	Darshan Jayesh Makwana	21D100003
	Mechanical Engineering	**B.Tech.**
	Indian Institute of Technology Bombay	**Gender: Male**
		DOB: 04/12/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	9.07
Intermediate	HSC	S K Somaiya	2021	9.68
Matriculation	SSC	M D Bhatia	2019	9.04

Pursuing **Dual Minors** in Computer Science & Engineering and AI & Data Science

SCHOLASTIC ACHIEVEMENTS

- Awarded **Branch Change** in Mechanical Engineering based on **Exemplary Academic Performance** *(2022)*
- Secured All India Rank **317** in JEE Mains in a pool of more than 1.5 million candidates *(2021)*
- Secured All India Rank **1273** in JEE Advanced in a pool of more than 0.3 million candidates *(2021)*
- Amongst the **top 1%** at National level **Homi Bhabha Balvaidynanik Exam** out of **1 million** candidates *(2018)*
- Awarded the prestigious **NMMS** Scholarship among **1 million+** talented candidates across the nation *(2019)*

TECHNICAL EXPERIENCE

Contextual AI Chatbot *Winter 2022*
Natural Language & Processing Intern *64Squares*
- Developed methods to analyze **unstructured data** on dialogues to improve nlu predictions in b2b markets
- Used **Bulk Labelling** along with **K means** clustering algorithm for effective preparation of training data
- Trained **Bert** and **Spacy** language models with **DIET classifier** for accurate intent and entity predictions
- Performed **stress testing** on the models to determine their stability and improve their resilience policies
- Extracted dialogue flows from conversation graphs by implementing a **Q learning** based **greedy algorithm**
- Experimented with different policies for Inferencing the next action taken by the model based on the context

End-to-End terminal Chat application *Winter 2022*
Gsasansol, Permafrost | Open Source *self project*
- Created an open source **end-to-end** encrypted pythonic terminal chat application using **curses** for UI/UX
- Implemented Server-side backend in python using **web sockets** for efficient communication and minimum lag
- Implemented account creation and authentication thus supporting custom **lobbies** and **user invites** in the client

POSITIONS OF RESPONSIBILITY

Web Coordinator | Student Alumni Relations Cell, IIT Bombay *Summer 2022 - Ongoing*
*Part of a **60 member** team responsible for fostering relations among **60K+** alumni and students*
- Working in a team of **5** to handle the social activity and web presence of Student Alumni Relations Cell
- Responsible for the development and maintenance of various websites and portals for SARC events
- Developed website for **PMP**, Placement Mentorship Program using HTML, CSS, JavaScript, Bootstrap and **Django** as a framework in a team of **5** resulting in **150% y-o-y** increase in registrations and allotments
- Interacted with **100+** Alumni of IITB during the **35th Phonathon**, telephonic marathon of IIT Bombay

Core Team Member | Data Analytics and Visualization Team, UGAC *Autumn 2022 - Ongoing*
*Part of a **12 member** team working to provide **data-centric solutions** to the Institute and external organizations*
- One of **3 Sophies** to be selected among **100+** sophomore via rigorous technical assignment and interviews
- Collaborating with **Prof. Sunita Sarawagi** from **CSE, IITB** for projects leveraging public **Indian datasets**
- Dissected and Interpreted **national data** on power and coal usage for gaining useful insights from the data
- Conducted a session for explaining a research paper on **Efficient Graph based Image Segmentation**

KEY PROJECTS

Image to Image Translation - CycleGAN *Winter 2022*
Using GANs to create art *Kaggle Hackathon*
- Implemented a Conditional Generative Adversarial Network to achieve translation of images to monet paintings
- Built the **CycleGAN** model in **pytorch** and trained it on monet paintings dataset to achieve image style transfer
- Saved a couple of generated fake images and sampled through them to feed discriminators to avoid large oscillations

Python library for mazes *Spring 2022*
mazenet.py | Open Source *self project*
- Created an open source python library for generation of mazes and finding **optimal paths** given the start locations
- Implemented object oriented class for Kruskal, Prims, Wilsons, Hunt and Kill algorithms for sparse maze generation
- Used cpython for compiling the python code in C which resulted in **decrease in running time** of the methods

Blockchain and Web3.0
Seasons Of Code | Web and Coding Club — *Autumn 2022*
- Implemented a fully functional **Blockchain** in **Javascript** for understanding its functional components
- Designed **Smart Contracts** for **Banking** and **Ballot** systems and performed gas **optimizations** on them
- Developed a **Decentralised File Sharing Application** on **Ethereum** using **web3.js** and **ethers.js** libraries

Machine Learning & Neural Networks
Summer of Science | Maths and Physics Club — *Autumn 2022*
- Implemented a fully functional **Neural Network** using a novel approach for calculating the **Entropy Loss** and the **Backward Pass** from scratch using only **Numpy** library for understanding the core aspects of a NN
- Achieved an accuracy of **97%** on a **butterfly classification system** trained on real world dataset
- Developed an **OCR Neural Network** for solving **PDEs** especially Laplacians using **physics informed learning**

Android Application
Phonathon | Student Alumni Relations Cell — *Autumn 2022*
- Created an **Android Application** using **React Native** as a framework for the event of phonathon under SARC
- Implemented a **Normalized** database structure for registering and logging users and alloting a group of alumni to a particular user model which resulted in **300%** y-o-y increase in participation for the event
- Ideated a **novel** approach for detecting **fraudulent phone calls** from a user and disqualifying him from the event

Understanding the performance and volatility of crypto assets
FinSearch | Finance Club — *Autumn 2022*
- Studied the performance of **Crypto Assets** that use **DLT** such as **Blockchain** to create/verify secure transactions
- Investigated the reasons for **Volatility** of **Crypto Currencies** and patterns for volatility in **Crypto Trading**
- Analysed the Future for **Crypto Assets** based on these factors and government scrutiny they are likely to attract

Alumination
Student Alumni Relations Cell | SARC — *Autumn 2022*
- Ideated and Developed the website of **Alumination**, which served as a seamless platform for fostering meaningful mentoring relationships between **10,000+** current students and **1000+** alumni of **IIT Bombay**
- Collaborated in a team of **5 UGs** in developing the website using HTML, CSS, JS, BootStrap and **Django** as a framework resulting in **2000+** registrations and **130%** y-o-y increase in registrations
- Created **Roadmaps** of database flow and **Authentication** which lead to a large increase in **Web API** performance

Bubble Shooter Game
Course Project | Prof. Parag Chaudhuri — *Winter 2021*
- Used Object Oriented Programming in conjunction with **STL Libraries** and **Graphics** to create a game
- Added different features like **Timer in each level**, **Randomised Bubble Radius** and **Scoreboard** in addition to visually enhancing the game and updating scores in file using concepts of **Data File Handling**
- Presented a **10 min** video highlighting the features and gameplay of bubble shooter game and the difficulties faced

Star Galaxy Separation
Course Project | Prof. Amit Sethi — *Winter 2022*
- Collected Data containing a catalogue of more than **222,000** objects from **HST(Hubble Space Telescope)** archive
- Implemented **Bootstraping** technique for correcting the effects of an imbalanced dataset in the training data
- Effectively employed l^1 **Regularized SVM**, **Naïve Bayes** and **Logistic Regression** method for classification

TECHNICAL SKILLS

Programming	C/C++, Python, Javascript, Solidity, MATLAB, bash, Android Studio, Git, Unity
Data Science	PyTorch, TensorFlow, OpenCV, Gensim, NLTK, Matplotlib, Scikit-Learn, DVC, PyCaret
Development	HTML, CSS, Bootstrap, Tailwind CSS, Django, Node, Angular, React, Firebase

KEY COURSES UNDERTAKEN
- **Computer Science:** Data Structures and Algorithms*, Computer Programming and Utilization, Games and Information (Game Theory), Introduction to Electrical and Electronics circuits, Smart Contracts†
- **Data Science:** Optimization Theory*, Fundamentals of Reinforcement Learning†, Programming in Data Science
- **Miscellaneous:** Calculus, Linear Algebra, Differential Equations, Electricity & Magnetism, Quantum Physics

Ongoing   *†Coursera Courses*

EXTRACURRICULAR ACTIVITIES
- Conducted a session on Mathematics of Paper Folding for teaching maths to 10th Graders with origami *(Aug '22)*
- Acquired **Rank 45** among 250+ teams in Inter **IIT Hackathon - Convolve** hosted by **IIT-Guwahati** *(Dec '22)*
- Secured **Global Rank 188** among 11K participants in **Codechef November Starters Challenge** *(Nov '22)*
- Part of a diverse **12** member team of CAB clusters under **Krittika** the astronomy club of IIT Bombay for studying the stellar **Evolution** and stellar **Classification** using **HR Diagrams** *(Sep '22)*