Shrey Patel — 19D100020
Mechanical Engineering — Dual Degree (B.Tech. + M.Tech.)
Centre for Digital Health — Gender: Male
Indian Institute of Technology Bombay — DOB: 01/01/2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	CBSE	Shri Agrasen Vidyalaya, Indore	2019	93.60%
Matriculation	CBSE	Navrachana Higher Secondary School	2017	10

Scholastic Achievements

- Among **top 10** students selected across all departments based on academic merit for **IDDDP** at **KCDH** — *2022*
- Secured an All India Rank **1156** in JEE Advanced, **99.85** %ile in Paper I, JEE Main (**1.2M+** candidates) — *2019*
- Achieved full score of **100** %ile in **Mathematics**, Paper II of JEE Main among 0.25+ million candidates — *2019*
- Among the **top 1% nationally** in National Standard Examination in Chemistry, selected for **INChO** — *2018*
- Recipient of the National Talent Search Examination (**NTSE**) **Scholarship**, awarded by **NCERT** — *2017*

Professional Experience

Data Analytics and ML Intern | Qubiseed Technologies — June '23 - ongoing
- Modelling rare disease **diagnosis prediction** through data refinement and clustering, using python and ML models
- Streamlined web scraping for comprehensive data integration, employing **Selenium** for automatic data extraction

Behavioral Analyst Intern | BuyerAssist.io — Dec '22 - Feb '23
- Formulated strategies to **push product adoption**, technical indicators; created dashboards based on product **KPIs**
- Leveraged product usage, event click data to study various client engagement by **cohort analysis** of roles, sector

Business Intelligence Intern | ICICI Lombard GIC — May '22 - Aug '22
- Analysed **big data** to identify areas of automation for **cashless health** claims by developing interactive dashboards
- Strategised a **4-point** approach to efficiently verify claims, eventually **bypassing** external analytics service provider
- Saved **21.2+% volume, 6000+ man-hours** by developing tesseract-based **document parser** for handwritten forms

Market Analyst Intern | A Hundred Hands — July '20 - Aug '20
- Analysed **40+ international brands** in the organic herbal care sector, automated **product portfolio** generation
- Employed **Beautiful Soup** along with excel to build portfolio generation tool; collated on **9 KPIs** for each brand

Technical Projects

AI/ML Driven Disease Screening for Prognostic Analysis of HL — May '23 - ongoing
Thesis guided by: Prof. Ganesh Ramakrishnan (CSE), Prof. Kshitij Jadhav (KCDH), Dr Hasmukh Jain (TMH)
- Built pipeline for tumour **segmentation** and **detection** for treating Hodgkin's Lymphoma, using **SAM** and **YOLO**
- Automated organ detection in **CT** by training, **optimising YOLO** model to extract clinically relevant image features
- Optimised code complexity by developing **gradient**-based **PET** scan shortlisting algorithm for tumorous regions

Targeted Active Learning for Imbalanced Image Classification — Feb '23 - May '23
- Trained and tested **deep learning** models using state-of-the-art **active learning** strategies on **MedMNIST** dataset
- Enhanced **per class** testing accuracy of models by more than **20%** by using **Submodular Mutual Information** (**SMI**) functions and **Targeted Subset Selection** algorithms; collaborative project in team of 4 under KCDH TA

Is Algorithmic Trading the Future of Trading | Winner and Mentor — July - Aug '21, '22, '23
FinSearch: Team Research Project — *Finance Club, IIT Bombay*
- Awarded **winner prize** among **150+** teams; further **mentored 32** students from 8 teams; 2 among top 15 finalists
- Grasped **financial modules** of stock market, technical, fundamental analysis and **trading** systems from **Zerodha**
- Scouted trading strategies, implemented **Pairs Trading strategy**, back-tested results using python on Nifty Bank

COVID-19 Impact on Digital Learning — Aug '21 - Oct '21
Course Project: Public Health Informatics — *Prof. Ganesh Ramakrishnan (CSE)*
- Awarded **AA** grade in course; analysed **student engagement** correlating it to demographics and COVID timeline
- Evaluated **big data** after preprocessing using **statistical tools** to provide insightful visualizations and conclusions

Hostel Activities Optimization — Jan '22 - May '22
Course Project: Industrial Eng. & Operations Research — *Prof. Avinash Bhardwaj (IEOR)*
- Built mathematical model with **cost parameters** and constraints to give **optimal** resource distribution using **AMPL**
- Incorporated student **satisfaction variable** to gauge emotional well-being, enforcing minimum **threshold** value

Academic Projects

Using Transfer Learning to Predict Li-ion conductivities
Mar '22 - May '22

Course: Multiscale Materials Informatics, Discovery and Design　　　*Prof. Alankar Alankar (C-MInDS)*

- Analysed **Pearson's correlation**, trained **random forest regressor** on average voltage from large battery dataset
- Employed **transfer learning** for elemental descriptors prediction, trained on labels created by structural descriptors

Treating Arrhythmia using Deep Learning
Aug '21 - Nov '21

Course: Statistical Machine Learning and Data Mining　　　*Prof. Asim Tewari (C-MInDS)*

- Collaborated in team of 5 in building a **market-deployable product** to detect arrhythmia; led **market-overview**
- Built healthcare tool using single-lead **ECG** signals by implementing deep **neural networks** achieving **73%** accuracy

Analysis of Laser Surface Hardening (LSH)
Feb '21 - May '21

Course: Manufacturing Processes　　　*Prof. Ramesh Singh (Mech)*

- Simulated and verified LSH process via **FEM** using open-source **FEniCS** python module in colab with a team of 5
- Modelled transient heat equation to calculate temperature field to find laser velocity; reviewed **5+ research** papers

Planning New Airline and Base Airport
Oct '22 - Nov '22

Course: Air Transportation　　　*Prof. Rajkumar Pant (Aerospace)*

- Presented **business proposal** to setup a new airline and base airport at Champhai in collaboration with team of 7
- Awarded **full score** for comprehensive reporting on evaluating airline and airport economics, layout, fleet operations

Dive-proof Phone Case - Mechanical Design Project
Aug '22 - Nov '22

Course: Machine Design　　　*Prof. Ramesh Singh (Mech)*

- Created and tested **market-ready**, fail-proof underwater phone case from scratch, by collaborating in team of **10**
- Optimised material selection, evaluated **cost analysis**, designed **CAD** models, tested **prototype**, live demonstration

Manufacturing of Ball Bearings
July '21 - Nov '21

Course: Manufacturing Processes　　　*Prof. Deepak Marla (Mech)*

- Compiled and presented end-to-end **product manufacturing report** on ball bearings collaborating in team of 3
- Evaluated production cost by **process optimisation**, tuned design parameters at par with global industry standards

Positions of Responsibility

Department Placement Coordinator | Institute Placement Team
June '23 - ongoing

Elected unanimously to represent the interest of undergraduate students in the Placement Committee

- Assisting in the placement of **2000+** students by working as a liaison between the Placement Cell and all students
- Strategised **Plan of Action**, including preparatory activities to enhance the placement preparation of the students
- Responsible for the resume verification of **120+** students and expertise company pitching for maximum recruitment

Creatives Head, Core Team Member | Yogastha, IIT Bombay
Apr '21 - Apr '22

- Boosting community engagement to **6500+** well-being enthusiasts by designing creatives for **social media outreach**
- Envisioned and hosted multiple **club events**, workshops and talk-shows; invited various yoga experts for sessions

Area of Expertise

Technical Skills	• **Python:** PyTorch, TensorFlow, OpenCV, SkLearn, Pandas, BeautifulSoup4, Selenium, FEniCS • MATLAB, SQL, Tableau, Excel-VBA, C++, HTML, LaTeX, AMPL, Kivy, SolidWorks, AutoCAD
Informatics Courses	Medical Image Computing, Algorithms and Complexity, Machine Learning for Remote Sensing, Image Processing, Multiscale Materials Informatics, Introduction to Public Health Informatics, Applied Data Science by WorldQuant University, Statistical Machine Learning & Data Mining

Extra-Curricular Activities

Leadership	• Managing academic, administrative interests of the department as the **CR** of KCDH	2022-24
	• Earned **honours** in Applied **Data Science** by **WorldQuant** University, **90+%** avg score	2021
	• Volunteered to **mentor** JEE aspirants assisting various national exams at CovEd India	2020
Technical	• Created **GUI application** for Battleship game at **IITH** Artificial Intelligence workshop	2020
	• Built bluetooth controlled **bot** and remote controlled **plane** from scratch in a team of 4	2019-20
	• Pitched a **business model** in EnB Buzz, annual pitching competition organized by E-Cell	2019
Sports	• Won **runner up** trophy among 6 participating teams in intra-hostel **football** league	2022
	• Represented Hostel-16 in **Lawn Tennis GC**; underwent yearlong **NSO** training	2019-20
	• Completed I'Day & R'Day **biathlons** (5+7 km), finished in **top 10** of 75 participants	2019-23
Interests	• Bagged **2nd** position in Silverscreen's **Ad Making** Competition at Freshiezza event	2019
	• Shortlisted for selection tests at **Service Selection Board**, qualifying **NDA** exam	2019
	• Ranked **3rd**, represented school in the Vodafone Quiz organised by Mr Derek O'Brien	2014
	• Professionally trained in **Tabla** up to **Level 3**; a regular member of **School Orchestra**	2013