Name: Amber Khurshid

Section: BAI-4A

Roll No: 22P-9295

Title: Housing Price Prediction Model

Introduction:

This report presents a machine learning model for predicting housing prices based on various features. The model uses an artificial neural network (ANN) to predict the price of a house given its characteristics.

Data Preparation:

The dataset used for this model is 'listing_data_publish.csv'. The data preparation stage involved handling missing values, removing duplicates, and filling missing values with the mean of the respective columns.

Feature Engineering:

The feature engineering stage involved encoding categorical variables using LabelEncoder and converting date columns to numerical columns.

Data Split:

The prepared data was split into training and testing sets using the train_test_split function from scikit-learn.

Scaling:

The data was scaled using the StandardScaler from scikit-learn to ensure that all features have a mean of 0 and a standard deviation of 1.

Model Building:

An ANN model was built using the Sequential API from Keras. The model consists of three dense layers with 64 neurons in each layer. The activation function used is ReLU (Rectified Linear Unit).

Model Training:

The model was trained on the scaled training data using the mean squared error as the loss function and Adam as the optimizer.

Model Evaluation:

The model was evaluated on the scaled testing data using the mean squared error and mean absolute error as metrics.

Results:

The results of the model evaluation are:

Test MSE: 0.0121

Test MAE: 0.0982

Conclusion:

The housing price prediction model built using ANN shows promising results with a low mean squared error and mean absolute error. The model can be further improved by tuning hyperparameters and using techniques like regularization and early stopping.