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Report

Midterm Project: Diamond Price Prediction

Abstract

In this project, I predict the diamond price that uses Random Forest Regressor Model to predict the price of a diamond based on its carat size, cut type, and size. It starts by loading a diamond dataset, visualizing the relationships between different features and prices, and performing data cleaning and feature engineering. Then, it splits the data into training and testing sets, trains the model on the training data, and saves the trained model to a pickle file. Finally, the program allows users to input carat size, cut type, and size to predict the price of a diamond.

Random Forest Regressor Model

I decided to use a Random Forest Regressor Model, Random Forest Regressor Model is an ensemble that uses multiple decision trees to make predictions. It randomly selects a subset of features and data to train each decision tree, which helps to reduce overfitting. Additionally, the final prediction is made by aggregating the predictions of all the trees, which provides a more robust and accurate result than using a single decision tree.

Performance testing

Sample testing of my price prediction using Test, Carat, Cute Type, Size, Price

Test	Carat	Cut	Size	Price Prediction
0	0.23	3	34	373.2
1	0.54	4	38	981.36
2	0.72	1	46	1795.56666667
3	0.48	2	51	875.2775
4	0.39	5	36	545.43
5	1.09	2	38	3880.18
6	0.47	3	32	872.43
7	0.9	1	34	2267.94666667
8	0.58	4	44	1009.2425

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Conclusion

In conclusion, this project predicts the price of a diamond based on its features such as carat size, cut type, and size. The project uses a Random Forest Regressor model to make predictions because the Random Forest Regressor model is an effective algorithm for predicting the prices of diamonds.