



ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	B.Tech in Mathematics & Computing	Indian Institute of Technology Delhi	9.72
2021	CBSE	Army Public School Dhaula Kuan	495/500
2019	CBSE	Army Public School Dhaula Kuan	489/500

SCHOLASTIC ACHIEVEMENTS

- **Department Rank 1:** Achieved Department Rank 1 among 120+ students in the class of Mathematics and Computing
- **IIT Delhi Semester Merit Award:** Awarded scholarship **thrice** for being amongst **Top 7%** students out of 1200 students
- **JEE ADVANCED 2021:** Secured **All-India Rank 419** among **150,000** candidates who appeared in JEE Advanced 2021
- **JEE MAIN 2021:** Secured **All-India Rank 515** among **1 million+** students who appeared in JEE Main 2021
- **SAKURA SCIENCE Fellowship 2023:** Selected among the **Top 5** students at IIT Delhi for a university visit to **Japan**
- **KVPY Fellow:** Awarded fellowship by Government of India for securing **All-India Rank 404** among **100,000** students
- **NAEST 2020:** Secured **3rd rank** in home-based **physics experiments** in NAEST conducted by IAPT and IIT Kanpur

INTERNSHIPS

- **Developing Diffusion Model to generate synthetic time-series data (UCL London)** (May, 2023 - Present)
 - Working to devise **Diffusion Model** that generates synthetic **time-series** such as stock prices, audio and medical data
 - Important to efficiently train models in **data-scarcity** conditions such as financial accounts and patient's medical data
 - Read numerous research papers on **generative models** like diffusion, GANs, and VAEs to get an idea of present works
 - **Co-authoring** research paper with a UCL student and 3 Ph.D. researchers at **UCL and NatWest**, presenting our model

PROJECTS

- **Automation of Animation Pipeline for Augmented Reality** | TCS Research, Prof. Rahul Narain (Dec, 2022 - Jan, 2023)
 - **Read papers** on algorithms establishing part-wise and node-wise **correspondence** between skeletons of different objects
 - Created a **GUI interface** with Python, from scratch using **Polyscope** and **PYGEL3D** graphics Python libraries
 - **Enabled** easy manual annotation of skeleton pairs to create a **dataset** for **testing** the correspondence algorithm
- **CS50 AI: Introduction to A.I. with Python** | Prof. David Malan, Harvard University (Jan, 2023 - May, 2023)
 - Traffic sign identification model using Neural Networks :
 - **Built** a neural network using **TensorFlow** and GTRSB dataset to classify road signs based on an image of those signs
 - Achieved **accuracy**-score of **95%** on GTRSB dataset, demonstrating capability of model for **self-driving** applications
 - Nim playing A.I. trained using Reinforcement Learning :
 - Developed a Python-based **Q-learning** agent to learn **optimal** Nim strategies, trained on 10,000 games of Nim
 - A.I. to play Minesweeper Game using deterministic techniques :
 - Developed a **knowledge**-based A.I. agent using Python and PyGame to play Minesweeper game, supporting **AI Move**
 - Created a knowledge base of mines and safes, updated after new click, and uses **set-theory** for **inference** mechanism
- **Simulation of Galperins' Billiards** | Prof. Ashish Chiplunkar (Aug, 2022 - Sept, 2022)
 - Simulated elastic **collisions** between 'n' objects in a 1-D space, using **Heap** data structure to keep track of collisions
 - Inspired by Galperin, calculated **digits of π** by simulating elastic collisions between three balls, with one acting as wall
- **Implementing Basic Search Nearby feature of Google Maps** | Prof. Naveen Garg (Oct, 2022 - Nov, 2022)
 - Developed Python program to **find restaurants** near to an input location and given **proximity**, in a 2-D plane city
 - Implemented a 2-D **Range Tree** to store coordinates of all hotels and enable efficient **logarithmic** time queries
- **Sequence Generator using Finite State Machines** | Prof. Dhiman Mallick (Nov, 2022 - Dec, 2022)
 - Goal was to create a **sequence generator** based on entry number and demonstrate it on Altera **MAX3000 CPLD** board
 - Designed and **implemented** a finite state machine using **Boolean** algebra, and programmed the machine in **Verilog**
- **Solving Sudoku using Python** | Prof. Sayan Ranu (Feb, 2022 - Mar, 2022)
 - Developed and implemented a **Backtracking algorithm** in Python to find the solution to a given sudoku puzzle

TECHNICAL SKILLS

- **Languages:** Python, C++, C, MATLAB, Verilog, LaTeX, HTML | **Libraries:** sci-kit learn, TensorFlow, matplotlib, NumPy, pandas
- **Design:** AutoCAD, Canva | **Courses:** Advanced Learning Algorithms (Stanford), Introductory Options by FEC IITG

EXTRA CURRICULAR ACTIVITIES

- Achieved **University Rank 5** in WorldQuant International **Quant** Challenge 2023, out of **300+** teams across IIT Delhi
- Secured **2nd position** in Mergers and Acquisition Case-Study at **Rendezvous 23'**, competing against IIMs and DU
- **Academic Mentor** at BSW: Personally **mentored** students of first year and taught **Linear Algebra** and Differential Equations



IIT COURSE

Degree	Institute	CGPA
B.Tech in Mathematics & Computing	Indian Institute of Technology Delhi	9.72

COURSES DONE

Engg. Visualization & Comm., Macro Economics, Discrete Mathematical Struc., Probability & Stochastic Pro., Data Structures And Algorithms, Optimization Methods & Appl., Linear Algebra & Applications, Digital Electronics, Embedded Systems, Introduction To Psychology

QUALIFYING EXAM

- Joint Entrance Examination (JEE) Advanced Rank: 419 (GE)

EXTRA CURRICULAR ACTIVITIES

- 1st position, Inter-hostel, Hockey (June, 2022 - May, 2023)
- Winner, BSA General Championship Trophy (August, 2018 - March, 2019)
- 4th position, Ragnarok (June, 2022 - May, 2023)
- OCS Volunteer, Recruitment 2022-23 (June, 2022 - May, 2023)

POSITIONS OF RESPONSIBILITY

- Kaizen Activity Head, NSS (June, 2022 - May, 2023)
- Executive , Mathematics Society, CAIC (June, 2022 - May, 2023)
- BHM Rep - BHM, Zanskar, BHM (June, 2022 - May, 2023)
- Coordinator, Speranza, BSW (June, 2022 - May, 2023)
- Squash - Captain, Zanskar, BHM (June, 2023 - May, 2024)