

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, Gurobipy, 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, MILP, 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 an algorithm** to identify key design parameters for content propagation in online social networks.
 - Orchestrated **Monte-Carlo Simulations** on network datasets to evaluate the performance of the 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

- **Teaching Assistant** for course [IE621] Probability and Stochastic Models I, IIT Bombay (June-Dec'21)
- **Student Companion** at Institute Student Companion Programme, IIT Bombay (June-July'22)