Model Optimization and Tuning Phase Template

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Team ID	SWTID1750052396
Project Title	Analysis of Medium App Reviews from Google Play Store
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.

Hyperparameter Tuning Documentation (8 Marks):

Model	Tuned Hyperparameters
K-Nearest Neighbors (KNN)	- `n_neighbors`: Number of neighbors to use (affects bias-variance tradeoff). - `weights`: Uniform or distance-based influence of neighbors. - `metric`: Distance metric used (e.g., 'euclidean', 'manhattan').
Naive Bayes	- `var_smoothing`: Portion added to variance to avoid zero division errors (for GaussianNB). Typically tuned using log-scale values (e.g., 1e-9, 1e-8).
Random Forest	- `n_estimators`: Number of trees in the forest. - `max_depth`: Maximum depth of each tree. - `min_samples_split`: Minimum samples required to split an internal node. - `max_features`: Number of features to consider for best split.

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Random Forest (Example)	Random Forest was chosen as the final model due to its superior performance in terms of accuracy and robustness on the validation set. It handles non-linear relationships and feature interactions effectively and showed the highest F1-score among all models.