**Model Optimization and Tuning Phase Template**

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| Date | 14 July 2024 |
| Team ID | 739755 |
| Project Title | Blood Donation Prediction |
| 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** |
| Logistic Regression | - | - |
| Random Forest | - | - |
| Support Vector Machine | - | - |

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

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| --- | --- |
| **Model** | **Optimized Metric** |
| Logistic Regression | - |
| Random Forest | - |
| Support Vector Machine | - |

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

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| --- | --- |
| **Final Model** | **Reasoning** |
| Logistic Regression | The Logistic Regression model was selected for its superior performance, exhibiting high accuracy during accuracy. Its ability to handle complex relationships, minimize overfitting, and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model. |