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	0.00
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 *Autumn 2020*
Data Structures and Algorithms | Course Project *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 *Autumn 2020*
Guide: Prof. Amitabha Sanyal | Course Project *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

Programming	C/C++, Java, Python, Bash, MySQL, Sed, Awk
Tools and Software	MATLAB, AutoCad, Solidworks, Git, LaTeX, Qiskit
Data Science	OpenCV, NumPy, Matplotlib, Pandas, TensorFlow, Keras
Development	Django, Angular,HTML, CSS, JavaScript, PHP, Bootstrap, Android Studio

Positions of Responsibility

Core Member *May 2020-Present*
Developer's Community *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 festproviding 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 compettitions.

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

- **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

- 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 **Aryabhatta 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)*