Adit Akarsh | **19D070003**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 27-06-2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	CBSE	KV IIT Powai	2019	95.20%
Matriculation	CBSE	KV IIT Powai	2017	99.20%

Pursuing minor degrees in **AI and Data Science** and **Computer Science and Engineering**

Scholastic Achievements

- Ranked **4th** in the Electrical Department among **164** students *2021*
- Scored a **perfect 10** SPI (Semester Performance Index) in the 3^{rd} semester with 38 credits *2020*
- Awarded the **Change of Branch/Major** to B.Tech, Electrical Engineering based on CPI *2020*
- Secured **All India Rank 538** in **JEE Advanced** among 200,000 candidates *2019*
- Achieved **All India Rank 828** in **JEE Main** out of 1.14 million candidates *2019*
- Recipient of the Kishore Vaigyanik Protsahan Yojana (**KVPY**) Fellowship *2019*
- Ranked in the **Top 3** in the country in the Matriculation level examination by CBSE *2017*

Professional Experience and Key Projects

Classification of Ultrasound Images
May-July 2021

Deep Learning Intern | Philips Innovation Campus, Bangalore

- Implemented a **Spatial Transformer Network** with HRNet to improve classification of ultrasound images
- Achieved **85.7%** test accuracy on the 6-class classification dataset of fetal heart view planes
- Conducted Literature Surveys of articles based on **Explainable AI** for classification and object detection
- Trained an attention-based **Vision Transformer** to reach **90%** test accuracy on a 3-class dataset

Multi-Modal Image Registration
April 2021

Medical Image Computing Course Project | Prof Suyash Awate, IIT Bombay

- Customised **VoxelMorph** to perform image registration on multi-modal data (MRI and CT scans)
- Trained a **CycleGAN** network to convert CT scan images to their MRI counterparts

Digital Logic Design in VHDL
February-April 2021

Digital Circuits Course Project | Prof Maryam Baghini & Prof Virendra Singh, IIT Bombay

- Utilized **Behavioural** modelling to design an **FSM** that plays a musical tone on a Krypton board
- Optimized combinational circuits and programmed their architectures using **structural VHDL**
- Designed a 16-bit Kogge Stone fast adder along with XOR, MUX and NAND components to build an ALU
- Verified designs by performing simulations on all possible inputs using **scan chains** on TIVA-C board

Hangman Game
March 2021

Microprocessors Course Project | Prof V. Rajbabu & Prof S. Vijayakumaran, IIT Bombay

- Programmed the word game, Hangman on the **Atmel AT89C51** Micro-controller with an **LCD Module**
- Coded the micro-controller in **Embedded C** using **Keil μVision** and **Flip softwares**
- Used a **UART** Module and **RealTerm** software for interfacing between a keyboard and the micro-controller

Olympics Performance Analysis
December 2020

Programming for Data Science Course Project | Prof Amit Sethi & Prof Manjesh Hanawal, IIT Bombay

- Performed Exploratory Data Analysis on the performance of **200+** nations over a century in the olympics
- Computed correlation between a country's average performance and its human development indicators
- Trained a **neural network** and performed **LASSO regression** on the data to predict performance

Tapestry Pooling
December 2020-April 2021

Web Development | Prof Manoj Gopalkrishnan, IIT Bombay
Using pooling techniques to help labs with detecting Covid19 cases in a reduced number of tests

- Responsible for debugging of the **Django backend** and development of new features
- Improved integration of the web interface with the Google Cloud server for easier report downloading

Tinkerers' Laboratory Website *April-July 2020*

Seasons of Code | Web and Coding Club, IIT Bombay

- Developed a web application using **Angular** for the frontend and **Django** for the backend, and integrated them using an **API** based on **Django REST Framework** and **Angular's HTTP Client Service**
- Incorporated IITB Single Sign-On Authentication (**SSO**) implemented using **OAuth2.0**
- Implemented an inventory management system for **2500+** users to issue various tools and check their availability using an **SQLite** database in the Django and Angular components

Spoof-resistant Face Recognition *April-June 2020*

Institute Technical Summer Project | Institute Technical Council, IIT Bombay

- Developed a system to classify images as real or spoofed, and to recognise the person if the image is real
- Trained a **Convolutional Neural Network** with **Dropout regularization** for **Liveness Detection**
- Extracted facial encodings using a **ResNet** and trained a **Support Vector Machine** to recognise the faces

Technical Skills

Languages	C++, Python, Julia, MATLAB, Embedded C, Assembly, VHDL
Web Development	HTML, CSS, Javascript, Bootstrap, Angular, Django, MySQL
Python Libraries	NumPy, Pandas, OpenCV, Scikit-learn, Matplotlib, PyTorch
Tools	Git, LaTeX, GNURadio

Positions Of Responsibility

Department Academic Mentor | Department of Electrical Engineering *2021-22*

- Among the 35 selected from 86 applicants on the basis of extensive **interviews** and **peer reviews**
- Mentoring **8 sophomores** to help them with academics, time management and extra-curricular endeavours

Class Representative | Department of Electrical Engineering *2020-22*

- Addressed the academic and logistical needs and issues of **164** fellow third year students
- Facilitated discussion among students of the class to reach a consensus on various issues faced, especially the problems faced in the handling of the special circumstances in the **online semesters**
- Conducted **regular meetings with professors** to provide constructive feedback on the courses

Teaching Assistant | Computer Programming and Utilization *2020-21*

- Conducted tutorials and doubt clearing sessions for a batch of **12** first year students
- Ensured the smooth conduction of lab sessions by providing suitable clarifications and hints

Key Courses Undertaken

Electrical Engineering	Power Electronics, Analog Circuits, Digital Systems, Signal Processing-I, Probability and Random Processes, Microprocessors, Markov Chains and Queuing Systems, Control Systems, Communication Systems*, Image Processing*
Computer Science	Data Structures and Algorithms, Design and Analysis of Algorithms*, Medical Image Computing
Data Science	Programming in Data Science, Deep Learning for Image Analysis*
Mathematics	Calculus, Linear Algebra, Complex Analysis, Differential Equations, Applied Mathematical Analysis in Engineering, Number Theory and Cryptography
Physics	Quantum Physics and Applications, Electricity and Magnetism

**To be completed by November 2021*

Extra Curricular Activities

- Designed an **App-Controlled Obstacle-manoeuvring bot** in the **XLR8** competition *2019*
- Worked as a coordinator in **Mood Indigo**, Asia's largest cultural festival *2020*
- Constructed a **Remote-Controlled Plane** with a foam body and **Servo Motors** for wing control in the **RC Plane** competition conducted by the Aeromodelling Club, IIT Bombay *2019*
- Received a **special mention** in the **Observation Planning General Championship**, an inter-hostel competition conducted by Krittika, the Astronomy Club, IIT Bombay *2019*
- Completed a certified course for LaTeX conducted by the Career Cell, IITB *2020*
- Successfully completed the year-long NSO course for **Electronic keyboard** *2019*