A Research on Designing of Gold Price Prediction

Prof. Swati Shamkuwar
swati.shamkuwar@raisoni.net
Asst. Prof Dept of Information Technology
G. H. Raisoni College of Engineering, Nagpur.

Divyanshu Sindpure
Department of IT
GHRCE
Nagpur
divyanshu.2209@gmail.com

Himanshu Dhanvijay
Department of IT
GHRCE
Nagpur
himanshudhanvijay9@gmail.com

Khush Patle
Department of IT
GHRCE
Nagpur
khushpatle90@gmail.com

I. ABSTRACT

Gold has historically been used for funding foreign trade transactions together with various additional forms of payment. Some states preserved and even expanded their gold investments and were regarded as successful, developing nations. These days, valuable metals like gold are held by all national central banks as proof for the compensation of foreign debts and a measure of containing inflation. It also demonstrates how sound the nation's finances are. Government agencies are not the only owners of gold reserves; other multinational companies and private individuals have additionally made acquisitions. At traditional Asian events, gold is also offered as gifts or memorials. India, Pakistan, and other countries also send gold jewellery as dowry. Gold prices are strongly impacted by the economic condition of the world's major economies as well as the amount of demand and supply for the precious resource on the market. We predict gold prices using 22 market factors and machine learning techniques. The results show that we are quite proficient at predicting daily gold rates. Our prediction algorithms may be used by investors and central banks to assist with determining whether they want to buy this asset.

Keywords-

Gold rate , Forecasting, Linear regression, Correlation, Neural Networks

II. INTRODUCTION

Gold has made it possible for trade on an international level when utilized together with other payment methods. Some states preserved and even increased their gold assets because they were seen as successful, prosperous nations. Thanks to our project, banks will be able to determine when to make investments in this commodity, which will be beneficial to investors. In this case, the object is referred to as gold. Investments in the supply of gold have been made by both private individuals and large multinational companies. Major investors have taken an interest in this priceless metal and spent enormous amounts on it. We forecast gold prices using 22 market factors and machine learning techniques. The results indicate we are actually quite good at projecting daily gold rates. During 2011 to 2017—a six-year period—the price of gold in India hardly shifted. The price at which the two parties decide on conducting business at another point in time is the futures price, which differentiates from this. Gold spot rates are set twice a day based on the availability and demand in the gold market. A number of

factors, including how much the worth of gold modifications, both those who invested and the banks owned by the state could either make or lose an extensive amount of money. By estimating the daily rise and fall in gold prices, investors can decide when to buy (or sell)gold.

III. LITERATURE SURVEY

Since gold has been an attractive metal and an owner of value for a long time, it has captured the interest of investigators, shareholders, and economists. Accurate gold price prediction is necessary for managing risk, establishing monetary policy guidelines, and making accurate investment decisions. Numerous methods have lately been created and used to estimate gold prices due to the arrival of new technology and the availability of large amounts of data. In the following overview of the published literature, we will look at the key ideas, approaches, and outcomes from studies regarding with gold price prediction.

1. Traditional Approaches:
The traditional approaches for predicting gold prices depend on technical as well as fundamental analysis. Fundamental analysis analyzes various kinds of economic variables, such as inflation, interest rates, currency exchange rates, political developments, and supply-demand dynamics, for predicting gold prices. According to study, factors like exchange rates and inflation can have a significant impact on gold prices. Studies have demonstrated, for instance, that gold prices tend to rise when there is global recession and high inflation.

2. Technical analysis:
It involves examining previous trade activity, trends, and pricing patterns in order to predict future price movements. Researchers have used a range of technical indicators, such as average movements, trend metrics, and levels of support or resistance, to predict gold prices. Technical analysis may be helpful for predicting short-term price fluctuations, although the effectiveness of this method over the long term currently being in inconsistency.

3. Machine Learning Approaches:
Methods based on machine learning have recently acquired popularity in the field of gold price prediction due to their ability to evaluate huge amounts of data and identify complicated trends. Researchers have used a range of machine learning methods and combination techniques to predict gold prices.
During historical data research and forecasting, regression models are frequently implemented. The linear relationships between gold prices and a variety of variables that predict have been investigated utilizing these models.ANNs can handle complex datasets that are large and are capable of recognizing nonlinear patterns in data since they are designed after the architecture and operations of the human brain. Researchers have been able to forecast gold prices by training ANNs on previous transaction data and integrating a number of inputs, including technical indications, investor behavior, and financial factors.
Since SVMs, which are based on the concept of determining the best parallel planes for separating data into distinct categories, they have been used to forecast gold prices. SVMs have been used for recognizing patterns in the gold price data by identifying support vectors and increasing the margin between various price actions.
The accuracy of gold price predictions has been improved through the utilization of combination techniques like random forests and gradient boosts to combine the outputs from different base models. These methods have shown positive outcomes in terms of identifying complicated trends while decreasing incorrect projections.

4. Sentiment Analysis:
The purpose of sentiment evaluation, also referred to as analysis of opinions, is to determine the emotional underlying of text

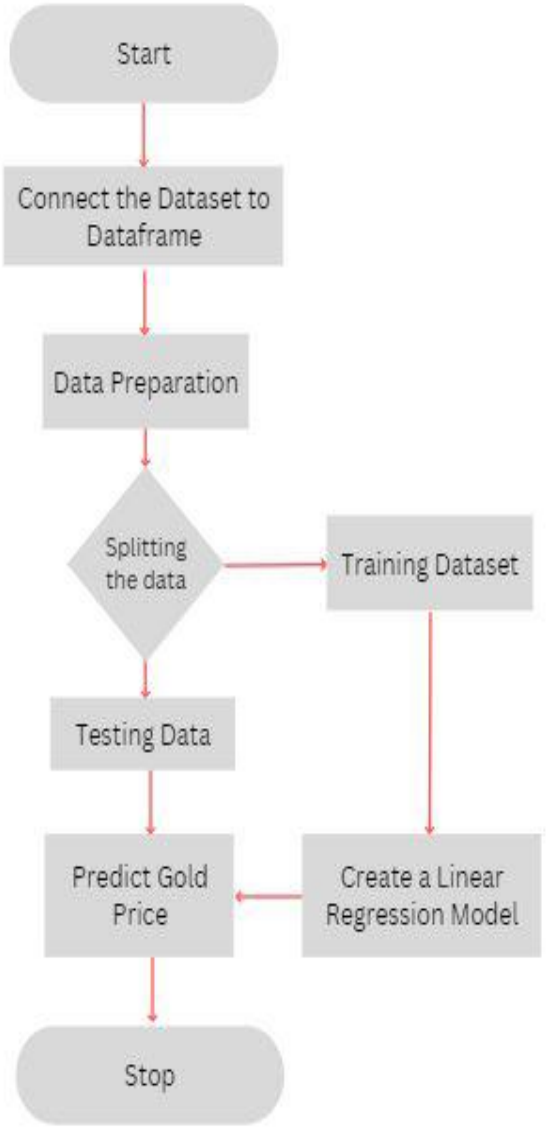
through analyzing text data from newspapers, social media posts, and financial reports. Researchers have utilised sentiment analysis to forecast gold prices through using scores of sentiment from news and social media data as variables of prediction in their models. Studies have shown, for example, that sentiment evaluation of reports regarding gold mining, world politics, and the economy as a whole can generate information that is useful in predicting the price of gold.

5. Hybrid Approaches:
Several research studies have suggested hybrid technique that combine a number of techniques in order to enhance the correctness of gold price forecasts. For example, researchers have combined machine learning algorithms with basic variables like unemployment and rates of exchange to improve prediction.

IV. PROPOSED METHODOLOGY

The two primary machine learning models we use are neural networks and linear regression. In order to compute functions that depend on a variety of inputs, artificial neural networks (ANNs), additionally referred to as neural networks or simply "networks," use signals from biological neural systems in the brain. In the case of the
price of gold, it can also be used to forecast constantly valued features. Figure 4 offers a case study. ANN The method used in statistics for modeling the relationship between the dependent (class variable) and one or more independent variables is called the linear regression method (LR).

V. FLOWCHART



VI. SYSTEM FRAMEWORK

a. Neural Networks

Neural networks are a collection of machine learning algorithms that follow the structure and function of the human brain. They are made up of interconnected nodes called neurons that interact to process data and generate decisions. Machine learning uses artificial neural networks to find complicated connections and trends in data. They are successfully utilized by programs for speech

recognition, natural language processing, and image recognition. In neural networks, neurons are organised into layers, and each layer contributes to the network's overall functionality. The output layer, which also receives the input data, produces the system's final output. In addition to analyzing the data, one or more hidden layers also extract features that might be used to generate connections between the layers of input and output. This usually happens using an efficiency method . Neural networks are a strong and flexible machine learning technological advances that have many successful uses in fields including computer vision, natural language processing, and robotics.

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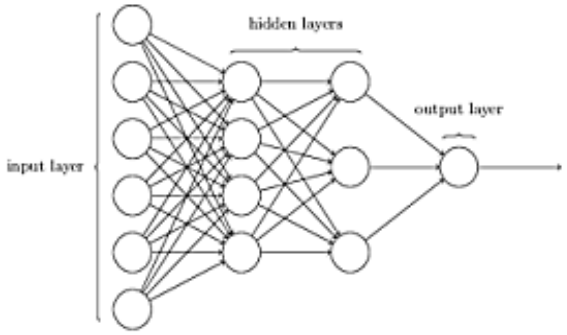

Fig:-Artificial Neural Networks

b. Linear Regression :-

The supervised learning method of linear regression, which works with multiple independent variables can be used to predict a continuous dependent variable. It is an approach to statistics that displays the relationship between the dependent variable and one or more independent variables using a linear function. The aim of linear regression is to identify the best-fitting line that represents the association between the dependent variable and the independent variable. (s). Given new values for the independent variable, this line of reasoning can then be used to predict the value of the dependent variable. (s). In comparison with multiple linear regression, which includes a number of independent variables, simple linear regression just includes one independent variable. The aim of linear regression is to reduce the sum of the residuals of squares, often known as the difference between the expected and actual results of the dependent variable. The linear regression approach has several applications in machine learning, including predicting customer behavior, residence principles, and price movements in stocks.

Correlation Analysis

It was identified by the use of correlation analysis which of the twenty-two variables we obtained have significant associations with the price of gold. The results of the correlation analysis is shown in Fig. 3. It provides some illuminating details. Two more large gold producers, Compania de Minas Buenaventura and Eldorado Gold Company, have been ranked as the tenth and eleventh with the greatest features, respectively. This study is the initial attempt to forecast the price of gold using the values of major gold miners. (see Table II). The next two characteristics that have the strongest correlation with one another after SLW are the price of precious metals (like silver) as well as the indicators for important international economies, specifically those of the US and UK. Unexpectedly, Russia's interest rate, which is the first to be included

in any study calculating the price of gold, comes in sixth. On the other hand, the price of gold is not substantially affected by the interest rate in China.

Dataset

Between January 2005 and September 2016, data for this study were gathered from a number of sources. Only a few of the variables for which data was gathered included the price of oil, the NYSE, the Standard and Poor's (S&P) 500 index, US Bond rates (10 years), and Euro-US Dollar exchange rates. Five big firms that have made significant investments in gold, as well as data from different national central banks, have also been collected. Information on precious metal prices for this period is provided in the analysis. We are trying to believe the price of gold in US dollars. The dataset undergoes extensive purification and preparation. The dataset was completed by properly dealing with the issue of missing values. Gold prices change daily, and significant global events also have an impact. In Fig. 2 it is shown that the price of gold has risen substantially since a few years ago. Due to the significant price uneven, a sequential divide of the dataset was employed rather than random selection. As a result, just 25% of the most recent data and 75% of the oldest data have been included in the training set. This means that the training set only consists of the first 2295 items, but the test set contains all 770 rows.

Because gold prices have varied substantially throughout the years, recent historical information would be a better reflection of the future path. As a result, we further divided the training set into four varieties. The first version's records make up 0% to 75% of the entire information, the second version's records stand for 15% to 75%, the third version's recordings stand for 30% to 75%, and the fourth and final version's records stand for 45% to 75% of the total data.

VII. CONCLUSION

Methods that utilize machine learning have been shown to be extremely successful for forecasting diabetes risk and detecting the condition early. Python has a variety of methods for machine learning that can predict diabetes.

Starting with a collection of important variables, such as age, BMI, glucose level, blood pressure, and family history, one can build a diabetes forecast model in Python. After the collection has been processed, treated for missing values, enlarged, and adjusted, preprocessing can begin.

In result, using machine learning for developing a diabetes prediction model in Python can aid in the identification of individuals who are at risk of acquiring the disease, thus allowing immediate help and treatment.

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