**Model Optimization and Tuning Phase Template**

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| **Date** | 11 March 2025 |
| **Team ID** | 740052 |
| **Project Title** | AI-Based Intelligent Insight Extractor |
| **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** |
| Spacy Pipeline | ……... | ……... |
| Word Tokenization | ……….. | ……... |
| Sentence Tokenization | …..…... | ……... |
| HeapQ | ……. …… | ……….. |

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

|  |  |
| --- | --- |
| **Model** | **Optimized Metric** |
| Load Spacy Pipeline |  |
| Word Tokenization |  |
| Sentence Tokenization |  |
| HeapQ |  |

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

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