

# Om Mishra

+91 7021552396 | [omm512462@gmail.com](mailto:omm512462@gmail.com) | [LinkedIn](#) | [GitHub](#)

## PROJECTS

---

### PulmoScan AI: High-Sensitivity Pneumonia Screening Tool | *PyTorch, Streamlit, OpenCV* [GitHub](#) | [App](#)

- Engineered a medical diagnostic system to detect pneumonia from chest X-rays, explicitly prioritizing **Recall (Sensitivity)** to minimize false negatives in clinical screening.
- Fine-tuned and benchmarked **DenseNet121** against ResNet50, achieving **99.7% Recall** (vs. 97.0%) and reducing missed pneumonia cases from 11 to 1.
- Implemented **Explainable AI (Grad-CAM)** with bicubic interpolation to visualize lung opacities and ensure transparent predictions.
- Built a full-stack Streamlit app with real-time inference, model hot-swapping, and caching, reducing inference latency by **80%**.

### Urban Mobility Optimization: Bike Demand Prediction | *Python, Scikit-learn, SHAP* [GitHub](#) | [App](#)

- Developed an end-to-end ML system to predict hourly bike-sharing demand, achieving  $R^2 = 0.935$  for proactive inventory rebalancing.
- Evaluated 7 regression models and selected a tuned **LightGBM regressor** with zero overfitting.
- Engineered time-aware features using cyclic encoding and log-transformation to correct skewed demand distributions.
- Applied **SHAP** to identify key demand drivers and translate insights into actionable business strategies.

### Telecom Customer Churn Prediction | *Python, Pandas, Scikit-learn, Streamlit* [GitHub](#) | [App](#)

- Built a full classification pipeline on 7,000 customer records with EDA and feature engineering to identify churn drivers.
- Trained and compared 8 ML models, selecting **Logistic Regression** for business-critical Recall = **80.9%** and ROC-AUC = 0.75.
- Deployed a Streamlit application for churn scoring, batch predictions, and retention-focused decision support.

### Neural Networks: Visualizing Forward & Backward Propagation | *HTML, CSS* [GitHub](#) | [App](#)

- Built an interactive educational web app explaining forward propagation, loss computation, and backpropagation via animated neurons and gradients.
- Integrated MathJax-based derivations to dynamically demonstrate weight updates and gradient descent.
- Designed smooth SVG and CSS animations to improve conceptual clarity of ANN internals.

## TECHNICAL SKILLS

---

**Languages:** Python, SQL

**Machine Learning & Deep Learning:** PyTorch, scikit-learn, CNNs, Transfer Learning

**Data Analysis & Visualization:** NumPy, Pandas, Matplotlib, Seaborn, Plotly

**Computer Vision & XAI:** OpenCV, Grad-CAM, SHAP

**Deployment & Tools:** Streamlit, FastAPI (basic), Git, GitHub, Linux, VS Code

## EDUCATION

---

**Smt. C.H.M. College**

*Bachelor of Science in Information Technology*

Ulhasnagar, Maharashtra

2024 – Present