MANAS BHAT

ACADEMIC QUALIFICATIONS

Year	Degree /Board	University /Institution	%/CGPA
2025*	Post Graduate Diploma in Business Analytics	IIM Calcutta, IIT Kharagpur, ISI Kolkata	-
2022	B.S. & M.S. (Dual Degree) Mathematics	Indian Institute of Science Education and Research Bhopal	7.61/10
2017	CLASS XII	DHSS, Jammu	89.40 %
2015	CLASS X	MHACS Nagbani, Jammu	10/10

KEY SKILLS/TOOLS — Predictive Modeling, Statistical Data Analysis, Critical Thinking, Python, R Programming, SQL, Power BI

AWARDS AND ACHIEVEMENTS

Masters Thesis	■ Successfully defended Masters Thesis in Pure Math at IISER Bhopal on the topic **'Zeros of Modular Forms'**
Scholastic Achievements	■ Secured **AIR 2** in **PGDBA** entrance exam | **99.83** & **99.87 %ile** in Quant section of **CAT 2022** and **XAT 2023** ■ Scored **98/122** in Math section of **JEE ADVANCED 2017** | Secured **99.93 %ile** (out of 22.5k) in **JK-CET 2017** ■ Attended **INMO training camp** after securing **Rank 5** in Regional Mathematics Olympiad **(RMO)** in 2015 ■ Cleared **National Standard Examination in Physics**(NSEP'15) held by **IAPT,** with **44k+** candidates enrolled
Case Competitions	■ **National Winner** among **823** teams in Mind Wizz; a **Suppy chain analytics** comp. held by IIM Udaipur['23] ■ National Finalist (**Top 7/424**) in μ-lytics; an **HR analytics** comp. conducted by MU School of Business['23]

ACADEMIC PROJECTS

Used Cars Price Prediction (Regression)	■ Developed Regression models to predict the price of used cars using **11.8k+** observations and **20** features ■ Performed **feature engineering**; imputed missing values using **iterative imputer**; validated all assumptions ■ Tackled multicollinearity with **VIF**, **PCA**, **Lasso** and **Ridge;** handled **influential points** using **dffits-statistic** ■ **Adj. R^2 = 0.77 (↑ 11.5%)**; Analyzed non-linear models: **AdaBoost**, **XGB**, **RF**; enhanced Adj. R^2 to **0.84 (↑ 9%)**
Drug-Drug Interaction Prediction	■ Harnessed **~1.92L** drug pairs to formulate Drug-Drug interaction classification models using **86 DDI classes** ■ Combined drug chemical structures into **feature vectors**; performed feature selection & used **DeepNN**, **KNN** ■ Executed **stacking** ensemble(**RF**, **NN** & **XGB**) with **LR** as meta learner & achieved accuracy of **0.94 (↑ 4.5%)** ■ Explored **Graph Neural Networks** and **node embedding techniques** for predicting drug-drug interactions.
Online Retail Segmentation	■ Investigated UK online retail dataset containing **~3.5L** observations for identifying diff. customer segments ■ Performed feature engg.; **Cohort** & **RFM** analysis; utilized **t-SNE**; used **K-means**, **agglomerative** & **DBSCAN** ■ Identified **4** segments with customer profiling from elbow method; **silhouette score**- **0.83** & **DB index**- **0.41**
Brand Positioning through Perceptual Map (NLP)	■ Created **Perceptual Map** of 8 Hotel chains using **OpenAI** embeddings, **BERTopic** & **LDA** from **12k+** reviews ■ Selected no. of topics by **coherence score** & Employed **LR** to describe **thematic** patterns across hotel chains ■ Leveraged **Multidimensional Scaling** yielding **actionable insights** while achieving a **stress score** of **0.096**
UK Electronics Sales Forecast	■ Forecasted monthly sales of electronics for a period of **30** months from the past **36** years data using **SARIMA** ■ Used **ADF** test for **Stationarity**; **log transformed** for heteroscedasticity; fixed **AR/MA** orders by **ACF/PACF** ■ Utilized **AIC**, **BIC** for best model selection; verified residuals using **Ljung-Box** test; achieved **MAPE** of **4.33%**

ADDITIONAL PROJECTS

Portfolio Optimization	■ Collated over **18** months of daily stock prices of **20** NSE-listed firms to find the optimal investment portfolio ■ Used **Markowitz** as a base model; Employed **Hidden Markov Model** (**5** states), calculated **transition** matrix ■ HMM outshone Markowitz with **returns 1.25 (↑34%)**, **volatility 0.18** (↓**16%**) & **Sharpe ratio 7.09** (↑**59%**)
Uplift Modelling	■ Employed uplift modeling (**14M** records) to identify customers who're most likely influenced by a campaign ■ **Statistically asserted** the significance of **CATE**; tackled class **imbalance** by clustering based **undersampler** ■ Utilized **GWUplift** using **XGB** as base learner & achieved uplift **QC** of **0.3**; suggested a list of target customers
Personalized Recommendation Of H&M Apparel	■ Developed **collaborative filtering** RecSys, 3.1L+ transactions; addressed popularity bias & **cold start** issues ■ Conducted EDA; generated a labeled dataset to implement **LightGBM** Ranker to recommend top 12 products ■ Utilized **ALS** to perform matrix factorization for discovering latent factors; got **MAP@12** of **0.031 (↑ 10.7%)**
X-Ray Pneumonia Detection (CNN)	■ Developed a binary classification model using **5.8k+** Pediatric Chest X-ray images for identifying pneumonia ■ Performed Image **preprocessing**; utilized **transfer learning** on **XceptionV3** & **ResNet50** model; recall: 0.87 ■ Used **early stopping** to overcome overfitting; improved recall by **13%** via **partial learning** on **VGG16** model

POSITIONS OF RESPONSIBILITY & EXTRA CURRICULARS

PGDBA ER Cell (Secretary)	■ **Headed** the **External Relations** team; served as an **interface** between association and all external agencies ■ **Organized** online awareness sessions ~**7k** views; PGDBA regs. ~**43%** ↑; **Mentored** & **Onboared** Junior Batch
Data Science Casebook	■ **Initiated** and **led** a team of **10** for the 2nd edition of PGDBA(DS) casebook with **10+** analytics case studies ■ Brainstormed on **frameworks** & business **KPIs**; particularly worked on cases of **FMCG** and **Gaming** industry
Drama	■ Emerged **winners** in Jammu division; competed at **zonal level** for Drama comp. at Hansraj Youth Festival '12
Cricket	■ Secured **First Position** in Intersection Wars **Cricket** Competition 2023 featuring **8** teams at **IIM Calcutta**

ELECTIVES : Healthcare Analytics, Game Theory, ML, FRM — **INTERESTS : Cricket, Philosophy, Baking**