Masada Jaswanthi | **210050095**
Computer Science & Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Female**
DOB: 28/06/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	Telangana State Board Of Intermediate Education	Narayana Junior College	2021	98.00%
Matriculation	Board of Secondary Education Andhra Pradesh	Narayana High School	2019	10

Scholastic Achievements

- Secured **All India Rank 1187** in Joint Entrance Examination **(Advanced)** among **1,50,000** aspirants *(2021)*
- Achieved **99.794 percentile** in Joint Entrance Examination **(Main) B.Tech** among 10 lakh candidates *(2021)*
- Secured **All India Rank 510** (99.39) in **JEE (Main) B.Arch** conducted by NTA among 60,000 canditates *(2021)*
- Secured **State Rank 314** in **AP EAPCET** among **170 thousand** candidates conducted by the **APSCHE** *(2021)*
- Chartered as a **KVPY fellow 2019 SA stream** with **All India Rank 263** among 50 thousand students *(2019)*
- Secured **State Rank 350** in **TS EAMCET** among **150 thousand** candidates conducted by the **TSCHE** *(2021)*
- Qualified for **INMO** exam (Indian National Mathematics Olympiad), conducted by the HBCSE in class 10 *(2019)*
- Awarded **KVPY fellowship** by the DST, **Government of India** to **1500** out of **0.1 million** candidates *(2019)*

Key Projects

Portal for the courses | *using **Django, PostgreSQL** | Course Project* *(Nov '22)*

Guide: Prof. Kavi Arya | Software System Lab

- Developed online Learning Management System **(LMS)** like moodle using Django's framework with different features
- Implemented Role-Based Access Control using HTML, CSS, Bootstrap for the frontend and **PostgreSQL** as database
- Implemented **User Authentication, DashBoard**, Assignments uploading, provide feedback and grades of students' submissions by instructor and restrict students' submissions based on **type and format provided by instructor**

Railway Station Planner | *using C++ | Course Project* *(Sep-Oct '22)*

Guide:Prof. Supratik Chakraborty | Data Structures and Algorithms Lab

- Developed an interactive Railway Planner in **C ++** utilizing various Data Structures namely **Trees, Graphs, Priority queues, Dictionaries, Tries** and Algorithms such as **Dijkstra's algorithm**
- Utilized **AVL Trees, Heaps** to store station information, calculate costs and facilitate optimal journey planning
- Implemented advanced features using **KMP Pattern Matching** for efficient review searching, **Quicksort** on linked lists for space and time optimisation, and **Hashtable** for quick station search and query handling

Image Processing and Data Analysis | *using **Matlab** | Course Project* *(Oct '22)*

Guide: Prof. Suyash Awate | Data Analysis and Interpretation

- Developed a cutting-edge algorithm for **Euclidean Planar sampling**, integrating **Principal Component Analysis** for **hyperplane fitting** and leveraging linear regression for precise character recognition of handwritten digits
- Implemented **Dimensionality Reduction** on the MNIST Dataset by applying Principal Component Analysis and reconstructed the original image with minimal quality loss using **reverse image processing**
- Generated the closest representation of images as a linear combination of the top **4 eigenvectors** with maximum weight, using **Frobenius norm** of the difference between the actual and approximated vector as a similarity metric

Cache Heirarchy Optimization | *using **ChampSim** | Course Project* *(Apr '23)*

Guide:Prof. Biswanandan Panda | Digital Logic Design and Computer Architecture

- Explored the shortcomings of conventional approaches in addressing cache latency issues in **Graph workloads**
- Implemented different cache hierarchy policies(**Inclusive, Exclusive and Non-Inclusive**), replacement policies and prefetchers for LLC in Champsim simulator showcasing execution with **1.5 times speedup** over baseline architecture

Socket Programming | *using C++ | Course Project* *(Apr '23)*

Guide:Prof. Bhaskaran Raman | Computer Networks

- Developed a **server-client system**, supporting **multiple clients** connections and enabling continuous file transfers
- Implemented **rate limiting functionality**, allowing a maximum number of bytes to be received per second
- Extended functionality to handle file transfer in **bidirectional file transfer** between the server and client

Other Technical Projects

Sliding Tile Board Game | *using **Python Z3*** | *Course Project* *(April '23)*

Guide: Prof. Ashutosh Kumar Gupta | Logic for Computer Science

- Encoded the famous sliding tile puzzle game into a **Boolean satisfiability problem** (SAT) and solved it using a **SAT solver** with a **DPLL**-based backtracking algorithm included with appropriate encoding and techniques
- Implemented SAT solver by encoding constraints into **CNF** so that game can be solved within given moves

Bubble Trouble | *using **Simplecpp Graphics*** | *Course Project* *(Feb '22)*

Guide: Prof. Parag Chaudhuri | Computer Programming and Utilization

- Implemented **initCanvas** in **C++** to complete a Bubble Shooter Game and utilized the **Simplecpp Graphics** libraries to create a visually engaging game interface, including a shooter with **bullets, bubbles, and margins**
- Implemented game mechanics, such as splitting and disappearing of bubbles upon collision with bullets using **Vectors** and Incorporated **health, score, and time cards** to enhance the gameplay experience of players

Supraglacial Ponds Monitoring | *Course Project* *(Mar '23)*

Guide: Prof. Gulab Singh | Remote Sensing and GIS Applications to Cryosphere

- Applied **remote sensing** techniques with high-resolution optical satellite imagery to map supraglacial ponds
- Employed the Modified Normalised Difference Water Index (**NDWI**) to identify water bodies on the glacier's surface
- Implemented **Mass Balance Module** from OGGM and **Ice Dynamics Module** to analyze glacier movement

Tic Tac Toe | *using **Java*** | *Course Project* *(Oct '22)*

Guide: Prof. Kavi Arya | Software Systems Lab

- Implemented classic two-player Tic Tac Toe game and **client-server architechture** model in Java by using **OOP**
- Learnt most of the basics of **inter-process communication, exception handling** and **socket programming**

Position of Responsibility

Junior Design Engineer, Software Subsytem | *Team Rakshak, IIT Bombay* *(Jan '23 - Present)*

Team Rakshak is a multidisciplinary tech team of 40+ members that develops robust UAVs for SRO

- Completed specialization in **Machine Learning** offered by **Coursera**, enhancing knowledge and practical skills
- As part of my training, actively participating in **Kaggle competitions** where I am utilizing various machine learning techniques with **ensembles, deep learning** and **gradient boosting** to achieve state-of-the-art performance
- Implementing **SOTA models like YOLO, DINO** to localize objects in real-time videos and learn **powerful image representations** without the need for manual annotations, improving downstream transfer learning tasks

Technical Skills

Programming	C++, Python, Java, VHDL, Assembly, Prolog, Bash, Sed, AWK
Development	HTML, JavaScript, CSS, Bootstrap, Django, PostgreSQL
Software	Git, LaTeX, MATLAB, NumPy, Pandas, TensorFlow, Keras, scikit-learn, PyTorch, FLTK, matplotlib, Docker, Wireshark, NS3

Key Courses Undertaken

Computer Science	Computer Programming and Utilisation, Abstractions and Paradigms in Programming + Lab, Data Structures and Algorithms + Lab, Discrete Structures, Data Analysis and Interpretation, Software Systems Lab, Design and Analysis of Algorithms, Digital Logic Design and Computer Architecture + Lab, Computer Networks + Lab, Logic for Computer Science, Operating Systems + Lab*, AI and ML + Lab*, Automata theory*
Mathematics	Calculus, Linear Algebra, Differential Equations
Other Courses	**Coursera - Machine-Learning by Andrew Ng**, Remote Sensing and GIS Applications to Cryosphere, Quantum Physics and Application

** to be completed by November 2023*

Extracurricular Activities

- Completed a year long military training under the **National Cadet Corps (NCC)**, IIT Bombay *(2021-2022)*
- Participated in **Codewars v1** competition, with a team of 4 organised by **WnCC club**, IIT Bombay *(2021)*
- Achieved **state 1st and 2nd ranks** in the years 2014, 2015 respectively in the exam **AIMED** *(2014-2015)*
- Achieved **International Ranks 52, 90** in IMO finals, 28 in NSO (year 2017) conducted by SOF *(2016-2017)*
- Participated in the business modelling competition, **EnB Buzz** where we worked on electric vehicles sales *(2021)*
- Volunteered in a significant environmental initiative, the **Versova Beach Cleanup** organized by Abhyuday *(2023)*
- Volunteered for the **marathon** with **5000+** participants organized by Fitizen in collaboration with Aavhan *(2023)*
- Participated in Trek to **Kalsubai** (highest peak in Maharashtra) organized by the **NCC**, IIT Bombay *(2022)*