Paavan Kumar Indela
Computer Science & Engineering
Indian Institute of Technology, Bombay

190050051
B.Tech.
Gender: Male
DOB: 18-09-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	Telangana State Board of Intermediate Education	FIITJEE Junior College	2019	96.70%
Matriculation	Indian certificate of Secondary Education	St. Joseph's School	2017	96.50%

Pursuing a **Minor** in **Data Science**

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 56** in **IIT JEE Advanced** out of **245,000** candidates *(2019)*
- Secured **All India Rank 211** in **JEE Mains** out of **935,000** candidates *(2019)*
- Participated in **Orientation-cum-Selection Camp** for **IPhO**(International Physics Olympiad) *(2019)*
- Awarded **gold** Medal for being in the **top 35** students in the **NSEP-INPhO** examinations *(2019)*
- Qualified for **INPhO** and **INChO** along with **300** other students from all over the country *(2019)*
- Qualified for the **Indian National Mathematics Olympiad** after being shortlisted in **RMO** *(2018,2019)*
- Ranked among National **Top 1%** in **NSEP** (National Standard Examination in Physics) and **NSEC** (National Standard in Chemistry) conducted by IAPT *(2018)*
- Recipient of the prestigious **Kishore Vaigyanik Protsahan Yojana** (**KVPY**) Fellowship with an All India Rank (**AIR**) of **88** and **124** respectively *(2017, 2018)*

INTERNSHIP EXPERIENCE

App Development using Flutter *Summer 2021*
Guide: Hardik Amal | Virtual Internship *Zeno Health (formerly Generico)*

Good Aid Website:

- Designed a single page static website **responsive** to changes in the size of the window screen

ZenoHealth Website:

- Reproduced the Company's official website using flutter with the use of **flutter-bloc** for efficient state management
- Implemented search functionality based on **approximate string matching** on the data obtained via **API** call

Delivery App:

- Worked on the **user interface** of the delivery app which supports **login** with a phone number through OTP
- Integrated **Google Maps API** with the medicine delivery app and migrated the state management to **flutter-bloc**

KEY PROJECTS

Optimisation Of Measurement Matrices *Spring 2021*
Instructor : Prof. Ajit Rajwade | Course Project *IIT Bombay*

- Implemented Algorithms **ISTA**(Iterative Soft Thresholding), **OMP**(Orthogonal Matching Pursuit) and used these along with **L1-LS** for reconstruction of images and videos based on **CS** (Compressed Sensing) and **Tomography**
- Compared some of the most recent advancements in design of **measurement** matrices for **Compressed Sensing** by performing a series of experiments to determine the optimal technique among these
- Implemented these Techniques of Optimisation in **MATLAB** and compared the **relative error** of the reconstructed image obtained by varying **sparsity** and **number of measurements** taken.
- Used the above mentioned algorithms with the **measurement matrix** optimised by these techniques to compare the **time taken** and relative error for the reconstruction of **natural images**.

Notify Me *Autumn 2020*
Instructor : Prof. Amitabha Sanyal | Course Project *IIT Bombay*

- Created an application, a **Centralized Notification System** whereby a professor can send real-time notifications to the students enrolled utilising the application using **firebase** notification service
- Developed a **Dashboard**, similar to moodle/Teams, using **Django** where a Professor can view the list of recipients who acknowledged a notification and can set deadlines for an event
- Designed a corresponding **Android Application** using **Android Studio** to resemble a virtual classroom environment (**Google Classroom**) which is much needed in this coronavirus crisis
- Developed a corresponding **iOS Application** employing the usage of **Flutter**

Virtual Keyboard with Computer Vision *Summer 2020*
Institute Technical Summer Project *Institute Technical Council ,IIT Bombay*

- Developed a Wireless Paper Based Virtual Keyboard usable on any flat surface through a camera via key detection from live feed using **Thresholding** and **Edge Detection** techniques
- Detected the key pressed by the user by **Masking** the image and **Contour Detection**
- Used **Numpy** and performed Image Segmentation using **K-Means Clustering Algorithm**
- Used **OpenCV** and **PIL** for image processing and developed a program based on **Color detection and segmentation** to implement video editing for an invisible cloak mechanism as a sub-project

OTHER PROJECTS

Image Classification Self Project | *Summer 2021*

- Implemented a model for classification of images with **convolutional neural networks** with loss as **binary-crossentropy**
- Predicted the category of image based on the **Sequential** model built using **Conv2D**, **MaxPooling2D** on **tensorflow**

Signal Separation | *Prof. Ajit Rajwade* Course Project | *Spring 2021*

- Separated linear combination of cosine waves and spikes using methods based on **dictionary learning**
- Studied the effects of **sparsity** and **noise amplitude** on **reconstruction** error for separating signals

Network Simulations | *Prof. Vinay J. Ribeiro* Course Project | *Spring 2021*

- Generated numerous environments using **ns3** to simulate information transfer between various pairs of nodes
- Simulated **FTP** and **CBR** flows with **Ethernet** and **Wifi** as link layers using **ns3** and **Wireshark** for observations

Logic Encoding on z3Py | *Prof. Ashutosh Gupta* Course Project | *Spring 2021*

- Created an **efficient** mastermind code-breaker using a **Z3 SMT Solver** in **python** robust to **unreliable** code-maker
- Developed a solver for removing the **minimal set of edges** to disconnect any two given vertices of a graph

Digital Logic Design | *Prof. Virendra Singh* Course Project | *Spring 2021*

- Used an **FSM**(Finite State Machine) on **VHDL** for compression of files based on Run Length Encoding
- Implemented a **VHDL** circuit to model the traffic signals on four lanes using **ModelSim Altera**

Principal Component Analysis | *Prof. Suyash Awate* Course Project | *Autumn 2020*

- Denoised and reconstructed the images using the modes of variation having **eigenvalues** above a threshold
- Used principal component analysis for **dimensionality reduction**, **hyperplane fitting** and **classification** of images

Data Structures | *Prof. Ajit A. Diwan* Course Project | *Autumn 2020*

- Created a **efficient** tree structure(**Quad Tree**) to represent images and for their manipulation.
- Implemented a **C++ class** for creation and **efficient** manipulation of permutation objects in **linear** time

COURSES UNDERTAKEN

Data Science	Artificial Intelligence and Machine Learning*, Foundations of Intelligent and Learning Agents*, Advanced Image Processing, Data Analysis and Interpretation, Probability I
Computer Science	Computer Architecture*, Operating Systems*, Design and Analysis of Algorithms, Computer Networks, Logic For Cs, Digital Logic Design, Data Structures and Algorithms, Software Systems Lab, Discrete Structures

**courses to be completed by November 2021*

TECHNICAL SKILLS

Programming	C++, Python, Java, dart, Bash, ns3
Data Analysis	MATLAB, Matplotlib, Keras, Tensorflow, NumPy, Pandas, SQLite3, SciPy
Software Development	Django, HTML5, PHP, JavaScript, Flutter, Android Studio, Angular, Kotlin
Other Tools	OpenCV, Git, Latex, Quartus, AutoCad, SolidWorks, WireShark, Z3solver

EXTRACURRICULAR ACTIVITIES

NCC (National Cadet Corps) *(2019-2020)*

- Among the **50** cadets selected for performing the parade at the NCC unit on the occasion of **70th Republic Day**
- Attended Annual Training Camp of **10** days and underwent rigorous and **professional military training**
- Fired **5** rounds of **0.22 Sporting Rifle** with great **precision** in Annual training Camp of NCC
- Assembled and Disassembled **Self Loading Rifle** (earlier used by Indian Army) as a part of NCC training

Sports *(2019)*

- Represented **NCC** in **Inter College Cricket** tournament conducted during **ATC** (Annual Training Camp).

Career Counselling Campaign *(2019)*

- Volunteered as a mentor for **Career Counselling Campaign** to guide high school chlidren of Government Schools across Mumbai conducted by **Abhyuday, IIT Bombay** in collaboration with **NCC**

Scholastic achievements and extracurricular activities are not verified by the Placement Cell