Anagha Bhangare		200020024
Chemical Engineering		B.Tech.
Indian Institute of Technology Bombay		Gender: Female
		DOB: 12/08/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	MSBSHSE	PACE Junior Science College, Thane	2020	92.15%
Matriculation	CBSE	New Horizon Public School, Airoli	2018	96.80%

Pursuing a **Minor Degree** in **AI and Data Science** at Centre for Machine Intelligence and Data Science

Scholastic Achievements

- Recipient of **INSPIRE** Scholarship offered by the Department of Science and Technology, Government of India('20)
- Obtained **9.59 SPI** in the fourth semester and awarded the **AA grade** for exemplary performance in 6 courses('22)
- JEE Mains : **99.19 percentile** among **1 million+** | JEE Advanced : Top **2%** among **0.15 million** candidates ('20)

Professional Experience

Piramal Pharma Limited | Global Emerging Leader (May'23 - Jul'23)
*Received **Pre-Placement Interview** Offer for strong work ethics & notable deliverables leading to economic benefits*

Strategy	• Implemented 6-Sigma based **DMAIC approach** to converge at key potentials for process optimisation • Curated the **PoA** for analysing **15+ equipment** resulting in reduced energy and steam consumption
Impact	• Obtained **15%** reduction in energy consumption baseline FY-22 leading to a **pilot implementation** • Projected an **INR 13.1M** reduction in working capital by proposing a maximum **ROI** of **3.5 years** • Cut total costs by **INR 0.3M** through streamlined data management by designing DMS & dashboards

CapriArch Solutions | Real Estate and Data Science Intern (Nov'22 - Jan'23)
*Awarded **Letter of Recommendation** from the Founder for excellent performance during internship tenure*

- Engineered model to forecast **Future Property Values** for next 10-30 years using **Price Trends** & **Inflation data**
- Developed an algorithm for accurate property evaluations, like **Net Operating Income (NOI)** & **CAP** calculations
- Consolidated **Master Property Table** including registration data, optimizing **data import scripts** for efficiency

QualityKiosk Technologies | Machine Learning and Data Science Intern (May'22 - Jul'22)
*Endowed with a **Letter of Recommendation** for excellent collaboration with the team and problem solving prowess*

- Extracted from **500+** PDFs via **pytesseract** & **pdfplumber** OCR libraries & utilised **RegEx** for feature extraction
- Uploaded extracted features to excel file using **openpyxl** and showcased a data transfer accuracy of more than **90%**
- Created **Pivot Tables** and **Dashboard** in Microsoft Excel for interactive & clean visualisation of the extracted data

Key Projects

ISRO's Chandrayaan Moon Mapping Challenge | Inter IIT Tech Meet 11.0 (Jan'23 - Feb'23)
*Worked in a team of **10**, with IITB Contingent ranking **4th** overall out of 20+ IITs*

- Generated an unprecedented super high resolution atlas for **trafficability analysis** and **landing site** characterisation
- Stitched **TMC-2** images of the lunar surface according to **Quadrangles**, using **Geo-Coordinates** from **gdal** library
- Super-resolved low-resolution **(5m)** images using **SwinIR, SRGAN** and **ESRGAN** creating HR **(30 cm)** images
- Obtained **28.52 PSNR** & **69.9% SSIM** on the lunar atlas with **Huber** loss after hyper-parameter tuning of SwinIR

Lottery Ticket Hypothesis for Object Recognition (Jul'22 - Dec'22)
Course Project : Deep Learning - Theory & Practice | Guide : Prof. P. Balamurugan

- Leveraged **pruning** and **retraining techniques** to identify and isolate the critical subnetworks or **"lottery tickets"**
- Designed experiments using **Pascal VOC** on **ResNet-50** framework using **transferred tickets** to validate the LTH
- Demonstrated commendable **69.8 mAP** on VOC at **90% pruning** as compared to **71.2 mAP** of unpruned model

Neural Super Sampling (Jan'23 - May'23)
Course Project : Introduction to Machine Learning | Guide : Prof. Biplab Banerjee, C-MInDS

- Validated the **ECCV 2018** workshop paper **ESRGAN**: *Enhanced Super-Resolution Generative Adversarial Networks*
- Adapted the **Residual-in-Residual Dense Block (RRDB)** as the basic network building unit of the architecture
- Created relativistic **Generative Adversarial Network (GAN)** to let the discriminator predict the relative realness

Tax-bracket based Voting Classifier (May'22 - Jun'22)
Datathon Project | DPhi

- Used **Gradient Boosting** to predict the political party to which a taxpayer belongs to using **US Taxpayers** dataset
- Pre-processed data by eliminating the redundant datatypes using a **correlation matrix** and applied **feature scaling**
- Visualised hard and soft **Voting Classifier** using **confusion matrices** and **heatmaps** showcasing a **91.8%** accuracy

Genetic Algorithm (Jan'23 - May'23)
Course Project : Optimisation | Guide : Prof. Mani Bhushan
- Customised genetic algorithm to solve complex optimisation problems such as extrema for **multi-variable** functions
- Employed **roulette** & **tournament selection**, crossover, and mutation for fitter candidate solutions over generations
- Attained **53%** performance enhancement by optimising **population & step size** and effects of crossover & mutation

Natural Language Processing with Disaster Tweets (Jun'22 - Jul'22)
Self Project | Kaggle | Developed a real disaster tweet detector to curb the spread of misinformation
- Devised a real disaster tweet detector using supervised models **Logistic Regression** and **Random Forest Classifier**
- Cleaned data using stemming and applied TF-IDF vectorisation from **NLTK** library to achieve **80%** testing accuracy

Text detection for Natural Scene Images (Jul'22 - Aug'22)
Self Project | Kaggle | Deep learning model for detecting and storing text from images
- Trained model on **Google Street View** text dataset for detecting and recognizing text from **natural scene images**
- Executed a custom **CNN** to classify text in the region of interest word-by-word from a dictionary of only **5000** words
- Fine-tuned the **YOLOv2** algorithm for text detection using **transfer-learning** and achieved a mean AP of **80.4 %**

Object-Oriented Programming based Lasso Game (Feb'21 - Mar'21)
Course Project | Guide : Prof. Kameswari Chebrolu
- Implemented a **Lasso Game**, requiring user to collect programmed targets and tracked the user's score **dynamically**
- Programmed the game using **C++** and prepared the **User Interface** using SimpleCPP, a graphics library over C++

Other Projects

Crude Oil to Chemicals | Bharat Petroleum Corporation Limited (Jan'23 - May'23)
Supervised Learning Project | Guide : Prof. Sanjay Mahajani, Mr. Pintu Maity (Sr. Manager(R&D), BPCL)
- Received a **Letter of Recommendation** from the Chief Manager of R&D for valuable insights & significant impact
- Charted overall petrochemical production from the **FCC, CCR, MTBE** and **HCU** in the BPCL Mumbai Refinery
- Projected a **17%** increase in production by simulating **FCC** unit using **DWSIM** and optimised operation parameters

Optimisation of a Double-Skin Façade for HVAC Cost Reduction (Jan'22 - May'22)
Course Project : Heat Transfer | Guide : Prof. P. Sunthar
- Led a **team of 8** to find the optimum configuration parameters in **double-skin façades** for high-rise office buildings
- Created a 3-D simulation using **Design Builder** & analysed the performance of the optimum model using **matplotlib**

Simulation & Analysis of Flow in a Diverging Channel (Jan'22 - May'22)
Course Project : Fluid Mechanics | Guide : Prof. Devang Khakhar
- Performed **Computational Fluid Dynamics** by configuring geometry of the channel using **Gmsh** & **OpenFOAM**
- Visualised the velocity & pressure fields, streamlines and pathlines for various channel configurations using **ParaView**

Technical Skills

Programming	: Python, MATLAB, HTML, HTML5, CSS, C++, Gmsh, SQL
Software	: Git, LaTeX, MS Excel, MS Powerpoint, OpenFOAM, DWSIM
ML Libraries	: Scikit-Learn, Numpy, Pandas, Seaborn, Matplotlib, TensorFlow, NLTK

Positions of Responsibility

Teaching Assistant | Student Mentorship Program, IIT Bombay (Jul'22 - Dec'22)
*Selected as a **TA** for the **English Learning Program (ELP)** after a rigorous assessment including **mock teaching***
- Part of a **14** member team aiming to coach **350+** students with a few necessary soft skills and the English language
- Developed the curriculum and derived activities in interactive sessions for an **8-week** Speaking and Listening module

Competitions & LYP Coordinator | Mood Indigo, IIT Bombay (Apr'21 - Mar'22)
Asia's largest College Cultural Festival | Footfall : 146,000+ | Events : 240+
- Ideated and revamped governing rules and regulations of **15+** competitions in **10+** cultural genres present in institute
- Negotiated deals with **'Cultural Academies'** and organized **15+** online competitions, tackling COVID-19 impact

Extracurricular Activities

Technical	• Completed the **Data Science Bootcamp** using Python offered by DPhi and Analytics Club IITB • Completed the LaTeX Bootcamp as a part of Learner's Space Program offered by Career Cell
Finance	• Completed the **Accounting Fundamentals** course offered by the **Corporate Finance Institute** • Handled **accounts receivable and payable** as an organiser of the Neoteric Model United Nations
Sports	• Completed year-long training in **Lawn Tennis** under **National Sports Organisation (NSO)** • Trekked **Kalsubai**, which is the highest peak in Maharashtra with an elevation of **5400 feet**
Social	• Raised funds for vocational training for **National Association of Disabled's Enterprises** • Ran **5+ kms** in Tata Marathon **Habitat for Humanity**, in support of better shelter & sanitation
Misc.	• Performed in the IIT Bombay **Annual Insync Dance Show** 2023 in front of **2500+** people • Mentored a group of **six** students in Summer of Science project on the topic Quantum Computing • Participated in the **Harvard College** Project for Asian and International Relations Summit, 2023 • Received Commendation in **National Level Competition** from **Spellbee International** • Awarded Six Sigma **White Belt** certification	• Presented MSP at the **Blue Economy Conclave**