GD Goenka University

House price prediction using neural networks

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Introduction

Good afternoon, everyone! My project involves building a house price prediction model using real-world data from Delhi and Gurugram.

Unlike academic datasets, this project uses actual property listings and integrates the trained model into a Flask web application for real-time predictions.

Neural Network Overview

Neural networks are inspired by the human brain and consist of:

- **Input Layer:** Takes features like size and location.
- **Hidden Layers:** Process data using activation functions.
- **Output Layer:** Predicts the house price.

For this project, I used 2 hidden layers with the ReLU activation function [Dense(128) + ReLU, Dense(64) + ReLU] and a single neuron in the output layer for price prediction.

INPUT LAYER

HIDDEN LAYERS

OUTPUT LAYER
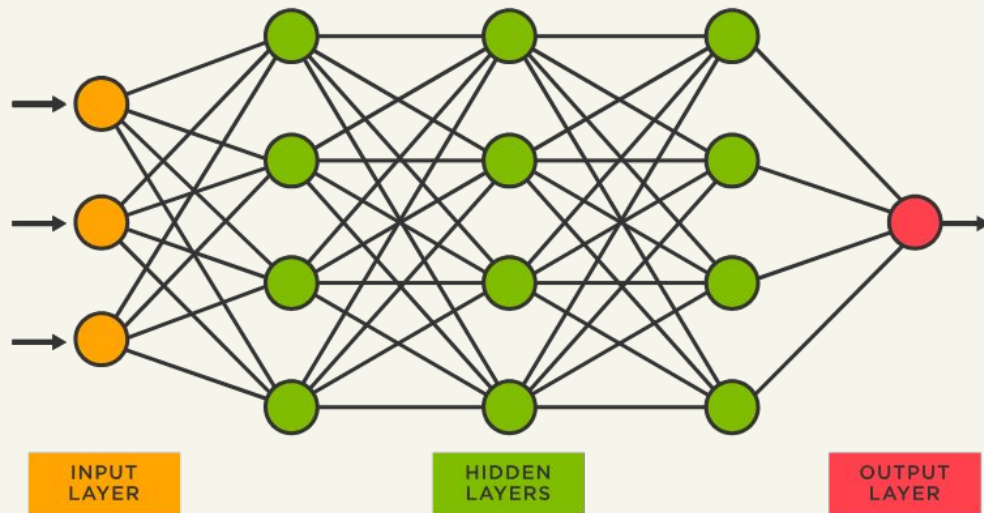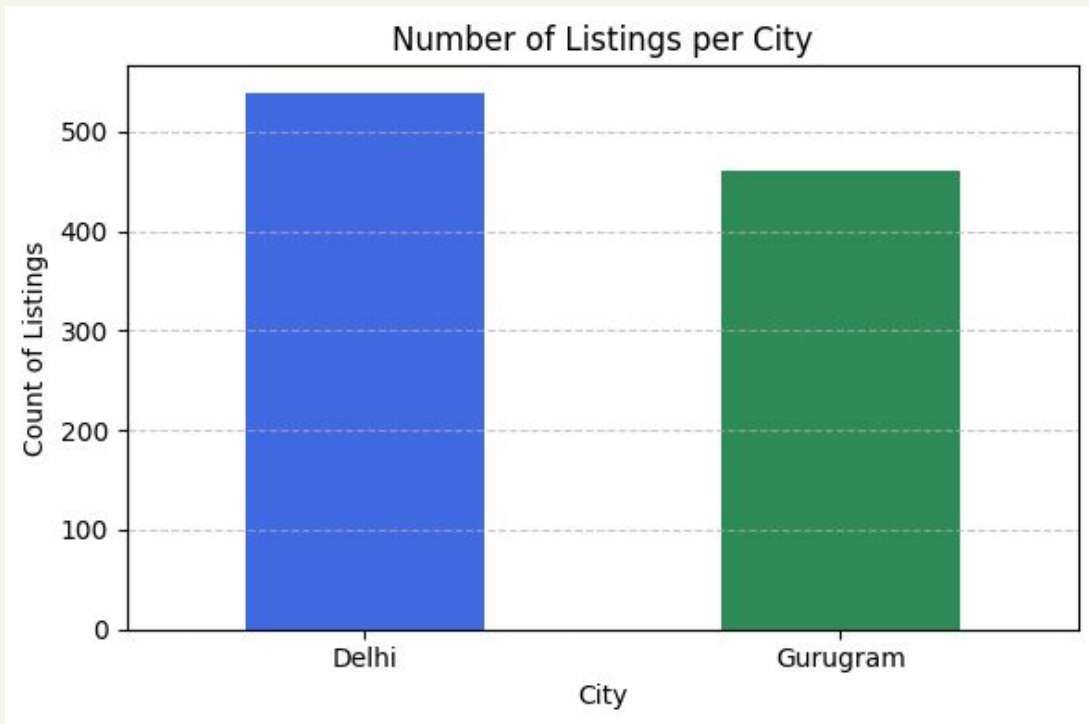
Problem Statement & Dataset

Goal: Predict house prices in Delhi and Gurugram based on key features.

Dataset Features:
- Area (sqft)
- Bedrooms & Bathrooms
- Age of Property
- Property Type
- Location & City

Preprocessing:
- One-hot encoding for categorical features
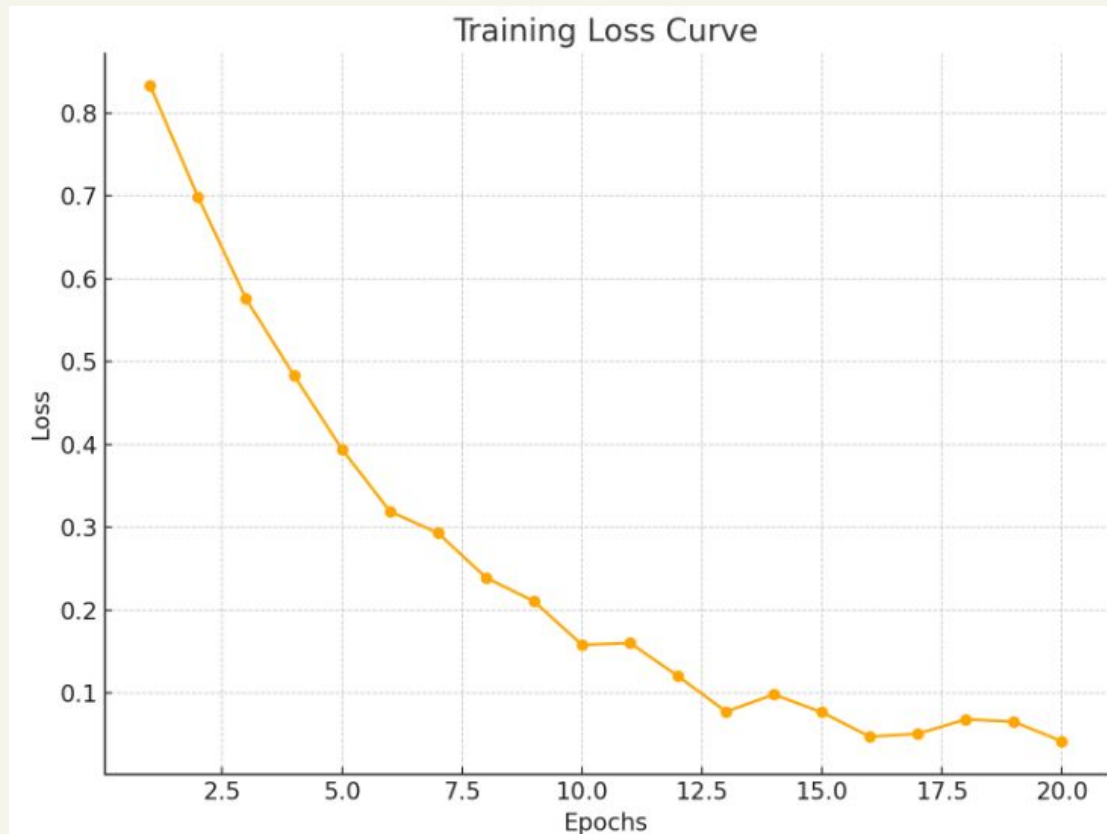- StandardScaler for normalization

Number of Listings per City

Model Training & Evaluation

Model training:
- Epochs: 100
- Batch size: Custom tuned
- Validation: 20% of training set
- Optimized using MAE and MSE

Evaluation Metrics:

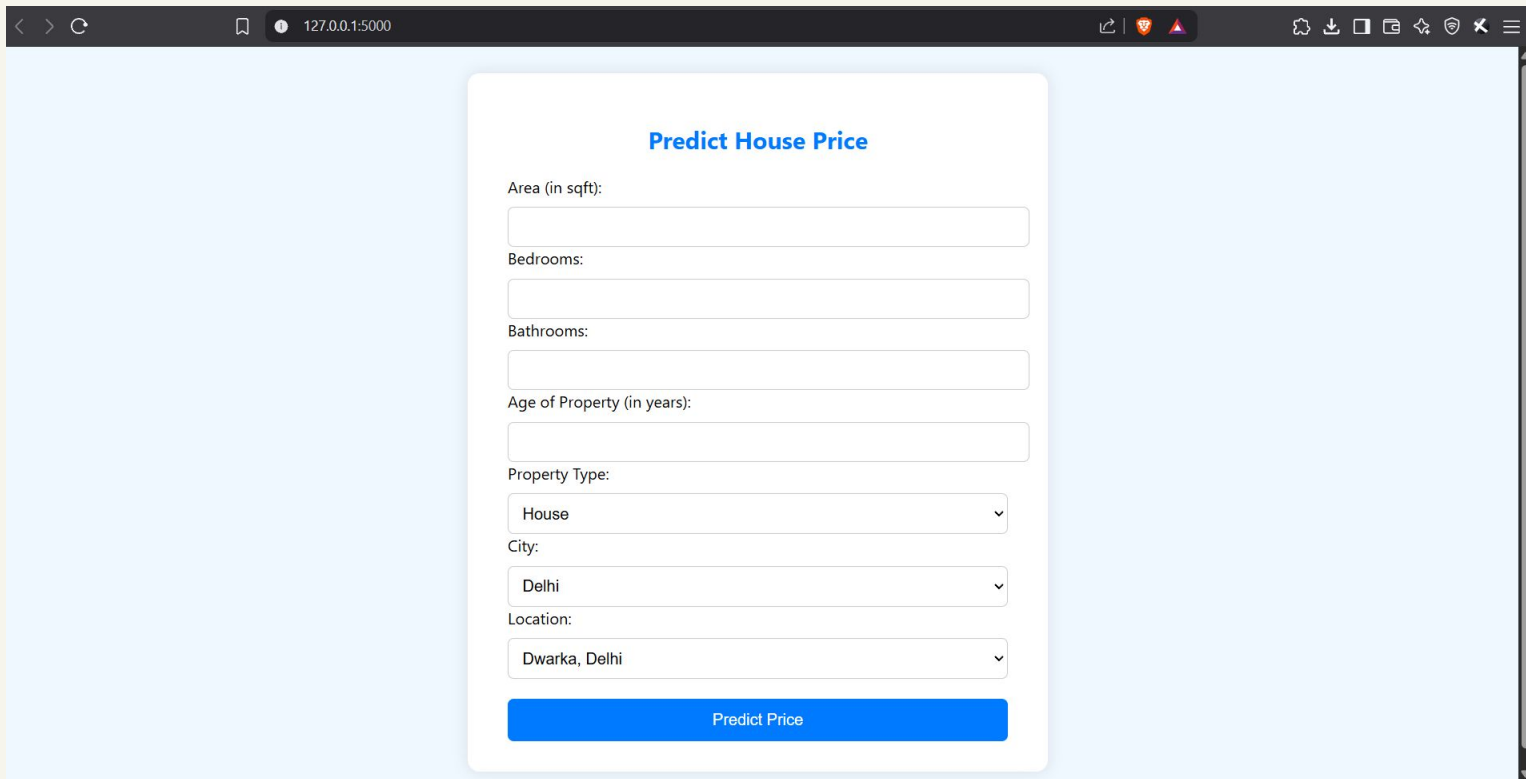| Matrix	Value
MAE	₹26.7 lakhs
MSE	₹8.74 × 10^{14}
R^2	0.79

Training Loss Curve

Results & Observations

Model Performance:

- Model accurately predicted house prices
- Minor deviations in high-end property prices
- Demonstrated generalization despite a small dataset

Actual vs Predicted House Prices

Index page

Result page

127.0.0.1:5000/predict

Predicted House Price 💰

Estimated Price: ₹486119.12

Try Another Prediction

Conclusion

In conclusion, this project highlights how neural networks can accurately predict house prices by learning patterns from data. With larger datasets and further optimization, the model can be even more robust.

✅ **Deployed on Flask** for real-time predictions
🚀 Next steps: cloud deployment, more features, map-based location integration

Access Full Code and Dataset:
🔗 https://github.com/alexstephen2025/Projects

Thank you! ✌️