**SMART INVESTMENTS**

**(GOLD AND HOUSE PRICE PREDICTION)**

*Thesis submitted to the SASTRA Deemed to be University*

*in partial fulfillment of the requirements*

*for the award of the degree of*

**B. Tech. Electronics & Communication Engineering**

*Submitted by*

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**Declaration**

We declare that the thesis titled “**Smart Investments (Gold and House Price Prediction)**” submitted by me/us is an original work done by me/us under the guidance of **Dr.** **Nithya C(AP III/ ECE)**, **School of Electrical and Electronics Engineering, SASTRA Deemed to be University** during the final semester of the academic year 2021-22, in the **School of Electrical and Electronics Engineering**. The work is original and wherever We have used materials from other sources, We have given due credit and cited them in the text of the thesis. This thesis has not formed the basis for the award of any degree, diploma, associate-ship, fellowship or other similar title to any candidate of any University.

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We take this opportunity to thank all our lecturers who have directly or indirectly helped our project.

**Abstract**

Investments are an important part of saving one's money, smarter investments lead to better lives. Hence one needs to know the prices of their interested assets so as to make a better decision. The Idea is to provide a one stop solution where a user can predict prices of various major investments such as House and Gold. Here the aim is to make evaluations based on every basic parameter that is considered while determining the price. Various Machine Learning Models are used such as Random Forest, Decision Tree, KNN, Naive Bayesian, Logistic Regression will be used for predicting the Price of Gold and House to find out which algorithm gives better accuracy. The machine learning model which gives best accuracy is deployed using Flask and integrated with a web application and the user interface is built using Flask, HTML, CSS, Bootstrap and JavaScript. This application is expected to help the user who plans to buy gold or house so they can know the price range in future, then they can plan their investments well. House price predictions are also beneficial for property investors to know the trend of housing prices in certain locations. Gold price prediction helps offer insights in gold price fluctuations, behavior and dynamics and ultimately provide the opportunity of gaining significant profits.

**Specific Contribution**

∙ Sumanayana Konda : Created the machine learning model responsible for predicting the gold prices for the upcoming 10 days. Collected the respective data and conducted thorough analysis. Fabricated the web application for user visualization.

∙ Chava Bhargavi Supraja : Created the machine learning model responsible for house price prediction in Bangalore city. Collected the responsible data and respective analysis. Also contributed to the fabrication of user interface for user visualization.

**Specific Learning**

∙ Sumanayana Konda : Learned the working and background of KNN and Random forest Regressor. Gained the knowledge of intricating Flask and machine learning algorithms.

∙ Chava Bhargavi Supraja: Increased individual knowledge of YG Booster and Flask working. Gained knowledge of PyCharm developer edition, HTML programming and machine learning algorithms.

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# **INTRODUCTION**

**1.1 A Gold Price Prediction Model Using Machine Learning**

This model predicts where the Gold price is headed. Ensemble Machine learning Regression techniques will be used to predict the price of one of the most important precious metal, the Gold where the models take information from the past Gold ETF (domestic physical gold) prices and returns a Gold price prediction for the next day. Different types classification and prediction algorithms are used to find out which algorithm gives better accuracy and this ML model will be integrated with a WebApp. This prediction model will be beneficial for investors to decide when to invest in this commodity.

**1.2 A House Price Prediction Model Using Machine Learning**

Predictive models for deciding the sale price of houses in metropolitan cities is still remaining as more challenging and trickier task. The sale price of properties in cities depends on a variety of interdependent factors. Key factors which may affect the house price include area of the property, location of the property and its amenities. A predictive model for evaluating the price based on the factors that affect the price will be constructed. Ensemble ML models will be used to build a predictive model, and  pick the best performing model by performing a comparative analysis on the predictive errors obtained between these models. Here, the attempt is to construct a predictive model for evaluating the price based on factors that affects the price. This real time application useful for real estate business and also buyer and sellers. If customer finds the price of house at some given website higher than the price predicted by the model, so he can reject that house.

## **What and Who faces this problem?**

**House Price Prediction**

The real estate sector is an important industry with many stakeholders ranging from regulatory bodies to private companies and investors. Among these stakeholders, there is a high demand for a better understanding of the industry operational mechanism and driving factors. This project can be considered as a further step towards more evidence-based decision making for the benefit of these stakeholders. The project focused on assessment value for residential properties based on dataset from Kaggle. The aim of our project was to build a predictive model for change in house prices based on certain time and geography dependent variables.

**Gold Price Prediction**

Gold is preferred as protective asset by investors because of their negative expectations regarding the current situation in the foreign exchange and capital markets. Investors also consider gold as an asset to rely on, when the desirable profits are not achieved by the world capital markets. Since gold is stored and accumulated over years, the influence of a year’s production on its price is less. The price of gold depends on currency fluctuations and other economic variables. The raise of gold prices and fall of prices in other markets has attracted more investors to invest in gold market. These changes in the price of gold made the investments risky and a fear has been developed that these prices would decrease. There are several numbers of studies analyzing the relation between the gold price and other economic variables. Understanding the relation between these variables helps the investors to take better decisions. Hence, we use machine learning algorithms such as multiple linear regression, random forest and gradient boosting for analyzing the relation between the variables and predict the gold price.

## **Our approach to solve the problem**

We plan to use different types classification and prediction algorithms to find out which algorithm gives better accuracy. Finally, our system predicts the price of gold and house which helps the person make smart investment. We plan to integrate this ML model with a Webapp.