Shainal Jain | **210040144**
Chemical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Female**
DOB: 01/12/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	HSC	Pace Junior Science College Nerul	2021	96.83%
Matriculation	CBSE	Atomic Energy Central School -4	2019	94.60%

Secured Associate Consultant role at EY in Enterprise Risk Consulting via IIT Bombay campus placements

SCHOLASTIC ACHIEVEMENTS

- Secured a change of branch to the **Dept. of Chemical Engineering** for excellence in academics ['22]
- Ranked in the top **1%** state rank in **National Standard Examination in Junior Science** (NSEJS) ['18]
- Ranked in the top **10%** (institute) in the Junior level screening test of **49th** and **50th NMTC** ['17,'18]
- Conferred with the **INSPIRE** scholarship for ranking in top **1%** of the Maharashtra HSC examination ['21]
- Secured merit and received an award for excellence in the **Ganit Prabhutva Pariksha** ['17]

PROFESSIONAL EXPERIENCE

Dr. Reddy's Laboratories | Internship [May'24 - Jul'24]

Tasked with cycle time reduction at Granulation stage of Colesevelam Tablet

Strategy

- Implemented the **DMAIC** methodology to converge at key potentials for **process intensification**
- Developed a coupled **CFD–DEM–PBM** framework for **fluidized bed wet granulation** and modeled the effects of process parameters like AFR on **particle dynamics** and **residence time**
- Applied a one-way **CFD–DEM** to **PBM** transfer for developing co-relations and deriving inferences between **particle-fluid** interactions with **granulation** behavior in the fluidized bed system
- Developed mechanistic **PBM** rate expressions for mapping crucial process parameters like humidity to critical quality attributes like granule size distribution and liquid content of the **API**
- The framework accurately captures system dynamics and provides a practical methodology for process model development, effectively supporting process design, development, and scale-up

Impact

- Reduced the cycle time from **7** hours to **3.5** hours per batch to improve delivery and yield by **2x**
- Projected an **INR 25M** reduction in working capital by proposing **Zero** additional **CapEx**

OptAlpha | Data Analyst [Feb'24 - Apr'24]

- Tasked with analysis, manipulation and interpretation of **financial data** and **algorithmic trading** strategies
- Developed and **backtested** end-to-end automated strategies, leveraging market data for performance optimization
- Conducted **price**, **volume** and **VCP** analyses for decision-driven identification of potential buy or shorting opportunities
- Drafted a **Trend Template** and identified **volatility contractions** within the VCP patterns to validate **Stage 2 uptrends**, applying rolling **moving averages**, stock volume patterns, and **RS** ranking for enhanced stock selection

KEY PROJECTS

M&A Analysis: Investment Banking

J.P. Morgan Virtual Experience Program | Forage [Jun'23 - Jul'23]

- Executed a comprehensive **M&A project** via analysis, **target identification**, financials, and investment options
- Conducted in-depth analysis of target companies, **evaluating financial performance**, **market position, competitive landscape, and growth potential**, while identifying synergies, and value creation opportunities
- Utilized financial modelling skills to prepare **discounted cash flow (DCF)** valuations, assessing intrinsic value and potential returns on investment for each identified target company based on perceived forecasts and analysis

KPMG Data Analytics

KPMG Virtual Experience Program | Forage [May'23 - Jun'23]

- Conducted **data quality assessment** and **evaluated the completeness** of three datasets provided by the client
- Developed **recommendation** for high-value customer targeting based on customer demographics and attributes
- Conducted a **Three phase analysis** including data exploration, model development, and data interpretation
- Designed a **Tableau dashboard**, revealing **data insights, high-value customer segment**, growth strategies

Credit Card Fraud Detection | Self Project ['23]

- **Preprocessed** the dataset using **scaling**, **distribution analysis**, and data **splitting** for extended analysis
- Applied advanced resampling techniques such as **random undersampling**, oversampling with **SMOTE**, and **anomaly detection** to address class imbalance in the data for improving overall model performance
- Utilized dimensionality reduction techniques like **t-SNE** for visualizing high-dimensional data and **clustering**, and implemented various classifiers like logistic regression and neural networks for testing and evaluation purposes

Detecting Depression Through Tweets | WIDS | Analytics Club IIT Bombay ['23]

· Performed **Sentiment Analysis** using **NLP** techniques to analyze text and extract **sentiment** information
· Trained the data using **Long Short Term Memory** model, implemented **word embeddings** to project words into real vectors using the **word2vec** library and compared the **LSTM** model against **logistic regression**

Unsupervised Domain Generalization | Course Project [Aug'23 - Dec'23]

· Implemented a **memory queue** system for **signed** key storage to ensure model robustness to **domain shifts**
· Optimized model performance via **InfoNCE** loss and **L**Ω regularization to align bridge domains via edge maps
· Enhanced **domain invariance** in image representations via a domain discriminator within the **BrAD architecture**
· Applied BrAD to **unsupervised learning** scenarios for direct knowledge transfer with **minimal supervision**

Causal AI | B.Tech.Project [Aug'24 - present]

· Implemented a **fault diagnosis** framework using real-time data to identify **causal relationships** during operations
· Enhanced **fault detection** and root cause identification using **TD** Mutual Information and **Transfer Entropy**

Optimal Scheduling of Condition-based Predictive Maintenance | Research Project ['23]

· Developed a **Markov chain-based model** analysis for **optimal scheduling** of **CbPM** in a **multigrade degradation system**, evaluating key performance measures including **availability** and **production rates**
· Created a **cost-based optimization model** to balance equipment usage and maintenance costs effectively
· Strategically solved **complex budget allocation** to **maximize** overall **productivity** for multiple independent machines, utilizing **loss of production cost** to determine optimal repair states

Crowd Evacuation Simulation | Course Project [Jan'24 - May'24]

· Simulated crowded scenarios with **AnyLogic** using **Pedestrian** library to analyze and test evacuation strategies
· Invoked **JAVA** for shortest distance algorithms and employed **Pypeline** for random number generation
· Investigated **CELLEVAC** strategies, placing **obstacles** & **adaptive guidance** to reduce crowd pressure at exits
· Conducted statistical analysis on evacuation time, obstacle effects, and varying exit sizes to optimize evacuation

Coromandel | Supervised Learning Project [Jan'24 - May'24]

· Optimized an insecticide synthesis reaction by reducing cycle time from **12.3** hours to **9** hours with no **Capex**
· Identified and resolved a **production bottleneck** and increased production capacity to **13.8 tonnes** per day
· Designed and modelled a **heater treater** to prevent emulsion formation and achieve minimum heat requirements

Zydus Cadila | Supervised Learning Project [Aug'23 - Dec'23]

· Reduced cycle time of **Topiramate** by **38%** by leveraging **chemical kinetics** and **heat transfer** principles
· Utilized calculated amounts of **liquid nitrogen** as a coolant to expedite heat transfer and reduce cooling costs
· Drafted and advocated an **upgraded pumping** system for further reduction in cycle time via **parallel processing**

POSITIONS OF RESPONSIBILITY

FinSearch Mentor | Finance Club, IIT Bombay [Jul'24 - Aug'24]

· Guided **12** mentees to understand the role and impact of **ESG** metrics in decisive **investment** strategies
· Conducted bi-weekly interaction sessions for concept clarity and doubt resolution on ESG research papers

Events Coordinator | Techfest, IIT Bombay [Dec '22]

· Procured contact points from **15+** companies from various fields to discuss opportunity of brand ambassadorship
· Streamlined registration and promotion process for various events by communicating with **20+** potential attendees

Key Courses

Certified Courses	· Neural Networks and Deep Learning (Andrew Ng, *Coursera*) · Improving Deep Neural Networks (Andrew Ng, *Coursera*) · Structuring Machine Learning Projects (Andrew Ng, *Coursera*) · Fundamentals of Quantitative Modeling (University of Pennsylvania, *Coursera*)
Major Courses	· Advanced Deep Learning (IE 643) · Probability and Stochastic Models (IE 621) · Simulation Modeling and Analysis (IE 630) · Techno-Commercial Aspects of Fine Chemical Industry (CL 678) · Process Control (CL 302)

Extra Curriculars

Sports	· Represented **IIT BOMBAY** in the **Inter IIT sports meet Badminton**	['22]
	· Won Institute **Badminton** open and **Table-Tennis** open	['22]
	· Secured **Second** position in **All India Inter-AECS Badminton Tournament**	['14]
Miscellaneous	· Stood **First** in an **ad-making** contest (team of 5) in **FRESHIEZZA**	['21]
	· Enthusiastic **competitive programmer** with max **Codechef** rating of 1433	['22]
	· Mentored a batch of over **150** juniors on purusing **IEOR** as minor degree	['24]