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GOLD PRICE PREDICTION USING MACHINE LEARNING

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ABSTRACT

The Project titled 'GOLD PRICE PREDICTION' predicts the gold EFT price based on the previous year's gold price data. The main goal of this project is to forecast the rise and fall in the daily gold rates, that can help investors to decide when to buy or sell the gold. Inventory forecasting plays a crucial role in the financial success of the business. The price of gold is calculated by looking at the dataset that contains the previous year's gold price. Rise in gold value coupled with volatility and falling prices from other markets such as capital markets and real estate markets has attracted more and more investors to gold as an attractive investment. There's a fear that those high prices will be sustainable and that the prices will reverse. Although there are a number of studies that analyze the correlation between the gold price and certain economic variables. We have applied machine learning technique to predict financial variables and we have focused on predicting the gold price ETF using a linear regression algorithm as our dataset is a numerical dataset.

Keywords: Gold ETF, Machine Learning, Supervised Learning, Linear Regression, Python.

I. INTRODUCTION

Gold was used for supporting trade transactions around the world besides other modes of payment. Various states maintained and enhanced their gold reserves and were recognized as wealthy and progressive states. Our project will be beneficial for investors, and control banks to decide when to invest in this commodity. Here the commodity is referred to as gold. Various multinational companies and individuals have also invested in gold reserves. Big investors have also been attracted to this precious metal and invest huge amounts in it. We predict future gold rates based on 22 market variables using machine learning techniques. Results show that we can predict the daily gold rates very accurately. For almost 6 years between 2011 and 2017, gold prices barely moved in India. The spot price is the current market price at which a commodity is purchased or sold for immediate payment and delivery. It is differentiated from the futures price, which is the price at which the two parties agree to transact on a future date. Gold spot rates are decided twice a day based on supply and demand in the gold market. Fractional change in gold price may result in huge profit or loss for these investors as well as the banks of the government. Forecasting the rise and fall in the daily gold rates, can help investors to decide when to buy (or sell) the commodity.

II. PROJECT OBJECTIVE

Here we proposed predictive models that are adaptive, flexible, and scalable, using the advantages of proposed computationally smart neural network models to enhance the training learning process and enhance faster convergence. The proposed research provides the highest likelihood of achieving high training rate prediction precision for the considered gold EFT price. Generally speaking, this work is performed to suggest suitable predictor models to effectively show the deemed gold in the different scenario with the datasets deemed from their respective databases of previous years. This present's aim is to present correctly the future modified closing price of Gold ETF in the future for a specified period of time. In this project, supervised Machine Learning Algorithms and the solution model were used to determine whether or not to buy Gold ETF using a dataset of past values.

The main objectives of the project are:

1. This project is based on the applicability of the proposed machine learning algorithms that had demonstrated their efficiency to predict gold prices with a better predictive rate.

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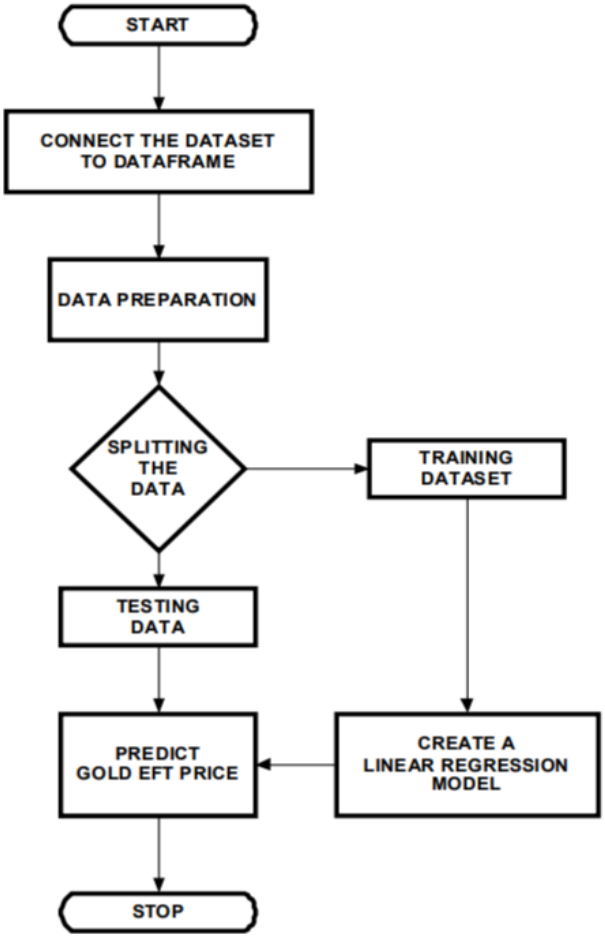
2. To apply the best appropriate Machine Learning procedure.
3. We proposed the development of a prediction model for predicting future gold prices using Linear Regression (LR).

III. WORKING PROCEDURE



3.1ALGORITHM

STEP 1: Gathering the data from y-finances library and preparing the data by removing the missing values

STEP 2: Now we split the gathered data into training and testing dataset.

STEP 3: Now using training data we create a linear regression model.

STEP 4: Using the testing data we test the created linear regression model.

STEP 5: Using the model now we predict daily gold ETF price.

3.2Linear Regression

Linear regression in machine learning helps you find out patterns and relationships in data and make an educated decision or prediction. It is one of the most well-known and well understood algorithms in statistics and machine learning. But before knowing that -What linear regression actually is, let us get ourselves accustomed to regression. Regression is a method of modeling a target value based on independent predictions. This method is used for forecasting and finding out the cause and efficient relationship between variables. Usually, the regression techniques mostly differ based on the number of independent variables and the types of relationships between the independent and dependent variables.

Simple linear regression is a type of regression analysis where the number of independent variables is one and there is a linear relationship between the independent(x) and dependent(y) variables. The red lines in the above graph are referred to as the best fit straight line. Based on the given data points, we try to plot a line that models the points the best. The line can be modeled based on the linear regression equation which is y = a_0 + a_1 * x.

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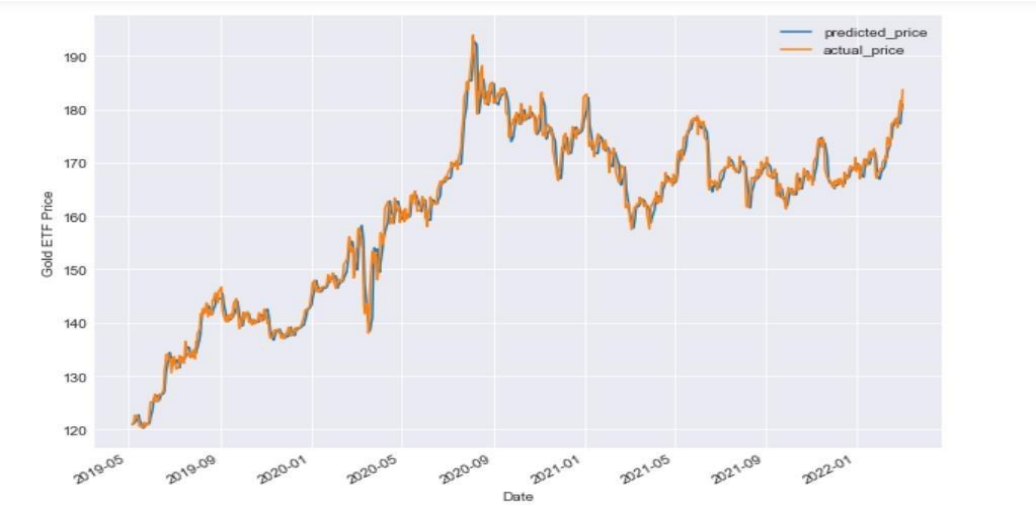
IV. RESULT AND ANALYSIS

- Gold ETF Price (y) = 1.20 * 3 Days Moving Average (x1) + -0.21 * 9 Days Moving Average (x2) + 0.44 (constant)



Above graph show the comparison of the actual price and predicted price using linear regression model.

- The below graph shows the change in gold ETF price for a certain period of time.

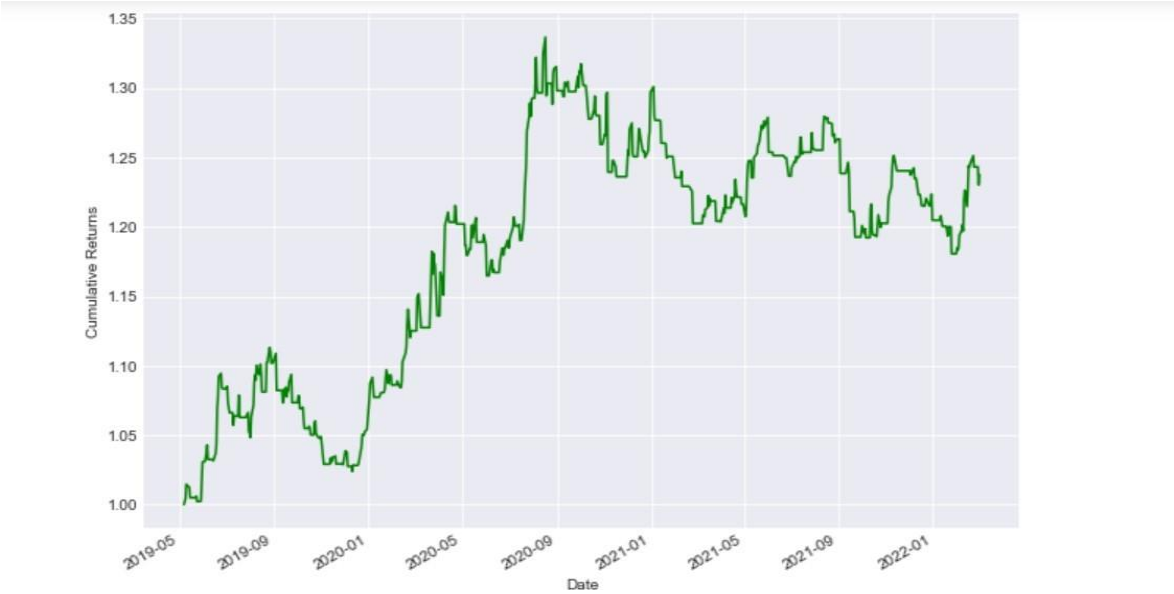


Fig: Cumilative Returns

- Here we show GOLD ETF PRICE of past four days which are predicted using the linear regression model

Out[30]:

Date	2022-04-14	2022-04-18	2022-04-19	2022-04-20	2022-04-21
signal	Buy	Buy	No Position	No Position	No Position
predicted_gold_price	184.444026	184.683838	183.491392	182.889094	181.677302

V. CONCLUSION

As we saw in this project, we'll create a machine learning linear regression model. We first train this machine learning model by giving information from past gold ETF prices. Then we use this trained model for prediction. Similarly, any model can be made much more precise by feeding a very large dataset to get a very accurate score. While forecasting the rate of gold is not very easy, it will allow investors and central banks to determine better when to sell and buy them and thus maximize their income

VI. REFERENCES

[1] Xiaohui Yang, "The Prediction of Gold Price Using ARIMA Model", 2nd International Conference on Social Science, Public Health and Education 2019.

[2] Manjula K. A., Karthikeyan P, "Gold Price Prediction using Ensemble based Machine Learning Techniques", Third International Conference on Trends in Electronics and Informatics, 2019

[3] R. Hafezi*, A. N. Akhavan, "Forecasting Gold Price Changes: Application of an Equipped Artificial Neural Network", AUT Journal of Modeling and Simulation, 2018.

[4] Shian-Chang Huang and Cheng-Feng Wu, Energy Commodity Price Forecasting with Deep Multiple Kernel Learning, MDPI Journal, 2018.

[5] Wedad Ahmed Al-Dhuraibi and Jauhar Ali, "Using Classification Techniques to Predict Gold Price Movement", 4th International Conference on Computer and Technology Applications, 2018.