

**Project Title:** Predicting Real Estate Prices Accurately

**Short Description:** This project guides students to predict real estate prices using Python, focusing on data analysis and simple machine learning techniques to estimate property values.

**Difficulty Level:** Beginner

**AI-ML Concepts Used:** Linear Regression, Data Preprocessing

**Learning Outcome :** Data analysis, prediction, coding skills

**Programming Skills Mastered:** Pandas, Scikit-Learn

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## Introduction

Predicting real estate prices is valuable for buyers, sellers, and investors to make informed decisions. In this project, we will use Python to predict property prices based on various features. This project is tailored for Class 9 and 10 CBSE/ICSE students to grasp the basics of data science and machine learning.

## Dataset Description

We will use a dataset comprising 414 real estate transactions, each described by various features. The key features in the dataset include:

- **Transaction Date:** The date of the real estate transaction.
- **House Age:** Age of the house in years.
- **Distance to the Nearest MRT Station:** Distance to the nearest Mass Rapid Transit station.
- **Number of Convenience Stores:** Number of convenience stores in the vicinity.
- **Latitude:** Latitude coordinate of the property.
- **Longitude:** Longitude coordinate of the property.
- **House Price of Unit Area:** Price per unit area of the house.



#### 4. Train the Model

We will use Linear Regression to train our model on the training data.

```
python
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from sklearn.linear_model import LinearRegression

# Create and train the model
model = LinearRegression()
model.fit(X_train, y_train)
```

#### 5. Make Predictions

We will use the trained model to make predictions on the test data.

```
python
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# Make predictions on the test data
y_pred = model.predict(X_test)
```

#### 6. Evaluate the Model

We will evaluate the model's performance using the Mean Squared Error (MSE) metric.

```
python
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from sklearn.metrics import mean_squared_error

# Calculate Mean Squared Error
mse = mean_squared_error(y_test, y_pred)
print(f"Mean Squared Error: {mse}")
```

#### 7. Visualize the Results

We will visualize the actual vs. predicted prices to understand the model's performance.

```
python
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import matplotlib.pyplot as plt

# Scatter plot of actual vs. predicted prices
plt.scatter(y_test, y_pred)
plt.xlabel('Actual Price')
plt.ylabel('Predicted Price')
plt.title('Actual vs. Predicted Prices')
plt.show()
```

## **Conclusion**

In this project, we learned how to predict real estate prices using Python. We explored data preprocessing techniques, feature selection, and implemented a simple Linear Regression model to make predictions. This project provided insights into the practical applications of machine learning in the real estate industry, enhancing our data analysis and coding skills.

## **Disclaimer**

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