



Sudhanshu

Bachelor of Technology
in Mechanical Engineering
Indian Institute Of Technology, Ropar

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GitHub | Website
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EDUCATION

| Degree | Institute/Board | CGPA/Percentage | Year |
|------------------------|--|---------------------|-----------|
| Bachelor of Technology | Indian Institute of Technology, Ropar | 7.29 (Till 4th Sem) | 2023-2027 |
| Senior Secondary | Rajasthan Board of Secondary Education | 84.40% | 2022 |
| Secondary | Rajasthan Board of Secondary Education | 91% | 2020 |

PROJECTS

- Checkers Game** April 2025 - June 2025
[Github](#)
C++, 2D Array, Graph, Minimax Algorithm
 - Developed a checkers game in C++ using a 2D array to represent the board and unique values for pieces.
 - Implemented turn-based moves, capturing, promotion, and game end conditions.
 - Used the minimax algorithm with fixed-depth search for an optimal AI opponent.
- CoSketch** March 2025 - June 2025
[Visit Site](#) | [GitHub](#)
Web Development Project
 - CoSketch: Developed a real-time collaborative drawing application enabling multiple users to sketch together with live updates and session persistence.
 - Frontend: Built with React, TypeScript, and HTML5 Canvas, integrating WebSocket connections for sub-100ms synchronization of drawing events.
 - Backend: Designed a Node.js/Express API and WebSocket server for room management, message broadcasting, and user presence, backed by a PostgreSQL database.
- KD-Tree** Oct 2024 - Dec 2024
[Github](#)
C++, Data Structure and Algorithms, KD-Tree, KNN, Median of Medians
 - Implemented a KDTree in C++ to efficiently find the nearest k d-dimensional points to a specified d-dimensional point with an average time complexity of $O(k \log k * d \log n)$.
 - Achieved a creation time complexity of $O(d * n \log n)$ from an array or vector using algorithms like Median of Medians. Priority Queue was used to perform the search of k Nearest Neighbour to a point.

Minor Projects

- Branch-predictor** [GitHub](#)
 - Implemented a C++ branch predictor to enhance instruction execution and branching efficiency.
- Codeforces Analysis API** [GitHub](#)
 - A API that delivers detailed analytics on Codeforces problems, user submissions, and contest performance.
 - Implemented using HTML, CSS and JavaScript.
- Chat App** [Visit Site](#) | [GitHub](#)
 - A responsive real-time chat app.
 - Built with WebSockets for instant messaging, user presence and message history.

TECHNICAL SKILLS

- Programming Languages:** C++, Python, Rust, JavaScript, TypeScript, SQL, Arduino.
- Development tools:** Git, GitHub, Code Editor (VS Code, Cursor), Postman.
- WebDevelopment:** HTML, CSS, JavaScript, Tailwind CSS, TypeScript, React, NextJs, NodeJs, Postgress, Prisma, Monorepo, MongoDb, WebSocket, Pub Subs(Redis), Poem, Tokio, Serde, Diesel.
- Devops:** CI/CD pipeline, Docker, Nginx(Reverse Proxies), Certbot(certificate management), Process Management(PM2), Newrelic, Prometheus and Grafana, AWS(EC2), Digital Ocean, Serverless(Cloudflare), Kubernetes(K8s).
- Competitive Programming:** Quite experienced in competitive programming and have a good grasp on data structures and algorithms.

KEY COURSES TAKEN

- Mathematics:** Probability and Statistics, Linear Algebra and Integral Transforms, Calculus, Differential Equations.
- Mechanical:** Theory of Machines, Fluid Mechanics, Solid Mechanics, Thermodynamics, Engineering Mechanics.
- Others:** Introduction to Computing and Data Structures, Economics, Basic Electronics.
- Additional Certified Courses:** Web Development, DevOps.

MISCELLANEOUS

- Achievement 1**, Website Development Internship | [Link](#) 2025
- Achievement 2**, Secure AIR 9863 among 150K candidates in JEE Advance | [Link](#) 2023
- Achievement 3**, Get 98.18 percentile in JEE Mains | [Link](#) 2023
- Specialist on Codeforces**, Max Rating 1497 on handle Sudhanshu_Gaur | [Sudhanshu_Gaur](#) 2025
- 3 Star on Codechef**, Max Rating 1765 on handle sudhanshu_g | [sudhanshu_g](#) 2025