Gold Price Prediction

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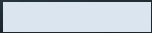
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Agenda

- Introduction
- Project Objective
- Working Procedure
- Result and Analysis
- Conclusion

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.

- 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

Project Objective

- 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.

- 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

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).

# 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 we predict daily gold ETF price.

Gold Price Prediction
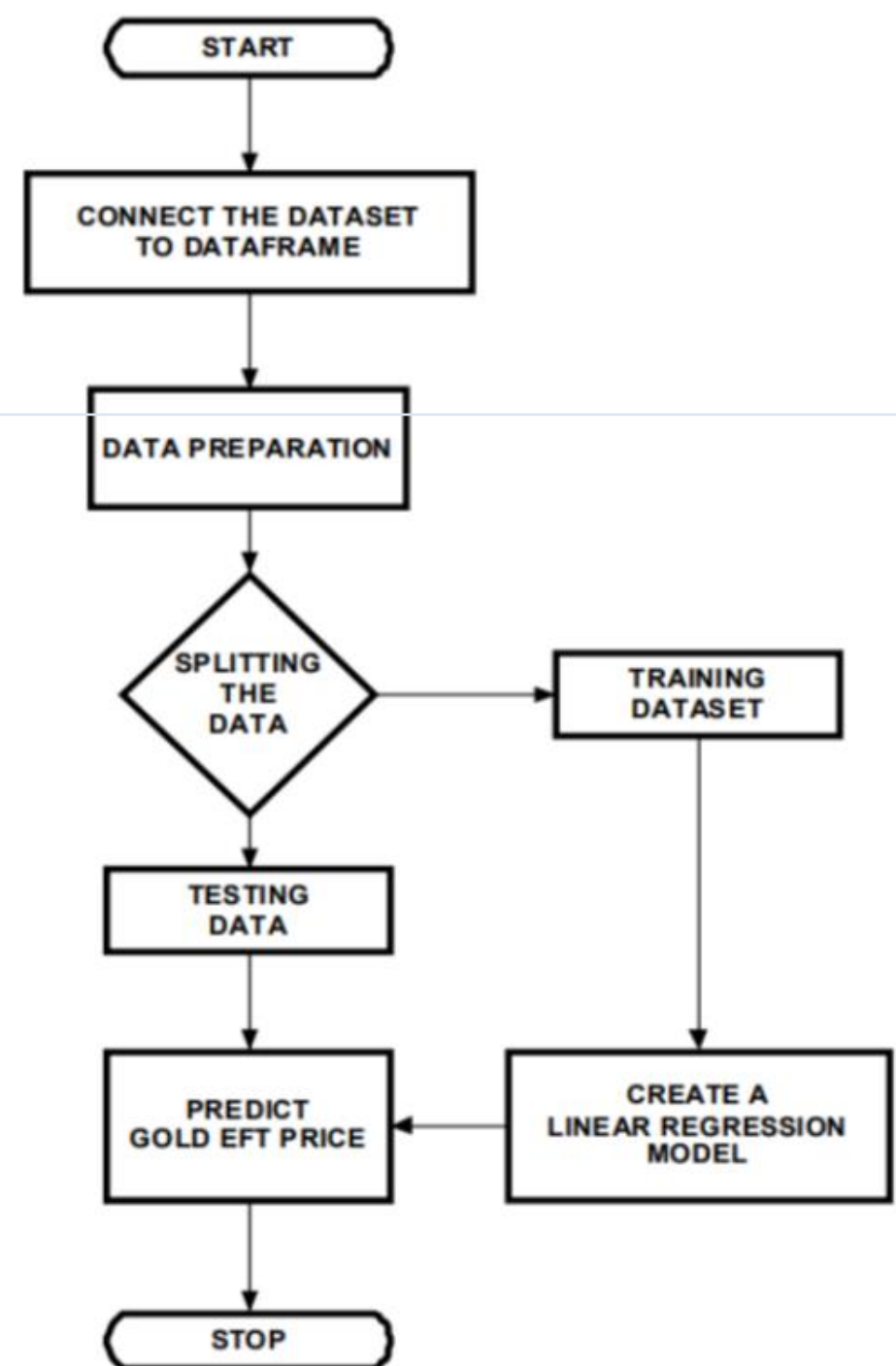
Define explanatory variables

An explanatory variable is a variable that is manipulated to determine the value of the Gold ETF price the next day. Simply, they are the features which we want to use to predict the Gold ETF price.
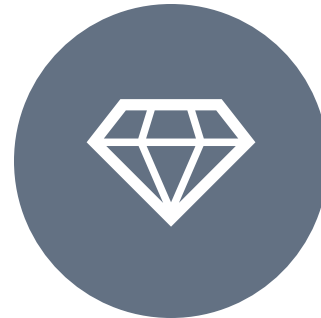
However, you can add more variables to X which you think are useful to predict the prices of the Gold ETF. These variables can be technical indicators, the price of another ETF such as Gold miners ETF (GDX) or Oil ETF (USO), or US economic data.

Split the data into train and test dataset

HISTORICAL GOLD ETF PRICE DATA

TRAIN DATASET 80%

TEST DATASET 20%

In this step, we split the predictors and output data into train and test data. The training data is used to create the linear regression model, by pairing the input with expected output.

The test data is used to estimate how well the model has been trained.

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.

- 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.

Create a linear regression model

DEPENDENT VARIABLE
(TO BE PREDICTED)

INDEPENDENT VARIABLE
(EXPLANATORY VARIABLE)
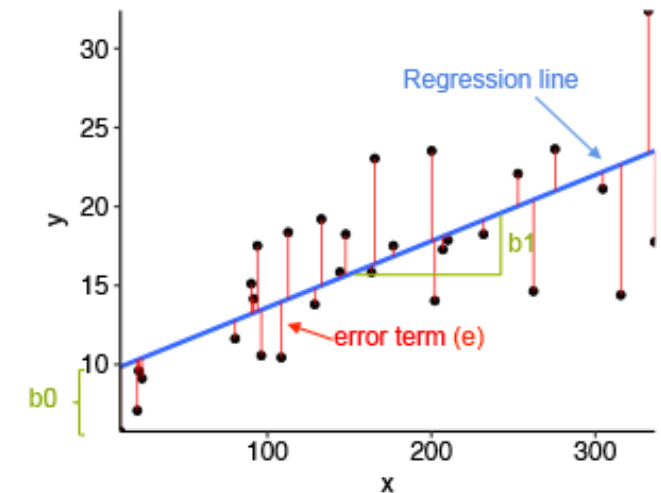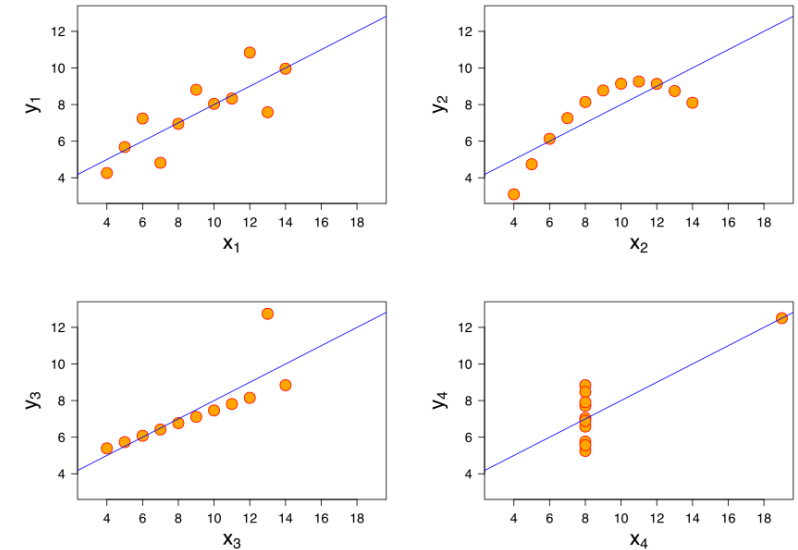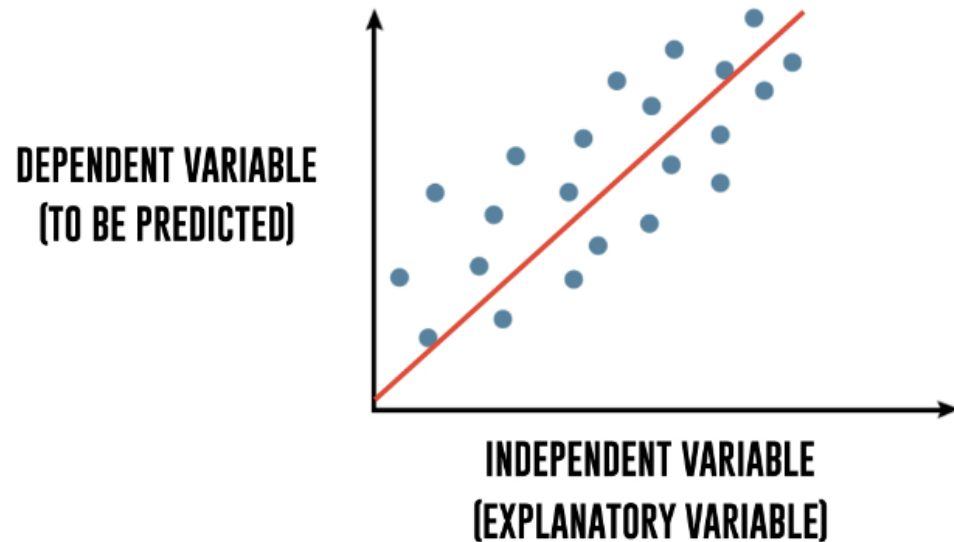
We will now create a linear regression model. But, what is linear regression?

If we try to capture a mathematical relationship between 'x' and 'y' variables that "best" explains the observed values of 'y' in terms of observed values of 'x' by fitting a line through a scatter plots then such an equation between x and y is called linear regression analysis.

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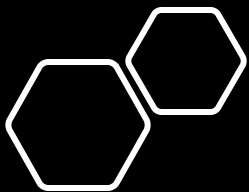
The below graph shows the change in gold ETF price for a certain period of time

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

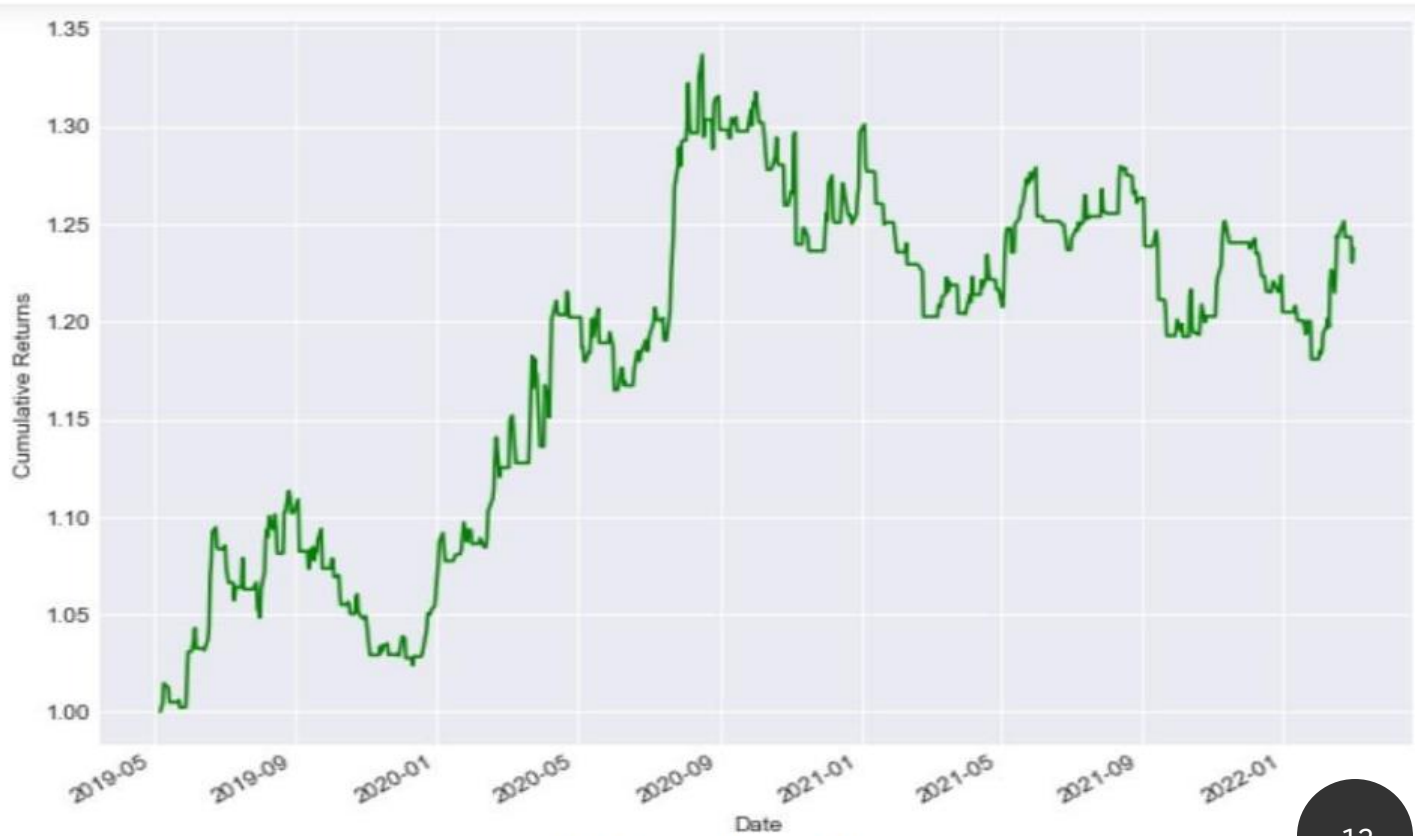| Date	2022-04-14	2022-04-18	2022-04-19	2022-04-20	2022-04-21
signal	Buy	Buy	No Position	No Position	No Position
predicted_gold_price	184.444026	184.683838	183.491392	182.889094	181.677302

Fig: Cumilative Returns

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. 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

Thank you