



Ahsanullah University of Science and Technology

Department of EEE

Numerical Technique Project Report

Name of Project: Real Estate Price Predictor using Linear Regression and Interpolation.

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The "Real Estate Price Predictor" is an innovative application designed to assist users in estimating the price of a property based on its location and surrounding property prices. This application utilizes machine learning techniques such as linear regression and interpolation to provide accurate predictions. Users can input the area of the property, select a location, and choose a prediction method (linear regression or interpolation) to obtain a reliable price prediction.

Introduction:

The real estate market is dynamic and complex, making property price estimation challenging. This application aims to simplify the process of property price prediction by leveraging data analysis and machine learning techniques. By incorporating data on surrounding property prices, the application offers users a valuable tool to make informed decisions.

Objectives:

The main objectives of the Real Estate Price Predictor application are as follows:

- Develop a user-friendly interface for inputting property information.
- Collect and analyze historical property price data based on location.
- Implement linear regression and interpolation algorithms for price prediction.
- Provide accurate and timely property price predictions to users.

Methodology:

i. Data Collection:

The application gathers historical property price data from various sources. The data includes property prices in different locations and their corresponding areas. This dataset forms the foundation for training the linear regression model and creating the interpolation function.

ii. Linear Regression:

The linear regression model is trained using the collected data. It establishes a relationship between property prices and their respective areas in a specific location. The model calculates coefficients that define the linear equation, allowing the prediction of property prices based on area.

iii. Interpolation:

For locations with limited data points, interpolation is used to estimate property prices. Interpolation generates estimates by considering nearby data points and their corresponding property prices. This method helps fill in gaps in the dataset and provides more accurate predictions in areas with sparse data.

iv. User Interface:

The application features a user-friendly interface that allows users to input the area of the property and select a location. Users can also choose between using linear regression or interpolation for price prediction. The "Get Prediction" button triggers the prediction process and displays the estimated property price.

Implementation:

The Real Estate Price Predictor application is implemented using the following technologies:

- MATLAB R2020a

Working Principle:

The application has been tested using a variety of scenarios and data points. The predictions provided by both linear regression and interpolation methods have demonstrated accuracy in estimating property prices based on user inputs. We have provided this app with data estate price list for estate area starting from 950 sq. ft. to 2100 sq. ft. The city information provided were all the divisions of Bangladesh: Dhaka, Rajshahi, Rangpur, Barisal, Khulna, Chittagong, Sylhet and Mymensingh. All the estate prices are based on the data collected in the year 2023.

Conclusion:

The Real Estate Price Predictor application serves as a valuable tool for individuals seeking to estimate property prices before making real estate transactions. By combining linear regression and interpolation techniques, the application offers reliable predictions that can aid users in making informed decisions.

Future Enhancements:

- Integration with external data sources to enhance the accuracy of predictions.
- Incorporation of user feedback to improve the user interface and overall experience.