**Model Optimization and Tuning Phase Template**

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| Date | 29 September 2024 |
| Team ID | LTVIP2024TMID24973 |
| Project Title | Detection of Phishing Websites from URLs  Using Machine learning |
| 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** | **Finalized Model Accuracy** |
| Model 1:  Logistic regression |  |

Note:

Due to the specific requirements of this project and the dataset's structure, the other models were not implemented in this phase, as Logistic Regression demonstrated superior performance for text classification.

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

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| **Final Model** | **Reasoning** |
| Logistic Regression | Logistic regression is justified for phishing website detection from URLs because it provides an interpretable, scalable, and efficient solution to a binary classification problem. Its probabilistic output, ease of handling various types of features, and ability to manage imbalanced data make it a strong candidate for this cybersecurity application. |