

## ACADEMIC QUALIFICATIONS

Year	Degree/Certificate	Institute	CPI/%
2020 - Present	B.Tech + M.Tech	Indian Institute of Technology, Kharagpur	8.48/10
2020	CBSE (XII)	Bhawan Vidyalaya Panchkula, Haryana	95.8%

## INTERNSHIPS

## Software Developer Intern — Graviton Research Capital(HFT)

(May'24 - July'24)

- Optimized encryption code by parallelizing operations and integrating the **AVX instruction set**, resulting in reduced latency
- Improved latency(**by 30%**) by profiling, identifying bottlenecks, resolving trade-offs between the original and AVX-optimized code
- Designed and implemented a **class split using CRTP for dual use in production and testing**, using mock files for testing
- Utilized **GoogleUT** to test member functions of the test class, ensuring comprehensive coverage across various possible scenarios

## AWARDS AND ACHIEVEMENTS

- Secured **sixth** highest score in **INMO 2019** and attended the **International Mathematics Olympiad Training Camp**, HBCSE
- Secured an All India Rank **460** in JEE Advanced, 2020 and All India Rank **634** in JEE Main, 2020 (Among top 0.04% candidates)
- Secured **National Rank 24** and stood **2nd in the Institute rankings** in **ICPC Regionals 2023** from Kanpur Mathura Region
- Qualified KVPY Stage 2 and was eligible for a scholarship under the KVPY scheme conducted by the Government of India
- Participated in the **Asian Pacific Mathematics Olympiad (APMO)** in the year 2019 as a representative of India

## PROJECTS

MiniShell | Operating Systems - [Link](#)

(Feb'23)

- Built a **C++** application that emulates the functionality of a Linux-type shell, using **syscalls** for process-related operations
- Implemented features like I/O **redirection**, **piping** several commands, interrupting and moving a running process to the **background**
- Implemented a searchable **shell history** using up-down arrow keys & features for **quick cursor navigation** using keyboard shortcuts
- Added system security features such as **fork bomb detection** and **file lock checking** using based on process statistics

Message Oriented TCP | Computer Networks - [Link](#)

(Feb'23)

- Developed a reliable transport protocol library in **C** with connection-oriented data delivery and **message boundary preservation**
- Implemented software layer to design **sockets API** for seamless **portability** of existing TCP applications to MTCP protocol
- Designed **threads** with **circular buffers** & adequate metadata to process incoming & outgoing bytes from underlying TCP connection
- Ascertained **synchronization** of access to shared buffers between the library threads & users' process via **mutex locks**

KGP-miniRISC Processor | Computer Organization and Architecture Laboratory - [Link](#)

(Oct'22 - Nov'22)

- Designed instruction encodings, data/control path elements, and ALU as per the given **ISA** in a single cycle 32-bit processor
- Successfully deployed and rigorously tested a range of algorithms, such as bubble sort and binary search, on FPGA board for validation

Apollo | Database Management Systems - [Link](#)

(Feb'23 - Mar'23)

- Ideated an **online hospital management** system for the management of hospital staff & implemented its backend using Django
- Implemented features like Patient Registration, Staff Login, Appointment Scheduling, and patient database maintenance via **MySQL**
- Added **Email Support** for the website with a Query forum and Automated reports communication in a weekly manner

## COMPETITION/CONFERENCE

- Peak Rating: **1949 (Candidate Master)** on Codeforces and **2058 (5 star)** on CodeChef under the handle swapbeast, linpaws634
- Secured global ranks **244** and **493** in Google's global coding competition, **Code Jam** Farewell Round A and Round C
- Participated in **Overnite Kshitij 2023**, at IIT Kharagpur and secured **3rd** and **6th** positions in the Final and Preliminary rounds
- Achieved **3rd** rank in the institute and an impressive **All India Rank of 134** in CodeKaze 2023, the nation's largest hiring challenge

## COURSEWORK INFORMATION

**Theory and Laboratory:** Programming & Data Structures, Algorithms, Software Engineering, Operating Systems, Computer Organization & Architecture, Compilers, Computer Networks, Database Management Systems, Machine Learning, Deep Learning  
**Theory:** Maths - I & II, Discrete Structures, Probability & Statistics, Linear Algebra, Information Retrieval, Big Data Processing

## SKILLS AND EXPERTISE

**Languages:** Proficient - C++, C, Python | Familiar - Java, SQL, Bash, Verilog, LaTeX    **Tools:** GNU Debugger, Perf, GitHub, Make  
**Libraries & Frameworks:** Standard Template Library, POSIX threads, Unix, Git, Numpy, Pandas, matplotlib  
**Skills:** Data Structures and Algorithms, Object Oriented Design, Systems Programming, Socket Programming

## POSITIONS OF RESPONSIBILITY

- As a member of the coding club of IIT Kharagpur(**Grimoire of Code**), contributed to developing a competitive programming culture and served as a **Problem Setter and Tester** for coding challenges(**CDC Series**)
- As a **Maths Olympiad captain** at RK Hall, taught **20+** students to develop mathematical skills for **Inter Hall Maths Olympiad**