Kunal Raj

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Profile

Proficient in designing and implementing web-based applications using JavaScript, React, Node.js, and MongoDB. Strong grasp of computer science fundamentals, including data structures, algorithms.

Education

Chandigarh University *2022 – 2026*
B.E. in Computer Science and Engineering

Skills

Technologies: Java, Python, C++, JavaScript, HTML, CSS, React.js, Node.js, Express.js

Databases: MySQL, MongoDB **Tools:** Git, GitHub, Docker, Tinkercad **Concepts:** DSA, OOP, REST APIs

Projects

Web-Based IDE Jan 2025 – Mar 2025

- Designed a sandboxed code execution environment using Docker, ensuring secure and isolated runtime for 100% of user sessions, supporting 10+ concurrent containers.
- Implemented a persistent code-saving feature using localStorage, improving user retention for sessions over 30 minutes and reducing accidental data loss by 90%.
- Integrated REST APIs enabling secure, real-time code compilation for 10+ programming languages with low-latency execution.
- Improved container startup time by 30% using caching and persistent Docker volumes.

LMS Class Modal Jan 2025 – Feb 2025

- Enhanced and Tuned four core real-time collaboration features, delivering seamless performance for 15+ concurrent users with consistent sub-150ms latency, leading to a 20% improvement in user satisfaction metrics.
- Designed and planned 6+ upcoming features, including attendee tracking, role-based permissions (teacher/student), responsive UI for rooms, and interactive tools like Raise Hand and Doubt sections to enhance engagement by over 40%.

Facial Recognition Security System Jan 2024 – May 2024

- Developed an OpenCV-based security system with face detection and recognition using Haar Cascades and LBPH, achieving 96% identification accuracy.
- Achieved 96.4% face recognition accuracy on a dataset of 120+ labeled images, reducing manual verification time by 70%.

Sudoku Game Solver Jun 2024

- Designed a graphical user interface for the Sudoku solver using Java Swing, enabling interactive puzzle input.
- Generated Sudoku puzzles with 3 difficulty levels and solved them in under 50ms using Streamlined backtracking.
- Integrated a Java Swing-based GUI enabling interactive puzzle input, difficulty selection, and real-time solution rendering, reducing solve time visibility to under 100ms.

Certificates

Cloud Computing (NPTEL), Computer Architecture (NPTEL), React Native (Coursera), Python for Everybody (Coursera)

Achievements

- Published a research paper on scalable Web IDE architecture in an international peer-reviewed journal, cited by 2+ academic sources and presented at a International-level.
- Solved 200+ algorithmic problems on LeetCode, including advanced system design challenges, strengthening proficiency in scalable architecture and accelerating solution development by over 40%.
- NSS Volunteer: Led 5+ outreach and campus cleanup drives, engaging over 100 students to promote civic responsibility and environmental awareness.