**Model Optimization and Tuning Phase Template**

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| Date | 14th July 2024 |
| Team ID | 740083 |
| Project Title | Sentiment Analysis of Commodity News (Gold) |
| Maximum Marks | 10 Marks |

**Model Optimization and Tuning Phase**

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

### Hyperparameter Tuning Documentation (6 Marks):

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| --- | --- | --- |
| **Model** | **Tuned Hyperparameters** | **Optimal Values** |
| Random Forest | - | - |
| Decision Tree | - | - |
| Gradient Boosting Regressor | - | - |

### Performance Metrics Comparison Report (2 Marks):

|  |  |  |
| --- | --- | --- |
| **Model** | **Baseline Metric** | **Optimized Metric** |
| Random Forest | - | - |
| Decision Tree | - | - |
| Gradient Boosting | - | - |

### Final Model Selection Justification (2 Marks):

|  |  |
| --- | --- |
| **Final Model** | **Reasoning** |
| Logistic Regression | Logistic regression is a statistical model used for binary classification that predicts the probability of a binary outcome based on one or more predictor variables. It uses a logistic function to model the relationship between the dependent variable and the independent variables. Logistic regression is widely used in various fields for its simplicity, efficiency, and interpretability in predicting categorical outcomes |