



Adarsh Raj  
Computer Science & Engineering  
Indian Institute of Technology Bombay

190050004  
UG Second Year  
Male  
DOB: 26/02/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	9.26
Intermediate/+2	CBSE	Delhi Public School, Ranchi	2019	95.60
Matriculation	CBSE	D.A.V Public School, Hehal, Ranchi	2017	10.00

## SCHOLASTIC ACHIEVEMENTS

- Achieved **All India Rank 344** in JEE (Advanced) among 150,000 eligible candidates (2019)
- Secured **All India Rank 394** in JEE Mains with a percentile score of **99.9727** out of a total of 1.4 million eligible candidates. (2019)
- Secured **KVPY** fellowship with **All India Rank 73** in written and interview examination (2018)
- Qualified for Indian National Astronomy Olympiad (**INAO**), among 300 students. (2019)
- Among **National Top 1%** in National Standard Exam in **Astronomy** among 16000 students (2018)
- Amongst the **top 50 students** in National Science Olympiad and International Mathematics Olympiad by Science Olympiad Foundation (SOF) (2018-2019)

## INTERNSHIPS AND RESEARCH EXPERIENCES

Virtual Trade Fair | Internship

August 2020 - September 2020

Amanha Idealabs

Mumbai, India

- Developed a **responsive framework** to support the functioning of an **online virtual trade fair** platform.
- Worked with team to create a framework for Video Conference Call integration via **enablex API** in **PHP**.
- Used **JavaScript** and **AJAX queries** to implement different user oriented functions.
- Modularized **CSS** files for maximum flexibility and usability when implementing different themes and unique configuration across a global application.

## KEY PROJECTS

Online Competetion and Development Environment

Autumn 2020

Guide: Prof. Amitabha Sanyal | Ongoing Course Project : Software and Systems Lab

IIT Bombay

- Developing an **online programming environment** and **dashboard** with personal workspace features.
- Implementing a website supporting **secured login, account creation, deletion and password reset**.
- Providing an online **IDE supporting multiple languages** including Python, C/C++ and Java.
- Developing **in-browser compiling utility** during submissions irrespective of OS and working on including a **command line interface** using **PHP** for use in code environment.
- Implementing an **online competing environment** with real-time grading, utilizing **AJAX** with **MySQL**.

Graph Theory

Summer 2020

Guide: Adwait Godbole | Summer Of Science

Maths and Physics Club, IIT Bombay

- Completed a self study project on **graph theory** and its applications in computer science.
- Studied graph-based **data structures and algorithms** in the context of analyzing time and space complexity.
- Explored properties and theorems related to **colouring, matching and algebraic graph theory**.
- Read and implemented various graph theory algorithms including **Breadth First Search, Depth First Search** and **Kruskal's Algorithm**.

Course Organizer and Analyser

Autumn 2020

Guide: Prof. Amitabha Sanyal | Course Project

IIT Bombay

- Organised courses using **sed** and **awk scripts** according to their **characteristics** for better **analyzation**.
- Used **shell scripting** in terminal without using any additional memory to provide a **quantitative measure** of performance in courses.

Image Compression and Noise Reduction

Autumn 2020

Guide: Prof. Amitabha Sanyal | Course Project

IIT Bombay

- Replaced all color vectors in an Image with their **K Cluster Centroids** using **KMeans Algorithm**.
- Reconstructed Image from given (possibly overlapping) patches while minimising the **salt and pepper noise**.

## Handling Permutations

*Data Structures and Algorithms | Course Project*

*Autumn 2020*

*IIT Bombay*

- Implemented an **efficient** class and produced a header file representing and operating on permutations in C++.
- Created an **Abstract Data Type** representing permutations as **maps** and **product of disjoint cycles**.
- Implemented operations like **inverse**, **product**, **exponentiation** and **square roots** for permutations.
- Used **Extended Euclidean Algorithms** in conjunction with extended **Chinese Remainder Theorem** to implement logarithm on permutations in linear time.

## Songs Management and Organisation

*Guide: Prof. Amitabha Sanyal | Course Project*

*Autumn 2020*

*IIT Bombay*

- **Organised songs** by **genre** and **artists** creating directories for each album and playlist with **bash scripting**.
- Implemented the script efficiently **without using any additional memory** and without spawning copies with the help of **symbolic links** to the original songs' location.

## TECHNICAL SKILLS

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<b>Programming</b>	C/C++, Java, Python, Bash, MySQL, Sed, Awk
<b>Tools and Software</b>	MATLAB, AutoCad, Solidworks, Git, L <sup>A</sup> T <sub>E</sub> X, Qiskit
<b>Data Science</b>	OpenCV, NumPy, Matplotlib, Pandas, TensorFlow, Keras
<b>Development</b>	Django, Angular, HTML, CSS, JavaScript, PHP, Bootstrap, Android Studio

## POSITIONS OF RESPONSIBILITY

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### Core Member

*Developer's Community*

*May 2020-Present*

*IIT Bombay*

- Member of the **Development Community** responsible for **ideation** as well as the **implementation** of major services required for smooth conduct of **academic necessities** with focus on maximising digitization.
- Responsible for **development** of an interactive website using **HTML**, **CSS**, **Bootstrap** and **JavaScript** for the team.

### Organiser, Infrastructure | Techfest, IIT Bombay

*Nov 2019 - Jan 2020*

- Responsible for the smooth conduction of **Techfest**, Asia's largest college technical fest providing a platform for the Indian student community to develop and showcase their technical prowess.
- Aided in groundwork for contacting participants across different parts of country and conveying the details of different competitions.

### Organiser, FnB | Mood Indigo, IIT Bombay

*Oct 2019 - Dec 2019*

- Responsible for the smooth conduction of **Mood Indigo**, Asia's largest college cultural festival with a footfall of **143000+** from across **1700+** colleges across India
- Aided in groundwork for handling food orders and delivery from different caterers in Mumbai.

## COURSES UNDERTAKEN

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- **Computer Science:** Computer Programming and Utilisation, Abstractions and Paradigms for Programming, Data Structures and Algorithms\*, Data Analysis and Interpretation\*, Software Systems Lab\*, Discrete Structures\*, Computer Networks\*\*, Design and Analysis of Algorithms\*\*, Logic for Computer Science\*\*
- **Misc:** Calculus, Linear Algebra, Electricity and Magnetism, Quantum Physics, Chemistry, Biology, Introduction to Electronic Circuits\*, Economics\*\*

*\* To be completed by November 2020*

*\*\* To be completed by April 2021*

## EXTRACURRICULARS

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- Successfully completed a **two semester course** under **NSS (National Service Scheme)**, educating underprivileged children and rural minorities, promoting sustainable development and associated practices that can be inculcated in daily life. *(2019-2020)*
- Stood **First** in **Short Video Making** in **Freshiezza** organized by Silver Screen, IITB. *(2019)*
- Made a **Remote Controlled Plane** having a foam body operating on **BLDC motor** and **Servo motors** for wing control, in **RC Plane competition** organised by the Aeromodeling Club, IITB. *(2019)*
- Scored **full marks** in the **Aryabhata Mathematics Olympiad** organised amongst all the DPS schools of the country. *(2018)*
- Awarded **Student of the Year** award for good performance in Annual sports competition of my school. *(2014)*