**Model Optimization and Tuning Phase Template**

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| Date | 27 October 2024 |
| Team ID | 739923 |
| Project Title | Toxic Comment Classification for Social Media using NLP |
| Maximum Marks | 10 Marks |

**Model Optimization and Tuning Phase**

The Model Optimization and Tuning Phase involves refining neural network 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. "During the optimization and tuning phase for toxic comment classification on social media, techniques such as hyperparameter tuning, model architecture refinement, cross-validation, and evaluation on balanced datasets are employed to improve accuracy, precision, recall, and overall model robustness."

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| **Model** | **Tuned Hyperparameters** |
| Model 1 |  |
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### Final Model Selection Justification (2 Marks):

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| **Final Model** | **Reasoning** |
|  | "For the final model in the optimization and tuning phase of toxic comment classification for social media, we utilized logistic regression classifiers for each target label, trained on features generated by a Count Vectorizer, and fine-tuned using hyperparameter optimization techniques to maximize predictive performance across all categories, the final model employed is logistic regression, optimized using the Count Vectorizer for feature extraction and trained to accurately predict the likelihood of a comment being toxic across various labels. |