Model Optimization and Tuning Phase Template

Date	15 July 2024
Team ID	740061
Project Title	Early Prediction Of Chronic Kidney Disease
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
Logistic Regression	-	-
Random forest	-	-

Performance Metrics Comparison Report (2 Marks):

Model	Optimized Metric

Logistic Regression	Logistic Regression Model Evaluation: Accuracy: 0.9 Confusion Matrix: [[46 8] [0 26]] Classification Report: precision recall f1-score support 0 1.00 0.85 0.92 54 1 0.76 1.00 0.87 26 accuracy 0.90 80 macro avg 0.88 0.93 0.89 80 weighted avg 0.92 0.90 0.90 80
Random forest	Random Forest Model Evaluation: Accuracy: 0.95 Confusion Matrix: [[52 2] [2 24]] Classification Report: precision recall f1-score support 0 0.96 0.96 0.96 54 1 0.92 0.92 0.92 26 accuracy 0.95 80 macro avg 0.94 0.94 0.94 80 weighted avg 0.95 0.95 0.95 80

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Random Forest	We have selected the Random Forest as best model due to the accuracy of the model. When we compare both models(logistic regression, random forest), the accuracy of the model is greater than Logistic regression.