.

🔗 For more information: portfolio/amritraj