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

Scholastic Achievements

- Secured an **All India Rank 15** in **Joint Entrance Examination Advanced** among 150,000 candidates *('21)*
- Got an **All India Rank 59** in **Joint Entrance Examination Main** among 1,000,000 candidates *('21)*
- Achieved **All India Rank 10** and was awarded the prestigious **KVPY fellowship** by IISc Bangalore, India *('21)*
- Awarded **4 AP** (Advanced Performer) grades for exceptional performance (**top 1%**) in Linear Algebra, Differential Equations, Basics of Electricity and Magnetism , and Data Structures and Algorithms *('22)*
- Among the National **Top 1%** in **Indian Olympiad Qualifiers** of **Physics**, **Astronomy** and **Chemistry** *('21)*
- Amongst the few curated students **invited** for the **Orientation Camp** of **International Physics Olympiad**, **International Chemistry Olympiad** and **International Astronomy Olympiad** *('21)*
- Department rank: **11** out of 190 students, demonstrating strong academic performance and dedication *('23)*

Professional Experience

Financial Research Analyst | *Internship* *(May '23 - Jul '23)*

Franklin Templeton Investments

- Studied the basics of **Fixed Income** Assets, particularly **Collateralized Loan Obligations** and their valuations
- Developed a **real-time** comprehensive **CLO** market monitoring platform with a robust data feed utilizing **SQL** queries and advanced analytics through **Python** scripts, empowering investors with actionable insights
- Spearheaded an **Exploratory Data Analysis** project to **forecast downgrades** in CLO tranches and translated found insights into the development of deterministic **machine learning models** with accuracies upto **97.4%**
- **Automated** PPT generation for weekly spreads meeting and converted VBA to Python code seamlessly

Key Projects

Algorithmic Trading | *Ongoing Summer of Science Project* *(May '23 - Jul '23)*

Math & Computing Club

- Achieved proficiency in **trading concepts** and **financial markets** by successfully completing modules 1-6 and 10 from **Zerodha Varsity**, a prestigious online platform renowned for its comprehensive educational curriculum
- Developed a comprehensive and adept understanding of both **technical** and **fundamental** analytical perspectives
- Acquired knowledge about **Derivatives** such as **Futures** and **Options**, with a focus on trading strategies
- Implementing diverse **Trading Systems**, including Pair Trading, Momentum Portfolio, and Calendar Spread
- Learning about **Profit and Loss** analysis and **Machine Learning** Techniques incorporated in trading systems

Microarchitecture based optimization | *Course Project* *(Spring '23)*

Guide: Prof. Biswabandan Panda, Department of Computer Science & Engineering

- Implemented a best-offset learning **prefetcher** for the L2 cache in **ChampSim** based on the DPC2 winning paper
- Optimized the **IPC** for graph algorithms such as BFS, Dijsktra's, etc by simulating combinations of various LLC cache **associativities**, **eviction policies** (LRU/LFU/FIFO) and cache **hierarchies** (inclusive/exclusive)

Railway Planner | *Course Project* *(Autumn '22)*

Guide: Prof. Supratik Chakraborty, Department of Computer Science & Engineering

- Designed a railway planner in **C++** using data structures such as **Dictionary**, **Trees**, **Heaps** and **Graphs**
- Efficient storing of journeys in the **dictionary** using a **hash table** allowing for searching in almost constant time
- Utilized **Quicksort** to sort the journeys and studied its effectiveness based on the selection of different pivots
- Optimized searching for station names using **Trie** data structure and querying reviews using **KMP** algorithm

Cinema A to Z | *Course Project* *(Autumn '22)*

Guide: Prof. Kavi Arya, Department of Computer Science & Engineering

- Built a **web application** which contains necessary information about all web series, animes and movies
- **HTML**, **CSS** and **JavaScript** are utilized to form an **interactive front end** for the web application
- Used the concepts of **Web Scraping** to scan through many websites and extract relevant information from them

Other Projects

Competitive Programming | *Ongoing Seasons of Code Project* *(Summer '23)*
Web & Coding Club

- Explored problem-solving techniques, including **dynamic programming**, **greedy algorithms**, and more
- Accomplished problem-solving prowess with over **250** successfully solved challenges from prominent platforms

Super Resolution of Face Images using Kernel PCA prior | *Course Project* *(Spring '23)*
Guide: Prof. Suyash P. Awate, Department of Computer Science & Engineering

- Employing **Kernel PCA**, we derived intricate higher-order, non-linear correlations within facial images
- The posterior probability model is enhanced by incorporating a **noise model** based on well-established blur matrices
- Utilized **gradient descent** to obtain the MAP estimate for a collection of low-resolution face images

Socket Programming Lab | *Course Project* *(Spring '23)*
Guide: Prof. Bhaskaran Raman, Department of Computer Science & Engineering

- Designed and implemented a robust C++ server-client **socket programming network**, facilitating seamless exchange of both textual data and media files with an emphasis on **reliability**, and **optimal performance**.
- Supports **multiple clients** and utilizes a round robin fashion of data transfer for **load balancing**.

Tic Tac Toe | *Course Project* *(Autumn '22)*
Guide: Prof. Kavi Arya, Department of Computer Science & Engineering

- Formulated the multiplayer game Tic Tac Toe using **Java** and the concepts of **socket programming**
- Developed a **Client-Server model** having various ports, and multiple threads and sockets for each port

Positions of Responsibility

Aahvan Coordinator | *Aahvan* *(May '22 - Apr '23)*

- Collaborated with **Decathlon** to promote sports within the institute using fun challenges
- Ideation and conduction of a half marathon with more than **5000 participants** in total

Institute Events Convener | *Institute Sports Council* *(May '22 - Apr '23)*

- **Responsible** for ensuring the smooth conduction of various **sports council events** catering to the whole institute
- Organized and handled various **General Championships** with huge audiences inside the institute

Department Academic Mentor | *Student Mentorship Programme* *(May'23 - present)*

- Selected out of a pool of candidates on the basis of extensive interview and peer review process to mentor sophomores
- Guiding sophomores on academic and extra-curricular decisions and helping them navigate their curriculum

Technical Skills

Languages	C/C++, Python, Java, Octave, Bash, Awk, Sed
Development	HTML5, CSS, JavaScript, Git, Bootstrap, LaTeX, Jira, Doxygen, Sphinx

Courses Undertaken

Computer Science	Abstractions and Paradigms for Programming, Data Structures and Algorithms, Data Analysis and Interpretation, Software Systems Lab, Discrete Structures, Computer Networks, Logic for Computer Science, Design and Analysis of Algorithms, Digital Logic Design and Computer Architecture, Artificial Intelligence and Machine Learning*, Operating Systems*, Automata Theory*
Basic Engineering	Differential Calculus, Integral Calculus, Linear Algebra, Differential Equations, Organic and Inorganic Chemistry, Physical Chemistry, Quantum Physics and Application, Basics of Electricity and Magnetism, Engineering Graphics and Drawing, Biology, Introduction to Electronics and Electrical Circuits, Economics

** to be completed by November 2023,*

Extracurricular Activities

Tech	Achieved 2rd place in **Techradiance** conducted by **Harbour technologies**	*('17)*
	Actively engaging in **competitive programming** hosted on various algorithmic programming sites including **Codechef**: **2113** and **Codeforces**: Max Rating **1821**	*('23)*
Sports	Got 3rd place in basketball district tournament	*('17)*
	Selected for Inter IIT Badminton Pre Camp	*('22)*
	Won Gold Medal in Badminton and Silver Medal in Frisbee Aavhan	*('22)*
Misc.	Awarded with the Bronze Standard of The International Award For Young People, (Part of The Duke Of Edinburgh's International Awards)	*('17)*
	Took part in various community service projects at Fountainhead school, Surat	*('18)*