

Project Title

**GOLD PRICE PREDICTOR**

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# Abstraction:

The Gold Price Prediction application is a cutting-edge tool designed to assist users in forecasting gold prices based on a set of influential economic and financial variables. Leveraging a pre-trained machine learning model, the application provides users with accurate predictions by analyzing factors such as the S&P 500 (SPX) value, US Oil Price (USO), Silver Price (SLV), and the EUR to USD Ratio. The user-friendly graphical interface ensures ease of use, making it accessible to a wide range of users, from financial professionals to enthusiasts. With a visually appealing design, error handling mechanisms, and clear result presentation, this application aims to empower users to make informed decisions in the dynamic landscape of gold markets.

# Objective:

# The goal of this project is to develop a user-friendly Gold Price Prediction application using a pre-trained machine learning model. The application will allow users to input relevant financial and economic data, and it will provide a predicted gold price based on the input parameters.

# Working Methodology:

# The working methodology for a gold price predictor, based on the structure you provided:

# **Libraries:**

# - Utilize essential libraries such as `tkinter` for GUI development, `numpy` for numerical operations, and `pandas` for data manipulation and analysis. Additionally, you may use libraries like `scikit-learn` or `TensorFlow` for machine learning tasks.

# **Use of Lists:**

# - Employ lists to store relevant information. For example:

# - One list for historical gold prices.

# - Another list for features or factors influencing gold prices.

# - An empty list to store the predicted gold prices.

# **Loading and Preparing Data:**

# - Read historical gold price data using Pandas.

# - Preprocess the data, handling missing values, and converting date-based data into appropriate formats.

# - Normalize or scale the data if necessary.

# - Optionally, consider incorporating external factors like economic indicators or geopolitical events that might impact gold prices.

# **Machine Learning Models:**

# - Train various machine learning models suitable for time series prediction:

# - Linear Regression

# - ARIMA (AutoRegressive Integrated Moving Average)

# - LSTM (Long Short-Term Memory) for deep learning

# - Use features such as historical gold prices, economic indicators, and other relevant factors.

# **User Input:**

# - Develop a GUI using `tkinter` to collect user input.

# - Allow users to input relevant information such as economic indicators, geopolitical events, or any other features that might influence gold prices.

# **Processing the Input:**

# - Convert user-input features into the format expected by the trained models.

# - Normalize or scale the input data based on the preprocessing steps applied to the training data.

# **Model Prediction:**

# - For each machine learning model:

# - Utilize the trained model to predict future gold prices based on the user-input features.

# - Aggregate predictions from multiple models if an ensemble approach is used.

# **Output:**

# - Display the predicted gold prices on the screen.

# - Optionally, provide additional information such as model confidence or uncertainty.

# **Feedback Loop:**

# - Implement a mechanism for users to provide feedback on the accuracy of predictions.

# - Use feedback to continuously improve the model, either by retraining with new data or adjusting model parameters.

# **Ethical Considerations:**

# - Consider the ethical implications of the predictions, especially if the AI system's decisions can have significant financial impacts.

# This methodology provides a structured approach to developing a gold price predictor with a graphical user interface and machine learning models for prediction. Keep in mind that model accuracy is crucial, and continuous refinement based on feedback and new data is essential for reliable predictions in dynamic financial markets.

# Tools:

* Programming Language (Python)

# Visual Studio Code, PyCharm, or Jupyter Notebooks

# Libraries (tkinter, numpy, pandas)

# 

# Flow Chart:

# 

**Start**

**User input**

**Processing**

**Silver Price**

**Euro to USD Ratio**

**US Oil Price**

**SPX Value**

**End**

**Predict price**

**Predict Price**

**Predict Price**

**Predict Price**

**Display Price**

# Applications:

Some of the applications of our project are as follows:

# **Investment Decision Support:**

# Users can utilize the Gold Price Prediction application to inform their investment decisions by inputting relevant financial data, allowing them to anticipate potential changes in gold prices.

# **Risk Management:**

# The application can serve as a risk management tool for individuals and businesses involved in gold-related transactions. By predicting gold prices based on various factors, users can assess and mitigate potential financial risks.

# **Market Trend Analysis:**

# The application can be used to analyze trends in the gold market by repeatedly predicting prices with different input scenarios. This can help users identify patterns and make more informed decisions about when to buy or sell gold.

# **Financial Planning:**

# Individuals and financial planners can integrate gold price predictions into their long-term financial planning. This can aid in making decisions related to savings, investments, and retirement planning.

# **Real-time Decision Making:**

# In a dynamic market environment, the application can provide real-time predictions, enabling users to make timely decisions based on the latest economic and financial data.

# Future Scope:

# The Gold Price Prediction application will utilize a machine learning model trained on historical data to make predictions. The model takes into account factors such as the S&P 500 (SPX) value, US Oil Price (USO), Silver Price (SLV), and the EUR to USD Ratio. Users can input these variables through a graphical user interface (GUI), and the application will display the predicted gold price.

# Reference:

# [1] https://youtu.be/9ffkBvh8PTQ?si=3YUtX2by6IU-TDcB

# [2] (https://ieeexplore.ieee.org/document/9791739)