**Model Optimization and Tuning Phase Template**

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| Date | 11-07-2024 |
| Team ID | 740047 |
| Project Title | SMOKE DETECTION USING IOT DATASET |
| 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** |
| Model 1 | ------ | ---- |
| Model 2 | ----- | ----- |
| ---- | ----- | ----- |

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

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| --- | --- |
| **Model** | **Optimized Metric** |
| Decicion Tree Classifier |  |
| Logistic Regression  K-Nearest Neighbors |  |

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

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| --- | --- |
| **Final Model** | **Reasoning** |
| K-Nearest Neighbors | KNN was selected as the final model for its high accuracy and exact prediction of the target outcome and it can be able to handle complex data. |