

# SOUMENDU MANDAL



## ACADEMIC QUALIFICATIONS

Year	Degree /Board	University /Institution	%/CGPA
2025*	Post Graduate Diploma in Business Analytics	IIM Calcutta, IIT Kharagpur, ISI Kolkata	-
2019	B.Tech Electrical and Electronics Engineering	NIT Warangal	7.57/10
2015	CLASS XII	Rampurhat Jitendralal Vidyabhaban	97 %
2013	CLASS X	Rampurhat Jitendralal Vidyabhaban	93.3 %

**KEY SKILLS/TOOLS** SQL, Excel, Machine Learning, NLP, Python, R, Agile Methodologies, Dashboarding, Statistical Modeling

## WORK EXPERIENCE (47 Months)

**Bosch Global Software Technologies** Senior Engineer Bangalore (Aug '22 - Jul '23)

Key Achievements	<ul style="list-style-type: none"><li>■ <b>Conceptualized</b> and <b>developed</b> a comprehensive algorithm to detect <b>anomalies</b> in over <b>200</b> test vehicles</li><li>■ Parameterized <b>15+</b> vehicle using charging data, resulting <b>First-mover</b> usage certification solution in Europe</li><li>■ Implemented error handling for <b>Databricks notebooks</b>, <b>documented</b> outcomes, provided <b>KT</b> to teammates</li></ul>
Analytics	<ul style="list-style-type: none"><li>■ Performed <b>feature engineering</b> for <b>autoencoder</b> based anomaly detection model on EV's <b>time-series</b> data</li><li>■ Created a <b>Tableau dashboard</b> to analyze fleet data for <b>70+</b> vehicles   identified <b>operational abnormalities</b></li></ul>
Responsibilities	<ul style="list-style-type: none"><li>■ Collaborated with cross-functional experts from <b>Germany &amp; USA</b> using <b>Agile</b> for continuous improvements</li><li>■ Presented usage certification solution at <b>EV Expo Bangalore</b>, leading to <b>increased customer acquisitions</b></li></ul>

**Mahindra Electric Mobility Limited** Assistant Manager Bangalore (Aug '19 - Aug '22)

Product Development	<ul style="list-style-type: none"><li>■ Implemented <b>Kalman filter</b> based battery <b>SOC Estimation</b> from traditional method   reduced Error by <b>3%</b></li><li>■ Developed a Python script for verifying Battery-related issue, saving <b>more than 1 hour per</b> analysis process</li></ul>
Key Achievements	<ul style="list-style-type: none"><li>■ Delivered <b>Root Cause Analysis</b> and <b>troubleshooting</b> on schedule for over <b>50</b> electric vehicle battery issues</li><li>■ <b>Collaborated</b> with the <b>CFT</b> team for the implementation and validation of BMS control algorithm (SOP, SOH)</li></ul>
Rewards & Recognitions	<ul style="list-style-type: none"><li>■ Received Mahindra AFS <b>Quarterly Divisional Excellence Award</b> from <b>CEO</b> for outstanding <b>performance</b></li><li>■ Rewarded <b>Excellence Award</b> for resolving project issue, achieved <b>5% capacity</b> increase for FAME II subsidy</li></ul>

## AWARDS AND ACHIEVEMENTS

Case Competitions	<ul style="list-style-type: none"><li>■ Ranked <b>2<sup>nd</sup></b> /1004, built <b>Dashboard</b> on Zomato Bangalore restaurant data   organized by <b>XLRI, Jamshedpur</b></li><li>■ Ranked <b>9<sup>th</sup></b> /243; built <b>Credit Score Classification model</b> for Banking industry  organized by <b>IIM, Udaipur</b></li></ul>
Academic Achievements	<ul style="list-style-type: none"><li>■ Awarded <b>Mamraj Agarwal Rashtriya Puraskar</b> by <b>Governor of WB</b> for securing <b>6<sup>th</sup></b> rank in state HS Exam</li><li>■ Top <b>0.5</b> percentile in <b>JEE Main'15</b> of <b>1.23M</b> candidates; Top <b>0.6</b> percentile in <b>WBJEE'15</b> of <b>0.13M</b> candidates</li></ul>

## ACADEMIC PROJECTS

Optimal Retail Price Prediction (Regression)	<ul style="list-style-type: none"><li>■ Leveraged <b>regression</b> analysis to predict <b>optimal product price</b> using retail transaction data of <b>30</b> features</li><li>■ Implemented <b>OLS, Lasso</b> and <b>Ridge</b> model  Addressed outlier by <b>Jack-Knife</b> and multi-collinearity using <b>VIF</b></li><li>■ Achieved <b>29.3% MAPE</b> and <b>0.85 R<sup>2</sup></b> using OLS and improved result to <b>9.4% MAPE</b> and <b>0.98 R<sup>2</sup></b> using Lasso</li></ul>
Customer Requirement Identification (NLP)	<ul style="list-style-type: none"><li>■ <b>Scrapped</b> over 30K mobile reviews from <b>Flipkart</b>; performed <b>topic modelling &amp; sentiment classification</b></li><li>■ Performed <b>tokenization, stemming &amp; POS tag</b>; Using <b>LDA</b>, got <b>6</b> optimal topics based on <b>coherence</b> score</li><li>■ Trained <b>LSTM</b> with labeled data; achieved <b>90.4%</b> accuracy; identified <b>topics</b> and <b>sentiments</b> in review data</li></ul>
Heart Attack Prediction (Classification)	<ul style="list-style-type: none"><li>■ Developed classification model to predict heart attack occurrence using <b>40</b> features column and <b>4.4L</b> records</li><li>■ <b>Imputed</b> missing values; detected <b>outliers</b>; performed <b>feature selection</b>; used <b>SMOTE</b> for class imbalance</li><li>■ Used <b>LR, RF,DT, XG Boost</b> models; achieved best result of <b>0.94 AUC</b> &amp; <b>0.91</b> recall by <b>Random Forest</b> model</li></ul>
Market Risk Modelling (Time Series)	<ul style="list-style-type: none"><li>■ Modelled daily stock price volatility of <b>NIFTY50</b> data with <b>1600+</b> observations using a <b>GARCH(1,1)</b> model</li><li>■ Performed <b>pre-processing</b>, <b>ADF</b> test for stationarity,analyzed <b>ACF,PACF</b> plots of return square &amp; residual</li><li>■ <b>Forecasted</b> exchange rate via <b>ARIMAX</b>, interest rate differential as <b>exogenous</b>, achieving <b>MAPE of 1.26%</b></li></ul>

## ADDITIONAL PROJECTS

Financial Insights with RAG and LLM (Gen AI)	<ul style="list-style-type: none"><li>■ Built <b>chatbot</b> using <b>Retrieval Augmented Generation &amp; Langchain</b> to generate <b>financial report analysis</b></li><li>■ Loaded docs &amp; created chunks via <b>TextSplitter</b>; created embeddings using <b>OpenAI</b> &amp; stored in <b>Pinecone</b> db</li><li>■ Used <b>MMR</b> for retrieving <b>chunks</b>; incorporated memory &amp; created <b>retrieval chain</b> for efficient conversation</li></ul>
Movie Recommender	<ul style="list-style-type: none"><li>■ Implemented <b>hybrid movie recommendation System</b> using data from <b>5K TMDB</b> movie &amp; <b>4.6 M</b> user rating</li><li>■ Built <b>content-based</b> recommender using <b>graph</b> network; used <b>cosine similarity</b> for <b>collaborative filtering</b></li></ul>
Image Captioning (CNN & NLP)	<ul style="list-style-type: none"><li>■ Implemented <b>encoder-decoder</b> models on <b>8K+</b> images to train &amp; generate automatic caption from images</li><li>■ Used <b>transfer learning</b> with <b>ResNet50</b> as encoder &amp; <b>transformer</b> as decoder;achieving <b>ROUGE of 0.144</b></li></ul>

## POSITIONS OF RESPONSIBILITY & EXTRA CURRICULARS

PGDBA Magazine Team	<ul style="list-style-type: none"><li>■ <b>Authored</b> an article titled '<b>Machine Unlearning: The Art of Selective Forgetting</b>' in the magazine <b>AINA 5.0</b></li><li>■ <b>Composed</b> interview questions &amp; <b>organized</b> interview s of esteemed academicians &amp; industry leaders in ML</li></ul>
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**ELECTIVES** : HCA, Financial Risk Management, Deep Learning

**INTERESTS** : E-sports, Cricket

