**Predicting House Prices Using Machine Learning**

**Introduction:**

* Briefly explain the importance of predicting house prices.
* State the purpose and scope of the document.

**Understanding the Problem:**

* Define the problem: Predicting house prices based on various features.
* Explain the relevance of this problem in real estate and finance.

**Data Collection and Preprocessing:**

* Discuss the sources of data (e.g., datasets, APIs).
* Explain data preprocessing steps:
* Data cleaning
* Feature selection
* Feature engineering

**Exploratory Data Analysis (EDA):**

* Visualize and analyze the dataset.
* Identify patterns, correlations, and outliers.

**Machine Learning Models:**

* Introduce various regression algorithms for house price prediction:
* Linear Regression
* Decision Trees
* Random Forest
* Gradient Boosting (e.g., XGBoost, LightGBM)
* Neural Networks (optional)

**Data Splitting and Model Training:**

* Split data into training and testing sets.
* Explain the training process for each algorithm.
* Discuss hyperparameter tuning if applicable.

**Model Evaluation:**

* Describe evaluation metrics:
* Mean Absolute Error (MAE)
* Mean Squared Error (MSE)
* Root Mean Squared Error (RMSE)
* R-squared (R²)
* Evaluate models’ performance and compare results.

**Feature Importance:**

* Determine which features are most important for price prediction. Visualize feature importance if applicable.

**Model Deployment:**

* Discuss deploying the chosen model for real-world predictions.
* Mention technologies or platforms for deployment (e.g., Flask, Django, cloud services).

**Conclusion:**

* Summarize key findings and model performance.
* Reflect on the significance of using machine learning for house price prediction.

**Future Work:**

* Suggest potential improvements or extensions of the project.
* Mention additional features or data sources for enhancing predictions.

**References:**

* Cite sources, datasets, and libraries used in the project.