**FOUNDATIONS OF DATA SCIENCE**

**SPARKLE VALUATE(Diamond Price Prediction)**

**ABSTRACT:**

The "Diamond Price Prediction" project aims to develop a data-driven model to accurately estimate the price of diamonds based on key features such as carat, cut, color, clarity, and other relevant attributes. Using advanced machine learning algorithms, the model analyzes patterns and trends in historical diamond pricing data to generate precise price predictions. This system can assist gemologists, jewelers, and buyers in making informed decisions, reducing the risk of overpricing or underpricing. By leveraging feature engineering and robust validation techniques, this project aspires to enhance transparency and efficiency

in the diamond marketplace, bridging the gap between subjective evaluation and objective assessment. Data sourced from multiple diamond marketplaces, including attributes like size, quality, shape, and provenance, is analyzed to identify patterns and correlations that impact price fluctuations. Several machine learning algorithms, including linear regression, decision trees, random forests, and neural networks, are employed to determine their effectiveness in price prediction. The analysis reveals that feature importance varies significantly across models, with attributes like carat weight and cut quality showing the most influence on price. Additionally, the study investigates the potential role of external factors such as global economic trends and consumer sentiment in diamond pricing. This research contributes to the broader understanding of diamond price dynamics and highlights the potential of artificial intelligence in luxury goods markets.

Keywords:

Diamond Price Prediction, Machine Learning, Regression Models, Feature

Importance, Price Fluctuation, Economic Factors, Consumer Demand.T

DATASETLINK:

https://www.kaggle.com/datasets/ronil8/diamond-price-prediction-dataset