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*
  Dynamic Weather and AQI Dashboard **Github**
  - Built a weather web app with Node.js and Express.js, integrating OpenWeatherMap APIs for live weather and AQI data.
  - Designed a responsive EJS frontend with dark mode, interactive JS elements, and secure API key handling via dotenv.
  - **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*
- **HScTSS Scholar**, Awarded Haryana Science Talent Search Scheme scholorship. *2020*