Guramrit Singh
Computer Science & Engineering
Indian Institute of Technology Bombay

210050061
B.Tech.
Gender: Male
DOB: 04/03/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	

Pursuing **Minor** in **Artificial Intelligence and Data Science**

Scholastic Achievements

- Secured **Department Rank 1** in a batch of 194 students in Computer Science and Engineering *(2023)*
- Received **Quadeye Scholarship** after 3-stage process consisting of CP & aptitude test and interview round *(2023)*
- Awarded **Institute Academic Prize** for securing **Institute Rank 1** among batch of **1400**+ students *(2022)*
- Conferred with **9 AP** grades given to **top 1%** students in courses including Software Systems Lab *(2023)*
- Bagged **All India Rank 26** in Joint Entrance Examination Advanced among **1,40,000**+ candidates *(2021)*
- Secured **AIR 1** with perfect **300/300** score and **100** percentile in **JEE-Main** among 10,00,000+ candidates *(2021)*

Olympiads

- Bagged **Silver** at **Southeast Asian Mathematical Olympiad (SEAMO)** in Intermediate Category *(2018)*
- Selected to attend the Orientation-Cum-Selection Camp for **International Chemistry Olympiad (IChO)** *(2021)* by making it to the **top 64** students to clear **INChO**, Indian National Chemistry Olympiad
- Among the **top 102** students to clear **INAO**, Indian National Astronomy Olympiad and selected for the *(2021)* Orientation-Cum-Selection Camp for **International Olympiad on Astronomy and Astrophysics(IOAA)**

Research Experience & Key Projects

Recursive Solutions to First-Oder Model Counting | *Summer Internship* *(May 2023 - Present)*
Guide: Prof. Kuldeep S. Meel, National University of Singapore

- Contributed to a codebase aimed at finding **weighted model count** of a given weighted first-order **CNF** formula
- Devised and implemented an algorithm to find a set of sufficient **base cases** for a given list of **recursive functions**
- Developed code in **Scala** to generate **C++** code for evaluating recursive functions, considering provided base cases
- Utilized the **GMP** library for **infinite precision** model count computation with optimized memory **caching**

Railway Planner | *Course Project* *(August 2022 - November 2022)*
Guide: Prof. Supratik Chakraborty , Department of Computer Science & Engineering

- Modelled a rail planner, utilizing **hash maps** to create database-query system with appropriate collision resolution
- Implemented auto completion feature using **tries** and analyzed user reviews with **Knuth-Morris-Pratt algorithm**
- Used **breadth-first search** to find journeys with **optimal cost** and **minimal layover** time at intermediate stations

FastChat | *Course Project* *(October 2022 - November 2022)*
Guide: Prof. Kavi J. Arya, Department of Computer Science & Engineering

- Built a **client-server** network, supporting secure text, image and file transfer interactions with **E2E encryption**
- Implemented **group** creation, enabling clients to create admin-enabled groups and broadcast messages to all members
- Conducted analysis of various **server load balancing** strategies including random, round-robin and least-connection

Enhancing Data Prefetching | *Course Project* *(March 2023 - April 2023)*
Guide: Prof. Biswabandan Panda, Department of Computer Science & Engineering

- Proposed a **heuristic-based prefetching** mechanism and successfully integrated it with the existing codebase
- Evaluated existing **IPCP** (Instruction Pointer Classifier Based Prefetcher) on a number of **graph** and **SAT** traces
- Achieved a notable **enhancement** of **2.64%** in **IPC** values over a collection of **20 traces** of different classes

File Transfer: Socket Programming | *Course Project* *(March 2023)*
Guide: Prof. Bhaskaran Raman, Department of Computer Science & Engineering

- Implemented a **client-server** network utilizing **TCP connections** to enable efficient two-way file exchange
- Used the **select system calls** for parallel transfer of files to achieve maximum throughput without buffer overflow

Technical Skills

Languages	Proficient in: C++, Python | Familiar with: Java, Scala, Bash, Awk, Sed, Prolog
Development	HTML, CSS, Bootstrap, JavaScript, PostgreSQL, Doxygen, Sphinx
Software and Packages	MATLAB, GitHub, LaTeX, Docker, NumPy, Matplotlib, Pandas

Extracurricular Activities

Sports	Completed a year long **National Sports Organisation** programme in **cricket**	*(2022)*
	Awarded **runner-up** in **cricket** tournament among ICSE Schools in Chandigarh	*(2018)*
Misc.	Solved **250**+ problems in last year hosted on sites like **Codechef** and **Codeforces**	*(2023)*
	Awarded the title of **Student of the Year** for the Academic Year 2018-19	*(2019)*