Sandesh Gaikwad

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EDUCATION

Indian Institute of Technology Bombay — **Mumbai, India**
M.Tech- Industrial Engineering & Operations Research — *July 2020 - July 2022*

Dr. Babasaheb Ambedkar Technological University — **Raigad, India**
B.Tech- Electrical Engineering — *June 2014 - June 2018*

TECHNICAL SKILLS

Programming Languages: Python, R, SQL
Python Libraries: Pandas, Numpy, FastAPI, Flask, PyTorch, Scikit-learn, 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)
Optimization Tools: PuLp, Pyomo, Google OR-Tools, CPLEX, Gurobipy, CBC, IPOPT, LP, MILP, MINLP, CP

WORK EXPERIENCE

Data Scientist — **July 2022 - Present**
Reliance AI Platform, 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.
- **Optimal Manpower Recommendation System 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)