Gold Price Prediction using Regression Model

Author: Elavarasi Chinnadurai

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Overview

This project predicts gold prices using a regression model. It includes correlation analysis, train-test split, model training, and prediction comparison between actual and predicted values.

Dataset

Dataset: GLD Price Dataset from Kaggle. It includes SPX, GLD, USO, SLV, and EUR/USD as features. Target variable is GLD.

Data Preprocessing

Data cleaning, correlation heatmap generation, and normalization of numeric features were performed to prepare the dataset for modeling.

Modeling Approach

A regression model (e.g., Linear Regression, Random Forest) was used to train on 80% of the data. The model was then tested on 20% unseen data to validate accuracy.

Evaluation Metrics

Model evaluation was done using Mean Absolute Error (MAE), Mean Squared Error (MSE), and R^2 Score. Visual comparison between actual and predicted prices confirmed reliable performance.

Results

The regression model shows strong correlation between predicted and actual values. The Mean Absolute Error indicates minimal deviation in predictions.

Visualizations

1. Correlation Heatmap 2. Actual vs Predicted Scatter Plot 3. Error Analysis Plot

Conclusion

The project successfully demonstrates how regression models can forecast gold prices using historical financial data.

Future Work

Implement deep learning models (LSTM/GRU) for sequential data analysis and develop a Streamlit dashboard for real-time prediction visualization.