

Akash Reddy Gillella **Computer Science & Engineering** Indian Institute of Technology, Bombay 190050038 B.Tech. Gender: Male DOB: 23-02-2002

| Examination   | University            | Institute                             | Year | CPI / % |
|---------------|-----------------------|---------------------------------------|------|---------|
| Graduation    | IIT Bombay            | IIT Bombay                            | 2023 | 9.74    |
| Intermediate  | TSBIE                 | Sri Chaitanya Narayana Junior College | 2019 | 98.70%  |
| Matriculation | Telangana State Board | Sri Chaitanya Techno School           | 2017 | 9.8     |
|               |                       |                                       |      |         |

Pursuing Minor in Management under SJM - School of Management.

#### (2020 - present)

### Scholastic Achievements \_\_\_\_\_

| • Secured All India Rank 4 in JEE-Advanced among 2,45,000 candidates.                         | (2019)             |
|-----------------------------------------------------------------------------------------------|--------------------|
| - Awarded 6 AP grades (Advanced Performer) , awarded to $top \ 1\%$ among $1100 \ Students$   | for outstanding    |
| academic performance, in Calculus, Linear Algebra, Quantum Physics and Application and others | . (2019 - present) |
| • Secured All India Rank 117 among 9,35,000 candidates in JEE-Mains.                          | (2019)             |
| • Bagged All India Rank 14 among 1,70,000 candidates in JEE-Mains-Paper-2.                    | (2019)             |
| • Bagged All India Rank 3 in TS EAMCET among 1,42,000 candidates.                             | (2019)             |
| • Recipient of <b>KVPY fellowship</b> with an <b>All India Rank 17</b> .                      | (2018-2019)        |

## Olympiads \_\_\_\_\_

| • | Placed Top 54 among 42,443 candidates in the National Chemistry Olympiad (InCHO) and received a | Gold   |
|---|-------------------------------------------------------------------------------------------------|--------|
|   | Medal at the OCSC - International Chemistry Olympiad.                                           | (2019) |

- Placed among **Top 39** among 39,214 candidates in the **Indian National Astronomy Olympiad**. (2019)
- Placed among Top 46 among 45,512 candidates in the Indian National Physics Olympiad. (2019)
- Placed among Top 30 among 36,425 candidates in InAO and received a Gold Medal at OCSC-IOAA. (2018)
- Recipient of the Special Award for 'Best Solution to a Challenging Data Analysis Question' at the OCSC for International Olympiad for Astronomy and Astrophysics. (2018)
- Placed among Top 36 among 32110 candidates in the InJSO and attended the OCSC IJSO. (2017)

# Key Projects \_\_\_\_\_

#### **Red Plag**

Instructor: Amitabha Sanyal

- Developed a text-plagiarism detector with ideas of **Bag of Words** strategy, using **RegEx** python package.
- Provided customized options for C++ code and visualization of results using Matplotlib in python.
- Built a website using Angular for frontend and Django REST-API for backend requests.

#### Network Simulator - C++

Instructor: Vinay J. Riberio

- Carried out network flow simulation of Hidden Terminal Problem, Three Parallel Flow Problem, Two Serial Flow Problem, which are encountered during CSMA/CA using ns3 library in C++.
- Generated the Throughput Load graphs, hypothesized the observed trends in throughput.

#### Model for Fruits

Instructor: Suyash P. Awate

- Performed Principle Component Analysis on a set of images of 16 fruits using MATLAB and generated a scree plot to identify necessary eigen vectors. Generated the dimensionality-reduced image versions.
- Extracted the loading matrix and the mean vector and generated images of new "fruits" using the model.

#### **Student Course Registration Portal**

Instructor: Ajit A. Diwan

- Implemented the Backend of a typical Student Course Registration Portal with features to register, drop a course, list-out courses of a student, prevent time-slot clashes for students, etc.
- Implemented Student and Course Classes using simple data structures such as sorted arrays for optimising time and memory resources.

(Autumn 2020) Course Project

(Spring 2021)

Course Assignment

(Autumn 2020)

Course Project

(Autumn 2020)

Course Assignment

#### Permutation Algebra

Instructor: Ajit A. Diwan

- Implemented the **Two-line notation** of Permutation object, with class methods to convert into One-line notation, Cyclic Notation, **Canonical Cyclic Notation**.
- Implemented effective class methods to carryout basic functionalities such as **Order of Permutation**, Inversion, Composition, **Exponentiation**, **Square-Root**.
- Implemented a class method to compute logarithm of a Permutation using the CRT Algorithm.

### Mastermind Solver

Instructor: Ashutosh Gupta

- Implemented a mastermind puzzle solver using **Z3 module** in **python**.
- Further developed the solver to tolerate an unreliable opponent and output an optimal solution.

### Image Segmentation

Instructor: Amitabha Sanyal

- Processed an image and generated outputs of various segmentation levels, using Matplotlib library in python.
- Generated new images, swapping the pixels with their K-Cluster Centroids, using the KMeans Algorithm.

### OTHER PROJECTS \_

**Processor - VHDL** (*Prof. Virendra Singh* | *Course Project* )

- Implemented a 16-bit multi-cycle processor in **VHDL** using Intel-Quartus supporting 15 sufficient Instructions.
- Minimized the finite states and implemented the ALU, Control Unit, Memory, Register File modules.

Quad-Trees (Prof. Ajit A. Diwan | Course Project)

• Implemented the **QuadTree** data structure to represent an binary image, with class methods to invert, set, fetch pixel values and overlap, intersect, complement, **resize**, **extract** images.

Accounting Standards (Prof. Varadraj B. Bapat | Course Project)

- Studied and thoroughly analysed the **Annual Report** of a publicly listed company.
- Reviewed their various accounting standards and their alignment with Indian Accounting Standards and computed the CG Score as per Clause 49 of SEBI Guidelines on Corporate Governance.

TCP variants (Prof. Vinay J. Riberio | Course Assignment)

- Carried out simulation of TCP-cubic and TCP-reno connections using socket programming in C++.
- Obtained the window scaling graphs using **wireshark** and theoretically justified the trends observed.

## TECHNICAL SKILLS \_

| Languages       | C++, Python, Bash, Sqlite3                                                                       |
|-----------------|--------------------------------------------------------------------------------------------------|
| Data Science    | NumPy, SciPy, Matplotlib, Pandas, Matlab                                                         |
| Web Development | HTML, CSS, JavaScript, Angular, Django                                                           |
| Software Tools  | Matlab, Git, ${\rm IAT}_{\rm E}\!{\rm X},$ AutoCAD, Adobe Photoshop, MS Office, Adobe Autosketch |

# Key Courses Undertaken \_\_\_\_\_

| Data Analysis and Interpretation, Data Structures and Algorithms, Design and Analysis     |  |
|-------------------------------------------------------------------------------------------|--|
| of Algorithms, Discrete Structures, Logic for Computer Science, Computer Networks,        |  |
| Digital Logic Design, Computer Architecture*, Operating Systems*, Artificial Intelligence |  |
| and Machine Learning <sup>*</sup>                                                         |  |
| Calculus, Linear Algebra                                                                  |  |
| Accounting and Finance, Operations Management, Marketing Management <sup>*</sup>          |  |
| Quantum Physics and Applications, Introduction to electrical & electronic circuits,       |  |
| Cryptography (Stanford University, Coursera), Economics.                                  |  |
|                                                                                           |  |

\* to be completed by November 2021

# Extra Curriculars \_\_\_\_\_

- Secured 3<sup>rd</sup> place among 200 Students in Bazinga Maths conduct by MnP Club, IIT Bombay.
- Participated in the 48-Hours long SARCasm Online Cryptic Hunt organized by SARC, IIT Bombay.
- Worked as an **Unacademy Plus Educator**, mentoring over **100** IIT-JEE aspirants. (May July 2020)
- Completed 80 Hours of social service under National Service Scheme (NSS) and was awarded special mention for exemplary volunteering work under NOCS01 and NOCS02.
- Attended Vijyoshi 2018 camp conducted by IISc Bangalore in association with IISER-Bhopal, keen on motivating students to pursue science and also presenting pilot lectures by leading researchers.
- Past time hobbies include Table Tennis, Digital art, Video Games, Non-fiction Books, Fitness blogs.

Course Project

(Spring 2021)

(Autumn 2020) Course Project

(Spring 2021)

(Autumn 2020)

(Autumn 2020)

(Spring 2021)