Rajat Bhasin

Bachelor of Technology
in Computer Science Engineering
Indian Institute Of Technology, Ropar

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Education

Degree	Institute/Board	CGPA/Percentage	Year
Bachelor of Technology	Indian Institute of Technology, Ropar	9.15 (Till 4th Sem)	2023-2027
Senior Secondary	Central Board of Secondary Education	94.6%	2022-2023
Secondary	Central Board of Secondary Education	93.2%	2020-2021

Major Projects

- **RISC-V Simulator** *Mar 2025 - Apr 2025*
  Computer Architecture **Github**
  – Built a 5-stage pipelined RISC-V CPU simulator with full instruction support, data forwarding, and branch prediction via BTB and PHT.
  – Implemented performance tracking (CPI, hazards) and configurable knobs for pipelining, forwarding, and debug tracing.
  – **Tech Stack:** C++, RISC-V
- **LRU-Splay Cache Framework** *Jun 2025*
  DSA project **Github**
  – Designed and implemented a cache simulation framework comparing LRU and Splay Tree-based caches under realistic access patterns.
  – Integrated Dijkstra's algorithm on dynamic graphs to evaluate cache performance in pathfinding, using custom data structures and STL in C++.
  – **Tech Stack:** C++, STL

Minor Projects

- **AtmosView** *Jun 2025*
  Real-Time Weather and Air Quality Monitor **Github**
  – Built a real-time web dashboard to display weather and AQI data based on user geolocation or searched cities.
  – Integrated OpenWeatherMap and AQICN APIs to dynamically render data using Express.js and EJS templating.
  – **Tech Stack:** Node.js, Express.js, EJS, JavaScript, CSS
- **C2Promela** *May 2025*
  Programming Paradigms and Pragmatics **Github**
  – Built an AI assistant to translate C code into Promela for formal verification via rule suggestions or code generation.
  – Used Sentence Transformers (MiniLM) for rule embeddings and Gemini API for context-aware Promela output.
  – **Tech Stack:** Python, Sentence Transformers (MiniLM), Google Gemini API

Technical Skills

- **Programming Languages**: C/C++, Python, JavaScript, EJS
- **Development Tools & Frameworks**: NodeJS, ExpressJS, Bootstrap, HTML, CSS, Postman
- **Misc**: Github, PostgreSQL, RISC-V

Key courses taken

- **CSE & Maths**: Data Structure & Algorithm, Digital Logic Design, Programming Paradigms and Pragmatics, Discrete Math, Computer Architecture,Probability and Statistics, Differential Equations
- **Others**: Professional Communication, History of Technology, Economics,Basic Electronics, Biology for Engineers, Signal and Systems

Achievement

- **Institute Merit Scholorship**,Awarded to top 7% students based on SGPA criteria(9.51) *2025 - Semester 3*
- **Codeforces**,Max rating 1237 ***Codeforces***
- **Jee Advanced**,Secured AIR 3093 *2023*
- **Jee Mains**,Secured AIR 3813 *2023*
- **Problem Solving Practice**,Solved 500+ programming problems across GeeksforGeeks, Codeforces, LeetCode, and Coding Ninjas. ***GeeksforGeeks*** ***LeetCode*** ***CodingNinjas***
- **HScTSS Scholar**,Awarded Haryana Science Talent Search Scheme scholorship. *2020*