Rahul Yadav

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Education

A.P. Shah Institute of Technology — Maharashtra, India
B.E. in Information and Technology; — *Jun 2020 – Jul 2024*
Major Degree in AI / ML — *Jun 2022 – Jul 2024*

Skills

Programming: JavaScript, TypeScript, Python, Rust, Bash, SQL, YML, Docker

Libraries: React, Redux, Node.js, Express.js, Django, Flask, Redis, GraphQL, Apollo, Mongoose

Languages: Hindi (Native), English

Work Experience

Data Science Wizards (DSW) — Open Source Engineer Intern
Thane, Maharashtra — *March 2024 – Current*

- Provided support to clients on various open-source tools and software, including **Docker, Redis, and Kafka**.
- Gained extensive hands-on experience with **Kubernetes (K8s)**, diving deep into its core concepts and practical applications.
- Created and managed K8s clusters of varying complexities:
  - Single-node clusters using **Minikube**
  - Multi-node clusters (**1 master, 2 worker nodes**)
  - **High-availability clusters** (3 masters, 3 worker nodes)
  - **Bare-metal clusters for OpenShift**
- **Deployed open-source projects (EFK stack)** on client's **Tanzu Kubernetes** environments across **pre-prod, prod, and DR** setups.
- Consulted on and resolved multiple issues in pre-prod and UAT environments, including **fixing connectivity problems between external services and internal pods**.

RedCarpetUp — Rust & Javascript WASM Development Intern
Remote — *Nov 2023 – April 2024*

- Developed features and added support for core libraries like Jsonnet in Rust, creating bindings between JavaScript and the custom Javy runtime.
- Integrated the Jsonnet library into the existing codebase by building a Rust bridge to enable communication between JavaScript and C++.
- Integrated Rust and JavaScript code using WebAssembly bridges like WASI, enabling efficient communication between the languages.

Pi R Square Digital Solutions Pvt Ltd — Full Stack Developer
Pune, Maharashtra (Remote) — *Feb 2023 – Oct 2023*

- Spearheaded the migration from v1 API to v2, **enhancing system reliability and performance**
- Designed and optimized various AWS Lambda functions, one of which drastically reduced **video generation time from 11-15 seconds to a significantly lower time**. Achieved this **by optimizing FFmpeg commands and reducing video frame rate** for static images.
- Managed and improved the frontend codebase, focusing on enhancing user experience and interface.
- Implemented React lazy loading, successfully **reducing bundling time and improving the application's performance**.
- Enhanced code quality by **componentizing various parts of the website**, resulting in a more maintainable and scalable codebase.

NixonBit — Full Stack Developer
Noida, Utter Pradesh (Remote) — *Jun 2022 – Dec 2022*

- Collaborated in the team to develop a social media platform, Bealive, **focusing on backend functionalities** such as user **authentication**, **data management**, and **API integration**.

- **Played an integral role in building an e-commerce** platform, implementing backend logic for product catalog, shopping cart, and order processing.
- **Worked with the frontend development team**, focusing on **enhancing user interfaces and user experiences** for client projects.
- Involved in the **development of an E-management software** for schools, Eclump, **working on features** related to the student **fee structure, fee history, and other administrative functionalities**.
- Made significant contributions to various projects, resulting in improved functionality and user experience.
- Demonstrated proficiency in a variety of programming languages, frameworks, and tools, showcasing versatility and adaptability.

Projects

VectoRapid | - *Private*

- Engineering a **high-performance, scalable vector database using Rust**, tailored for computational efficiency in high-throughput tasks. Chose Rust for its strong type checking, memory safety features, and low-level control.
- **Utilized SIMD (Single Instruction, Multiple Data)** registers for **high-speed vector similarity** calculations. Employed Rust's `unsafe` blocks to tap into low-level machine operations.
- **Integrated RocksDB as the storage engine**, optimized for write-heavy workloads. Implemented hierarchical k-means clustering algorithms to accelerate query times.
- **Leveraged HNSW (Hierarchical Navigable Small World) graphs** for efficient nearest-neighbor search within identified sub-clusters.
- Designed the system to be algorithm-agnostic, offering users the flexibility to operate in a standard mode or customize the database with advanced algorithms for specialized needs.

Pose Tracking Application |

- Developed a pose tracking application as a personal project, leveraging the MediaPipe package for pose landmark detection.
- The application allows users to track their pose and identifies the next pose for a given exercise. This is achieved by processing images or videos, identifying key body locations, and analyzing posture.
- The application provides real-time analysis of the user's posture and suggests the next pose for the exercise, improving the efficiency and effectiveness of the exercise.
- The project showcases my understanding of machine learning concepts and my ability to apply them in a practical setting.

Reimbursement |

- Developed a reimbursement management platform as part of a college project, transforming the traditional offline reimbursement process into an efficient online system.
- The platform enables users (students and staff) to request reimbursements online, eliminating the need for physical forms and reducing processing time.
- Implemented features for report generation and graphical analysis, providing insights into reimbursement trends and improving decision-making.
- The platform streamlines the reimbursement process, making it more efficient and user-friendly.

Storage System |

- Developed an express.js application that enables users to create a store for uploading various types of files such as images, videos, mp3, and text.
- The main objective of the application was to merge audio and image files, convert text to audio, merge video and audio files, and merge multiple video files.
- The project showcases my understanding of file handling, merging, and processing in a server-side application, as well as my ability to use express.js for building web applications.

Achievements

Conducted a GitHub session for the Data Science club, discussing collaborative code development, linking Git Repos, and handling pull requests.

Conducted a Git/GitHub session for the DevOps club, emphasizing code tracking, collaboration, and the role of DevOps in the software development lifecycle.

Participated in the Smart India Hackathon, securing runner-up position with my team. Showcased problem-solving skills, technical proficiency, and teamwork. Contributed to an innovative solution recognized nationally.