Mintu yadav
Industrial Engineering & Operations Research
Indian Institute of Technology Bombay

23M1529
M.Tech.
Gender: Male
DOB: 05/03/1997

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2025	8.22
Graduation	Barkatullah University	University Institute Of Technology, BU	2019	7.43
Graduation Specialization: Civil Engineering				

M.Tech Research

Medical Prescription Generation | *Master's Thesis* | *Prof. P. Balamurugan, IIT Bombay* *(May'24 - Present)*

- Performed a custom **text classification** pipeline using **Logistic Regression**, **Random Forest** and **KNN**. Achieved the highest test set accuracy of 88.7% using **TF-IDF** and **Chi-Squared features** with RF outperforming other **classifiers**
- Designed chat interface for research papers using **RAG** & **LangChain** with a **local LLM**, eliminating **API keys** needs
- Currently working to build **knowledge graph** by implementing **NER**, **relation extraction** & **text mining** using LLM

Modified Particle Swarm Optimization | *Seminar* | *Prof. Jayendran Venkateswaran, IIT Bombay* *(Jan'24 - May'24)*

- Showcased **MPSO** algorithm, achieved up to **42% faster convergence time** compared to **standard PSO** technique
- Evaluated using **14 benchmark functions**, demonstrated up to **35% improved accuracy** in 9 out of 14 benchmarks
- Conducted **statistical data analysis**, thoroughly confirming the significance of improvements with a **p-value** < 0.05

Technical Projects

Dynamic Pricing for Ride-Sharing Services | *Self Project* *(Jun'24 - Jul'24)*

- Developed **dynamic pricing strategy** that adjusts ride costs dynamically based on **demand & supply** levels in the data
- Implemented **pricing model** with **demand & supply multipliers** to adjust prices for demand and supply fluctuations
- Designed a **dynamic web platform** to predict **ride-sharing prices** by using a trained **Random Forest** regression model

Transfer Learning for Survival Analysis | *Course Project* | *Machine Learning* | *Prof. P. Balamurugan* *(Jan'24 - May'24)*

- Implemented a **transfer-Cox algorithm** with strong rule using efficient **L2,1-regularization** penalty Cox regression
- Conducted a **PCA** and screening approach to improve computation speed **4.3X** times using **FISTA** & **Strong Rule**
- Achieved **C-index 0.5869** and standard deviation of 0.0456 on **8 cancer types** making model scalable and efficient

Facial Recognition Attendance System | *Self Project* *(May'24 - Jun'24)*

- Developed **facial recognition** based attendance system using **OpenCV** & **KNN**, achieving 95 % **accuracy** on test data
- Implemented **real-time attendance** tracking solution with **automated data capture**, handling up to 100 images/user
- Designed and integrated a **responsive web tool** to display attendance records **dynamically**, updating every 2 seconds

Mortgage Default Prediction | *Course Project* | *Multivariate Data Analysis , Prof. U. Ananthakumar* *(Jan'24 - May'24)*

- Conducted **exploratory data analysis** and feature selection using **Extra Tree Classifier** to extract top 10 features
- Applied **SMOTE** for oversampling, utilized **PCA** for dimensionality reduction, compared **LR model** and **RF model**
- Achieved **AUC** of 0.83 & **F1-Score** of 0.87 by RF model, elevates **risk management** for both banks and investors

Passenger Traffic Forecasting for Airlines | *Self Project* *(May'24 - Jun'24)*

- Applied the **Box-Cox** transformation method, thoroughly conducted **ADF** & **KPSS tests** to verify **dataset stationarity**
- Leveraged **ARIMA, SARIMA, Holt-Winters** & **ARMA** methods, uncovering intricate complex patterns and trends
- Achieved superior predictive accuracy with **SARIMA**, yielding impressive metrics: **38.00 RMSE** and **8.00 MAPE**

Technical Skills and Key Courses

- **Machine Learning**
- Engineering **Statistics**
- **Simulation** and Modeling Analysis
- Mathematical **Optimization** techniques
- **Probability** and Stochastic Processes
- **Multivariate Data Analysis**

Languages : Python, SQL, PowerBI | **Libraries :** Pandas, Numpy, Matplotlib, PyTorch ,Transformers, LangChain, OpenCV

POR & Extracurricular Activities

- **Teaching Assistant (IE643)**:Mentoring **100+**students to help them with conceptual and technical doubts *(Autumn'24)*
- **Sponsorship Coordinator(IEOR)**:Enabled **industry-student collaborations** for technical Projects & initiatives *(Mar'24)*
- **Interview Coordinator(IITB)**:Collaboratively placed **2000+**students, managed assessment tests for **20+**firms*(Dec'23)*
- **Kaggle** rank **6th** in the IE 506 Machine Learning course **competition** achieved F1 score 0.869 using **XGBoost** *(Jun'24)*
- **Hobbies**:Enjoy gym workouts, watching Marvel movies, exploring tech gadgets and exploring new cuisines