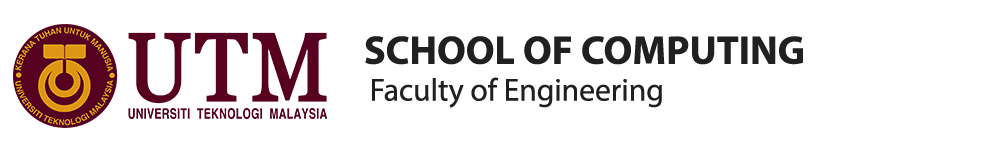
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Project Proposal Form MCST1043

Sem: 2 Session: 2024/25

**SECTION A: Project Information**.

|  |  |  |
| --- | --- | --- |
| Program Name: | **Masters of Science (Data Science)** | |
| Subject Name: | **Project 1** | **(MCST1043)** |
| Student Name: | | Siti Nur Elisya Aqmar binti Mohamad Kamal | | |
| Metric Number: | | MCS241056 | | |
| Student Email & Phone: | | [sitinurelisyaaqmar@graduate.utm.my](mailto:sitinurelisyaaqmar@graduate.utm.my) & 019-4191965 | | |
| Project Title: | | Predictive Machine Learning Modeling for Gold Prices | | |
|  | |  | | |
| Supervisor 1: | |  | | |
| Supervisor 2 / Industry Advisor(if any): | |  | | |

**SECTION B: Project Proposal**

**Introduction**:

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| For a long time, gold has been an asset that is reliable to have, especially during difficult economic times. Investors,  . |
| financial experts and politicians are all very interested in making accurate gold price predictions. However, predicting the | |
| price of gold is a difficult undertaking because of its volatility and reliance on a number of market-driven, geopolitical, | |
| and economic variables. | |
| Using historical data and certain economic factors, this research seeks to create predictive machine learning models that | |
| can estimate short- and medium-term gold prices | |
|  | |

**Problem Background**:

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| Although gold is regarded as a safe-haven asset, its price fluctuates greatly and is affected by a number of variables, |
| including interest rates, inflation, oil prices, and world events. The complex and non-linear interactions between these |
| variables are difficult for traditional gold price forecasting techniques to take into consideration. Because machine |
| learning can examine enormous information, uncover hidden patterns, and produce more accurate predictions, it |
| presents a potential answer. This study intends to investigate how these methods might increase the precision of gold |
| price forecasts, as machine learning applications in gold price prediction are still rather limited. |
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**Problem Statement**:

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| The complex and unpredictable interaction of market, geopolitical, and economic factors makes it difficult to predict |
| gold prices with any degree of accuracy. The non-linear correlations between these factors are frequently missed by |
| conventional forecasting techniques like technical analysis and statistical models. Because of this, financial experts and |
| investors find it difficult to base their decisions on accurate price forecasts. By utilizing past data and spotting trends that |
| are difficult to spot using traditional techniques, machine learning presents an effective approach. In order to give |
| investors and financial experts’ additional useful tools, this project intends to use machine learning techniques to increase |
| the predicting accuracy of gold prices. |

**Aim of the Project**:

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| The aim of this initiative is to create and assess machine learning models that use historical price data and pertinent |
| economic variables to more accurately forecast gold prices. To find trends and increase the accuracy of gold price | |
| forecasts, the project aims to investigate a variety of machine learning approaches, which include regression models and | |
| time-series forecasting algorithms. The main goal is to give financial experts and investors a better tool for making | |
| informed judgments in the unstable gold market. | |

**Objectives of the Project**:

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| --- |
| * To use exploratory data analysis (EDA) in order to find correlations, trends, and patterns between external |
| factors and gold prices. |
| * To create and evaluate many machine learning models for short-term gold price prediction, such as Linear |
| Regression. |
| * To analyse and display model outputs to help decision-makers comprehend and make sense of the findings. |

**Scopes of the Project**:

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| The information on daily or weekly gold prices over the previous ten to twenty years will be the project's main emphasis. |
| The US Dollar Index, oil prices, interest rates, inflation (CPI), and stock market indices are among the economic data |
| that will be considered. |
| Python will be used to create machine learning models, which will then be assessed for predicted accuracy. |
| The study might include the developing of a basic dashboard or user interface for visualization, but it will not involve |
| actual deployment or real-time trading systems. |

**Expected Contribution of the Project**:

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| A collection of trained machine learning models that can predict the price of gold in the short to medium term. |
| An understanding of the main economic variables affecting gold pricing. |
| A detailed analysis of various machine learning techniques for financial time-series forecasting. |
| A visual dashboard or report that presents results in an interactive and approachable way. |
| An insightful case study that shows how machine learning may be used practically in financial data analysis. |
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**Project Requirements**:

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| Software: |  |
| Hardware: |  |
| Technology/Technique/ Methodology/Algorithm: |  |
|  |

**Type of Project (Focusing on Data Science)**:

|  |  |
| --- | --- |
| [ / ] | Data Preparation and Modeling |
| [ ] | Data Analysis and Visualization |
| [ ] | Business Intelligence and Analytics |
| [ / ] | Machine Learning and Prediction |
| [ ] | Data Science Application in Business Domain |

**Status of Project**:

|  |  |
| --- | --- |
| [ / ] | New |
| [ ] | Continued |
| If continued, what is the previous title? |  |

**SECTION C: Declaration**

**I declare that this project is proposed by**:

|  |  |
| --- | --- |
| [ / ] | Myself |
| [ ] | Supervisor/Industry Advisor ( ) |
| Student Name: | Siti Nur Elisya Aqmar binti Mohamad Kamal |

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|  |  |  |  |
| **Signature** |  | **Date** |  |

**SECTION D: Supervisor Acknowledgement**

The Supervisor(s) shall complete this section.

**I/We agree to become the supervisor(s) for this student under aforesaid proposed title.**

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| Name of Supervisor 1: |  |

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|  |  |  |  |
| **Signature** |  | **Date** |  |
| Name of Supervisor 2 (if any): |  | | |

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| **Signature** |  | **Date** |  |

**SECTION E: Evaluation Panel Approval**

The Evaluator(s) shall complete this section.

**Result:**

|  |  |
| --- | --- |
| [ ] FULL APPROVAL | [ ] CONDITIONAL APPROVAL (Major)\* |
| [ ] CONDITIONAL APPROVAL (Minor) | [ ] FAIL\* |

**\*** Student has to submit new proposal form considering the evaluators’ comments.

**Comments:**

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| Name of Evaluator 1: |  |

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| **Signature** |  | **Date** |  |
| Name of Evaluator 2: |  | | |

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| **Signature** |  | **Date** |