



SAMYAK JAIN



ACADEMIC DETAILS

| Year | Degree / Board | Institute | GPA / Marks(%) |
|------|---|--------------------------------------|----------------|
| --- | B.Tech and M.Tech in Computer Science & Engineering | Indian Institute of Technology Delhi | 8.9 |
| 2020 | CBSE | Amity International School | 97.4 |
| 2018 | CBSE | Amity International School | 95.4 |

SCHOLASTIC ACHIEVEMENTS

- **IIT-D Semester Merit Award:** Awarded for being in top 7% out of 1000+ students in **2 consecutive** semesters (2021)
- **Department Change:** Among 5 students to secure a change in discipline to CSE(Dual) on academic merit basis (2021)
- **KVPY:** Awarded prestigious Kishore Vaigyanik Protsahan Yojana fellowship for **both SA and SX streams** (2020)
- **NSEP Merit Award:** Awarded for being in **national top 1%** in **National Standard Examinations** in Physics(NSEP) (2020)
- **NTSE Scholar:** Selected among the **top 750 students** (from 10,00,000+ students) conducted by NCERT (2018)
- **NEST AIR 9:** Secured **AIR 9** in Nationwide Education and Scholarship Test (2 lakh+ people participated) (2018)

INTERNSHIPS

- **MITACS, Research Internship, UVic(Prof. J Pan)** *Geometrical Probability in Wireless Network* May, 2023 - Jul, 2023
 - Improved algorithm for Directed Connectivity Analysis for use in **Starlink satellites** by **40% space optimization** using memoization
 - Developed **dynamic Ran2Ran**, a distance distribution algo for randomly moving objects in **arbitrary polygons** using static Ran2Ran
- **Carnegie Mellon University, Research Intern(Prof. Pradeep Ravikumar)** *Clinical NLP* Apr, 2022 - Jul, 2022
 - Developed a probabilistic DL model for **context-sensitive** spelling correction of **clinical text** with **96.56%** accuracy
 - Modified **levenshtein distance** & included abbreviations for better analysis of clinical reports of patients via computers

PROJECTS

- **Graph Distillation (Prof Sayan Ranu):** *PyTorch,Python* Nov, 2023 - Nov, 2023
 - Developed a **state of the art** algorithm for **model agnostic graph distillation** in node classification **without** use of **GPU**
 - Used a reverse KNN set from WWL distances of graphs to generate shapley value & find good/bad nodes for distillation set
- **Seq2Seq Architectures in NLP (Prof Parag Singla):** *PyTorch,Python* Nov, 2023 - Nov, 2023
 - Built a **Seq2Seq** architecture from **scratch** converting text images to latex using **custom Resnet** with a **0.76 BLEU score**
 - Constructed **CNN** and **ResNet** based encoders and **LSTM** based **decoders** from **scratch** with teacher forcing for training
- **Hacking Linux Kernel v6.1.6 (Prof Smruti Sarangi):** *C, Kernel Programming* Jan, 2023 - May, 2023
 - Modified the **linux kernel** to implement custom **IPC mechanisms**, **systems calls** and implemented a **virtual character device**
 - Implemented a **custom scheduler** inside the kernel based on **RMS** and **DMS scheduling** and implemented **PCP mechanism**
- **Self-Driving Car & AI game engine(Prof Rohan Paul):** *Course projects using python* Aug, 2022 - Dec, 2022
 - Implemented **Markov Decision Processes** & **Q-Learning** for a **self-driving car** on **random maps** with other **moving cars**
 - Developed an **AI engine** for the Connect4(mXn board)game using **MCTS**(Monte Carlo Tree Search) & **Expectimax algorithms**
- **Maze Game IIT Delhi (Prof. Rijurekha Sen):** *C++, SDL* Apr, 2022 - May, 2022
 - Designed a multiplayer real-life game in IITD using **SDL2** & **OOPS** with **random spawning** & **auto-chasing obstacles**
 - Incorporated the **TCP/IP protocol** via stream socketing to enable players play over **wifi/localhost** without disruption
- **Interpreter for Functional Programming Language (Prof. S Arun Kumar):** *SML,ML-LEX,YACC* Mar, 2022 - Apr, 2022
 - Devised a 2 stack **Turing Machine** for a Turing complete functional programming language using **ML-Lex**, **ML-Yacc** in **SML**
 - Delivered **AST** of programs; supports **lambda recursive**, named & nested function evaluation with bool & int arguments
- **Multifidelity data in Fourier Neural Operators (Prof. Souvik Chakraborty):** *PyTorch,Python* Jun, 2021 - Feb, 2022
 - Integrated **FNO** with **MAML** to numerically simulate PDEs & used **ANIL** algo to reduce data by **40x** with **99.7%** accuracy
 - Utilized **PyTorch** for the code along with **CUDA**, **MATLAB** & **FeniCS** for Data generation using **HPC** facility of IITD
 - Compiled the results and completed the manuscript; One manuscript in draft form (to be communicated soon); **Received LOR**

TECHNICAL SKILLS

- **Programming Languages:** C, C++, R, Python, SML, Octave, Java, VHDL, JS,HTML-CSS, Prolog, ML-Lex, ML-Yacc
- Libraries & Frameworks like TensorFlow, Keras, PyTorch, Qiskit, BeautifulSoup, ReactJS, Django, Flask, Astropy, NLTK
- **Softwares & Utiles:** MATLAB, AutoDesk Inventor & EAGLE, LaTeX, Blender, Solidworks, TinkerCAD & Arduino, MS Word & Excel

POSITION OF RESPONSIBILITY

- **Course TAsip: Data Structures And Algorithms (Prof Rahul Garg & Prof Subodh Sharma)** Aug, 2023 - Dec, 2023
 - Selected as TA for Data Structures & Algorithms for a class of **500 students**. Responsible for creating 2 course assignments and their autograders, in charge of lab sessions of strength 50 and creating the programming quizzes. **Received LOR.**
- **Overall Coordinator at PAC: Umbrella body for research culture in physics** Aug, 2023 - May, 2024
 - Led a 3-tier team of 15 coordis, 40 executives & 100+ members; Generated revenue of **5 lakh rupees**.
 - Organised **Cosmicon-** annual astronomy extravaganza with a footfall of 3000+ with **8 workshops**, **6 guest lectures**.

Disclaimer: All the information on this page is entered by student.



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IIT COURSE

Degree

B.Tech and M.Tech in Computer Science & Engineering

Institute

Indian Institute of Technology Delhi

CGPA

8.9

COURSES DONE

Linear Algebra & Diffe. Equa., Calculus, Intro. To Electrical Engg., Intro. To Computer Science, Probability & Stochastic Pro., Discrete Mathematical Structur, Digital Logic & System Design, Introduction To Comp.sc. & Eng, Data Structures And Algorithms, Principles Of Elect. Materials, Climate Modeling, Signals And Systems, Computer Architecture, Programming Languages, Design Practices, Computer Networks, Digital Logic & System Design, Principles Of Artificial Int., Cryptography & Computer Sec., Analysis & Design Of Algorithms, Quantum Information & Computa., Optimization Methods & Appl., Stochastic Of Finance, Operating Systems, Spl. Topics In Cryptography, Intro. To Parallel & Dis. Pro.

EXTRA CURRICULAR ACTIVITIES

- Ortus Hostel fest Team head, Nilgiri (July, 2021 - May, 2022)
- Rangmanch Hostel Cultural Fest, Nilgiri (July, 2021 - May, 2022)
- Ortus Hostel fest Team head, Nilgiri (July, 2021 - May, 2022)
- Rangmanch Hostel Cultural Fest, Nilgiri (July, 2021 - May, 2022)
- Head Volunteer, Office of Career Services (July, 2021 - May, 2022)
- Rubik's Cube - SciBizTech League Quiz - Third, Rubik's Cube - SciBizTech League Quiz (July, 2021 - May, 2022)
- IITD Quizzing League (Team Standings) - Second Runner-up, IITD Quizzing League (Team Standings) (July, 2021 - May, 2022)
- IITD Quizzing League - Bronze Medal, IITD Quizzing League (July, 2021 - May, 2022)
- Open BP debating tournament 2021 Semi-finalist, Open BP (July, 2021 - May, 2022)
- AmProAm Debating Tournament 2021 Semi-finalist, AmProAm Debating Tournament (July, 2021 - May, 2022)
- Ortus Hostel fest Team head, Hostel Committee (July, 2021 - May, 2022)
- Rangmanch, Hostel Committee (July, 2021 - May, 2022)
- Rangmanch Hostel Cultural Fest, Hostel Cultural Fest (July, 2021 - May, 2022)
- Ortus Hostel fest Team head, Hostel Fest (July, 2021 - May, 2022)
- Ortus Hostel fest Team head, Nilgiri (July, 2021 - May, 2022)
- Rangmanch Hostel Cultural Fest, Nilgiri (July, 2021 - May, 2022)
- Winner, Bluffs and Bargains (June, 2022 - May, 2023)
- Finalist, IITD Scrabble League (June, 2022 - May, 2023)

POSITIONS OF RESPONSIBILITY

- Overall Coordinator, Physics and Astronomy Club, CAIC (June, 2023 - May, 2024)
- Coordinators, Physics and Astronomy Club, CAIC (June, 2022 - May, 2023)
- Executives, Physics and Astronomy Club, CAIC (July, 2021 - May, 2022)
- Tryst Coordinators, CAIC (July, 2021 - May, 2022)
- Sportech Executives, BSA (July, 2021 - May, 2022)
- BRCA Rep - Literary, Nilgiri, BHM (July, 2021 - May, 2022)
- Junior Member, ShareIIT, NSS (July, 2021 - May, 2022)
- Executive, Mathematics Society, CAIC (July, 2021 - May, 2022)
- Representative, Events Team, AAIP, OTH (July, 2021 - May, 2022)
- Hostel Representative, Literary, BRCA (July, 2021 - May, 2022)