Model Optimization and Tuning Phase Report

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| Date | 08 July 2024 |
| Team ID | 739677 |
| Project Title | FetalAI: Using Machine Learning To Predict And Monitor Fetal Health |
| 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 :

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| --- | --- | --- |
| **Model** | **Tuned Hyperparameters** | **Optimal Values** |
| Random Forest | - | - |
| Decision Tree | - | - |
| Logistic Regression | - | - |
| K-Nearest Neighbors | **-** | **-** |

**Performance Metrics Comparison Report :**

|  |  |
| --- | --- |
| **Model** | **Optimized Metric** |
| Random Forest | **-** |
| Decision Tree | **-** |
| Logistic Regression | **-** |
| K-Nearest Neighbors | **-** |

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| --- | --- |
| **Final Model** | **Reasoning** |
| Logistic Regression | The Logistic Regression model was selected for its superior performance, exhibiting accurate results during testing. Logistic regression is chosen for its simplicity, interpretability, and efficiency, making it a strong candidate for binary and multiclass classification problems. Its assumptions about linear relationships and independence of observations, combined with its ability to provide probabilistic outputs and straightforward interpretability, often make it a preferred choice.  Top of Form  Bottom of Form |

# Final Model Selection Justification (2 marks)