

# Sandesh Gaikwad

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## EDUCATION

**Indian Institute of Technology Bombay**  
*M.Tech- Industrial Engineering & Operations Research*  
**Dr. Babasaheb Ambedkar Technological University**  
*B.Tech- Electrical Engineering*

**Mumbai, India**  
*July 2020 - July 2022*  
**Raigad, India**  
*June 2014 - June 2018*

## TECHNICAL SKILLS

**Programming Languages:** Python, R, SQL  
**Python Libraries:** PyTorch, Scikit-learn, Pandas, Numpy, FastAPI, Flask, OpenCV, Plotly, Matplotlib  
**Databases Tool:** MySQL, MongoDB, SQLAlchemy, DBeaver  
**Development Tools:** Git, Docker, Azure DevOps, Conda, Jupyter, Postman, MS Office, Anylogic, MATLAB  
**ML Architectures:** Regression, Classification, Clustering, Deep Learning (CNN, YOLO, LSTM, GAN), Transformers  
**Optimization Tools:** PuLp, Pyomo, Google OR-Tools, CPLEX, Gurobi, CBC, IPOPT, LP, MILP, MINLP, CP

## WORK EXPERIENCE

**Data Scientist** **July 2022 - Present**  
*Retail Analytics, Jio Platforms Limited* *Mumbai, India*

- **Rake Allocation and Distribution Optimization for Petrochemical Products** | Tools: Python, MILP, MySQL
  - Developed an optimized solution for efficient wagon **allocation** and petroleum product distribution **scheduling**.
  - Achieved **\$3,000** annual cost savings by deploying a robust, **data-driven** in-house tool with improved accuracy.
- **Inventory Policy Recommendation Service** | Tools: Python, Scipy, FastAPI, Azure Devops
  - Engineered a solution to optimize inventory through data analysis, sanity checks, and parameter estimation.
  - Crafted a data-driven simulation tool to improve decision-making and realize cost savings using Pareto analysis.
  - Designed APIs to create dashboards for solution evaluation, business validation, and KPI statistics.
- **Vendor Anomaly Detection** | Tools: Python, PySpark, Scikit-learn
  - Analyzed transactional data to uncover patterns and detect anomalies in vendors using advanced analytics.
  - Designed an ML framework using Isolation Forest and XGBoost to analyze and predict potential anomalies.
  - Leveraged SHAP values for interpretability and established new rules to enhance future anomaly detection.
- **Manpower Requirements Forecast for Warehouses** | Tools: Python, FastAPI, PuLp
  - Assessed the planning process to identify bottlenecks in manpower requirements planning for warehouses.
  - Developed a data driven AI-tool to deliver optimized, automated recommendations for staffing requirements.
- **Reliance Data Science Platform** | Tools: FastAPI, OR-Tools, YOLOv5, Pytorch
  - Created APIs for data validation, integration, and optimization to enhance resource and vehicle route planning.
  - Implemented AI-vision models to recognize sales representatives' ID cards, increasing identification accuracy.

## RELEVANT PROJECTS

- **Data Based Analysis of Content Propagation on Social Networks** | Tools: MATLAB, Python | IIT Bombay
  - Developed a mathematical model describing content propagation over Social Networks.
  - Analyzed twitter datasets to determine crucial design parameters of the developed mathematical model.
- **Forecasting the Covid-19 Recession And Recovery** | Tools: ARIMA, Prophet, R, Python | IIT Bombay
- **Statistical Credit Risk Model for Consumer Loans** | Tools: Pandas, Scikit-learn, Seaborn | Self
- **Modeling and Simulation of Financial Risk Assessment** | Tools: Vensim, MS-Excel | IIT Bombay

## PUBLICATIONS & PATENTS

- **A Hybrid Bayesian-Genetic Algorithm Based Hyperparameter Optimization of a LSTM Network for Demand Forecasting of Retail Products.** In Proceedings of the 15th International Joint Conference on Computational Intelligence - Volume 1: ECTA; ISBN 978-989-758-674-3, SciTePress, pages 230-237, Rome, Italy, 2023. [Link](#)
- **A Novel Approach to Allocation and Scheduling of Rail Rakes and Wagon Management for Transportation of Petroleum Products.** Presented at 10th International Conference on Business Analytics and Intelligence, 2023. The manuscript is under review with International Journal of Advanced Operations Management.
- **Method and System for Optimized Human Resource Planning in Warehouses.** Patent applied in India, 2023.

## EXTRACURRICULAR ACTIVITIES

- **Student Companion** at Institute Student Companion Programme, IIT Bombay - June-July 2022
- **Teaching Assistant** for course [IE621] **Probability and Stochastic Models I** at IIT Bombay -June-Dec 2021