

Model Optimization and Tuning Phase Template

Date	15 July 2024
Team ID	739984
Project Title	Genetic Classification of An Individual By 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):

Model	Tuned Hyperparameters	Optimal Values
RandomForest Classifier	n_estimators, min_samples_split, min_samples_leaf, max_features, max_depth, bootstrap	10, 2, 1, log2, 30, False

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
RandomForestClassifier	Not provided (initial metric)	Accuracy: 1.0 Confusion Matrix: [[2, 0], [0, 3]] Classification

		Report: Precision: 1.00, Recall: 1.00, F1-score: 1.00, Support: [2, 3]
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Final Model Selection Justification (2 Marks):

Final Model	Reasoning
RandomForestClassifier	The RandomForestClassifier was chosen due to its perfect prediction performance (accuracy of 1.0) and balanced hyperparameters.