Scholastic Achievements

- Achieved an **All India rank of 60** in **JEE Mains** out of 1.5 million students *('20)*
- Achieved an **All India rank of 109** in **JEE Advanced** out of 0.15 million students *('20)*
- Awarded the **Kishor Vaigyanic Protsahan Yojana (KVPY)** fellowship by securing an **All India Rank of 309** out of **50,000 candidates** *('19)*
- Awarded **National Talent Search Examination** (NTSE) Scholarship by NCERT, Government of India which is given to **1000** out of **1 million** aspirants from all over India *('18)*

Work Experience

Assert SecureTech | *Computer Vision Intern* *(Jan'22 - Apr'22)*

- Worked on **Computer Vision projects** such as developing systems to detect multiple objects in **large data sets** of photos and videos with high accuracy using **state of art models**
- Trained and tested object detection models like **Yolov4** on custom data sets using **Darknet**
- Implemented models such as **PyTesseract and EasyOCR** for optical character recognition
- Created an **annotator** used for detecting specific objects in a **large number of photos**

Rekonsile | *Web Development Intern* *(July'22)*

Startup aiming to build SaaS Solutions for E-Commerce payments

- Used web service APIs such as **Amazon MWS** and **Selling Partner API**, to fetch large amounts of data from sellers in **multiple marketplaces** and store that into a database
- Made a website using **React.Js** for frontend, while using **Node.Js** and **Nest.Js** for backend
- Set up a **MongoDB database** to store information about sellers, products, finances, etc

Key Technical Projects

E-Commerce Website | *CS317 Course Project* *(Jan '23 - Apr '23)*

Guide: Prof. S. Sudarshan

- Created an E-Commerce web server using **Node.js** for the backend along with a **React.js** frontend
- Used a **PostgreSQL database** to store user information, products, order items, wishlists, etc.
- Designed the site's core features, including **product management** for sellers, **order placement** for buyers, displaying a seller's **product statistics** and adding products to a **cart/wishlist**
- Integrated a user-friendly **payment interface** using **Stripe**, which was designed to allow users to add funds to their wallet, check their transaction history, and complete orders directly

Moodle | *CS251 Course Project* *(Oct '21 - Nov '21)*

Guide: Prof. Amitabha Sanyal

- Implementing our version of *Modular Object Oriented Dynamic Learning Environment* (Moodle) using **Django Framework** and by integrating **PostgreSQL Database**
- Providing feature of **Login, Edit Profile** for existing users and **Sign Up** for new users
- Developing the feature of **Creating Assignment**, **Accessing assignments** created by other users and make File Submissions to it, along with Providing Feedback for own assignment
- Working on **Automating Evaluation** using a **Bash or Python Script** to display marks and feedback of own submissions in Front End using **HTML, CSS**, and **Bootstrap**

IPLC Compiler | *CS316 Course Project* *(Jan '23 - Apr '23)*
Guide: Prof. Amitabha Sanyal

- Designed and implemented a **compiler** using **C++, flex,** and **bison**, which involved lexical analyzer, parser, and code generator components for a substantial subset of C programs
- Developed **symbol tables** for local and global variables and functions, utilizing data structures and algorithms to enable efficient storage and modification of data during the compilation process.
- Created **abstract syntax trees (ASTs)** to represent the program's structure and executed the **Sethi-Ullman algorithm** for efficient code generation and optimizing register allocation

Facial Recognition | *CS337 Course Project* *(Aug '22 - Nov '22)*
Prof. Abir De

- Developed a **deep learning** project that utilized **convolutional neural networks (CNNs)** to detect and classify faces into classes of people, and optimised hyperparameters of the CNNs
- Conducted data pre-processing techniques such as adding **pooling layers** and **batch normalization** to improve the quality of input data and enhance model performance.
- Achieved a high level of accuracy for the model, with a performance score of 89.58% accuracy

Other Projects

Mentor Mentee Allocation Mechanism Design | *CS6002 Course Project* *(Jan '23 - Apr '23)*
Guide: Prof. Swaparna Nath

- Developed an allocation method that ensured the **stability** of **mentor-mentee allocation**.
- Modified and adapted existing algorithms, such as **top trading cycle, max matching, and deferred acceptance**, to suit the requirements of the mentor-mentee allocation problem.

Mandelbrot Zoom | *CS293 Course Project* *(Oct '21 - Nov '21)*
Guide: Prof. Bhaskaran Raman

- Implemented the famous **Mandelbrot Zoom** purely in **C++** using curated data structures

P2P Server | *CS224 Course Project* *(Apr '22 - May '22)*
Guide: Prof. Kameshwari Chebolu

- Implemented a **P2P network** to search for files based on topologies of a network of clients
- Utilised **TCP Socket Programming** to establish connections between multiple clients
- Used **Wireshark** to track movement of packets between clients and identify faulty data transfer

Rush Hour | *CS228 Course Project* *(Feb '22)*
Guide: Prof. Ashutosh Gupta

- Encoded the rush hour game into a **Boolean Satisfiability problem** implemented the problem in Python using **conflict driven clause learning** with the help of **Z3 Library**

16-Bit Multi-Cycle RISC Processor | *CS230 Course Project* *(Apr '22 - May '22)*
Guide: Prof. Virendra Singh

- Designed an **8-register, 16-bit multi-cycle** processor with an ISA consisting of **15 instructions** using **VHDL**, and demonstrated the datapath along with the complete **controller-FSM** design

Bash Autograder | *CS251 Course Project* *(Sep '21 - Oct '21)*
Guide: Prof. Amitabha Sanyal

- Made an **auto-grader** on **Bash** to grade tasks involving well defined inputs and outputs
- Designed **command line utilities** to pull student submissions from a remote website, compile the submission, run them against predefined inputs and generate a final mark-sheet

Technical Skills

- **Languages:** C, C++, Java, Python, Javascript, Bash, MATLAB, SQL, AWK, SED
- **Software:** Git, LaTeX, Photoshop, Final Cut Pro, Logic Pro X
- **Development:** HTML, CSS, MySQL, PostgreSQL, Django, Node.js, Express.js, MongoDB
- **Data Science:** Matplotlib, NumPy, SciPy, Pandas, MATLAB

Extracurricular Activities

- **Stood Third** in Mood Indigo's Battle of the Bands out of multiple bands all over India
- **Stood First** in the Goonj Music General Championship against 10 participating hostels.
- Was part of **Symphony's Summer Band** and handled Music production and Guitar
- Finished in **3rd Place** out of more than 80 schools in **Navi Mumbai Science Quiz** 2017