Airbnb Dynamic Pricing Recommendation Engine

Introduction

The purpose of this project is to develop a dynamic pricing recommendation system for Airbnb listings. By analyzing historical Airbnb data based on various factors such as city, property type, review scores, and other listing features, the project aims to predict optimal pricing for hosts to maximize revenue while staying competitive. This project highlights the importance of data-driven pricing strategies in the short-term rental market.

Abstract

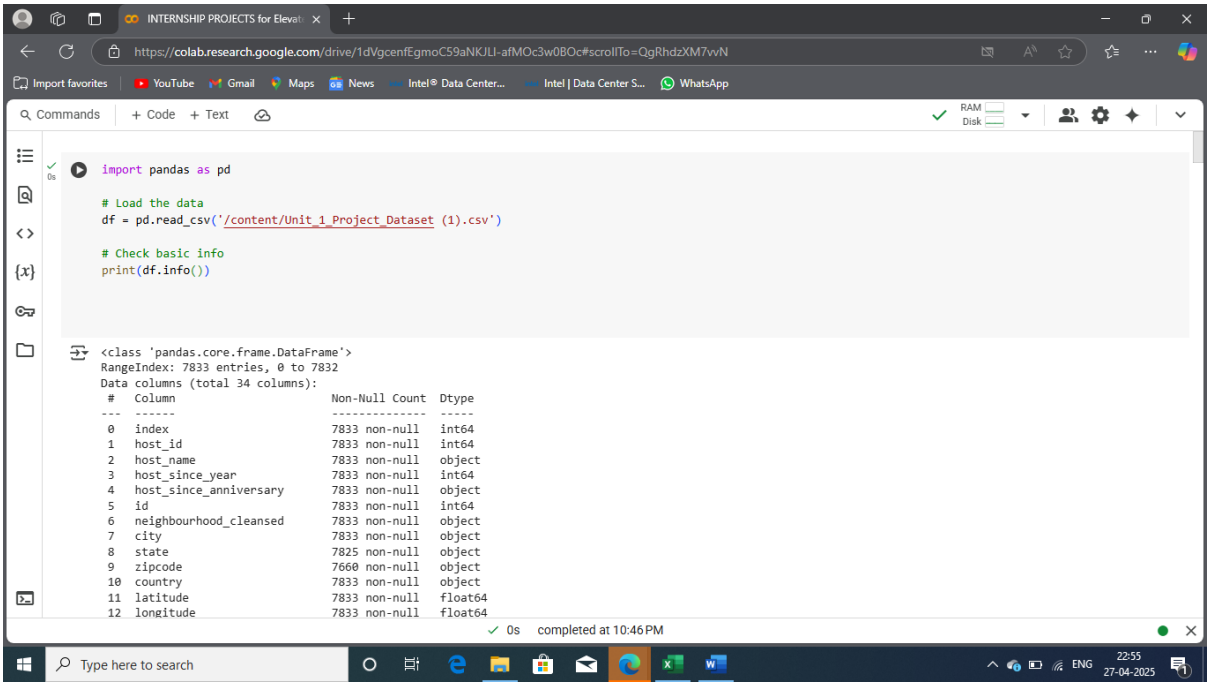
In this project, historical Airbnb listing data was collected and analyzed to identify key pricing predictors. Exploratory data analysis (EDA) was conducted to study price variations across different cities, property types, and quality indicators (e.g., review scores). A regression model was developed to predict suggested prices. Visualizations were created to better understand the data and help users interact with pricing recommendations. The project was implemented using Python, Tableau, and Excel, culminating in a dashboard and price prediction engine.

Tools Used

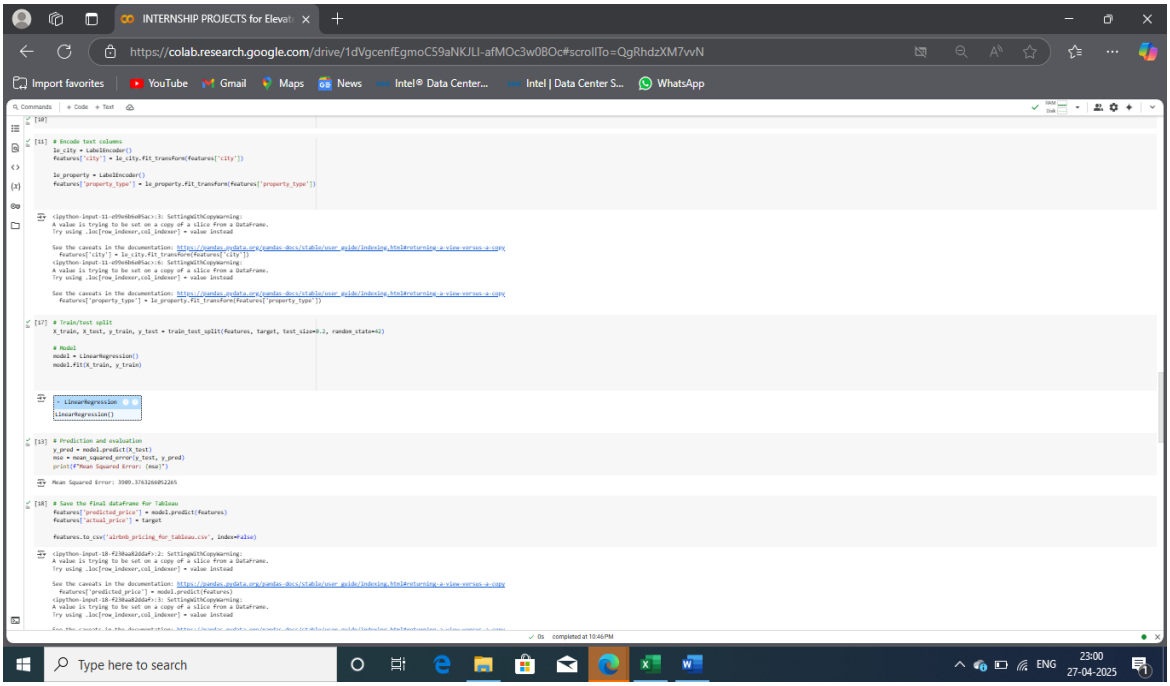
- **Python** (Pandas, Seaborn, Plotly, Scikit-learn)
- **Tableau** (Dashboard creation)
- **Excel** (Data cleaning and initial exploration)
- **Google Co lab** (Python environment)

Steps Involved in Building the Project

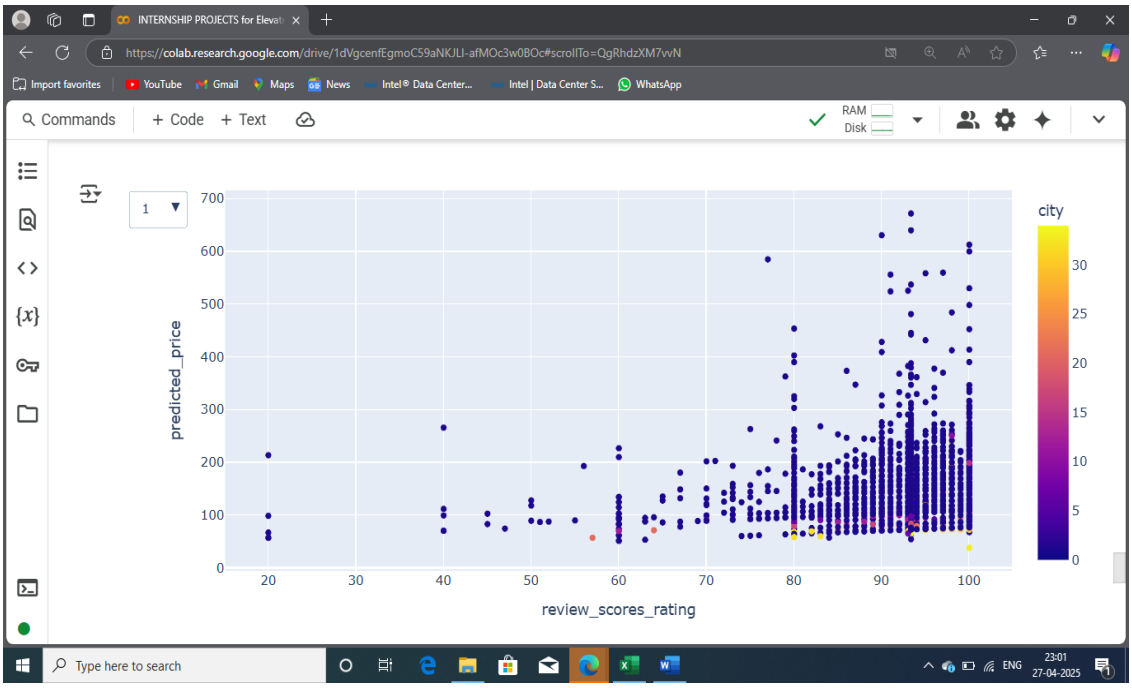
1. **Data Collection:** Gathered Airbnb historical data including city, property type, number of reviews, and pricing details.
2. **Data Cleaning:** Handled missing values, removed outliers, and formatted data properly for analysis.



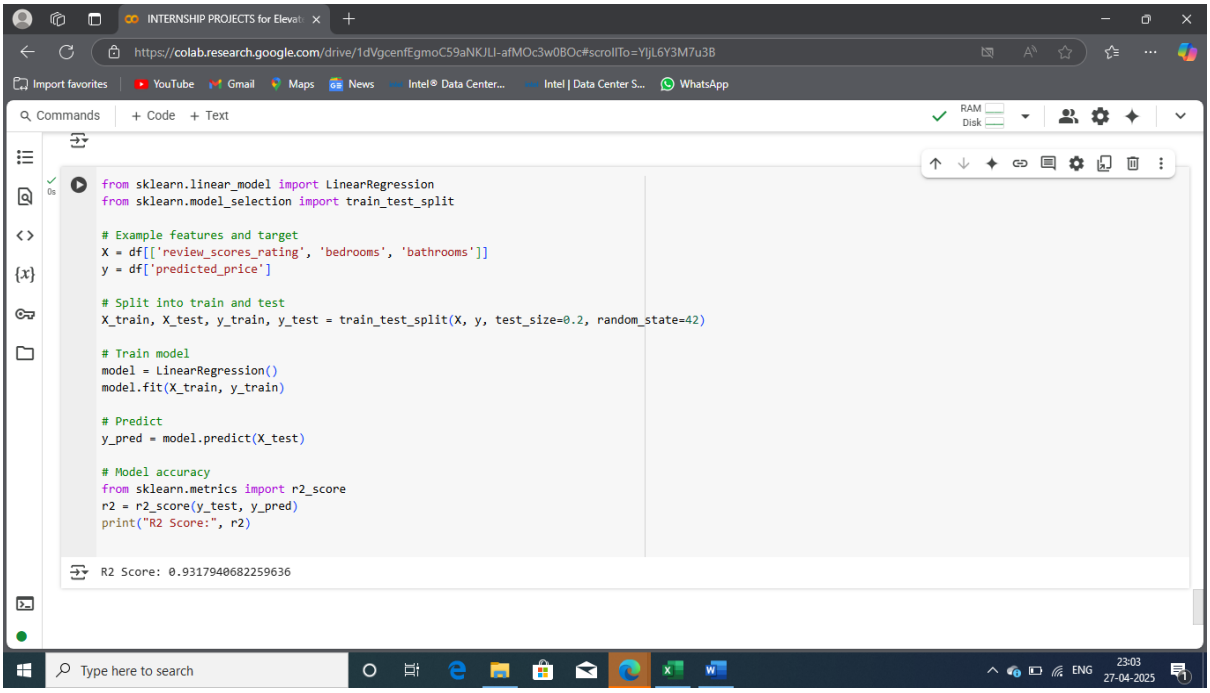
3. **Exploratory Data Analysis (EDA):**
    - Analyzed average prices by city and property type.
    - Studied the impact of review scores on pricing.
4. **Model Building:**
    - Built a Linear Regression model to predict optimal pricing.
    - Identified important features like review scores, number of bedrooms, and bathrooms.



5. **Visualization:**
    - Created interactive graphs using Plotly in Colab.
    - Developed a Tableau dashboard with filters and sliders for predicted prices.



6. **Recommendations:** Suggested pricing strategies based on location, listing quality, and seasonal trends.



Conclusion

The project successfully demonstrates how machine learning and visualization tools can be used to recommend dynamic pricing for Airbnb listings. By leveraging review scores, property features, and location data, hosts can be empowered to adjust their pricing more scientifically. The project showcases practical skills in data analysis, predictive modeling, and dashboard development, providing valuable insights for real-world Airbnb operations.