Model Optimization and Tuning Phase

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Team ID	SWTID1720175375
Project Title	Prediction and analysis of liver patient data using ML
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
KNN	"n_neighbors", "weights", "algorithm", "metric", "leaf_size"	3,uniform,auto,euclidean,1
Random forest classifier	Criterion, max_depth, max_features, min_samples_leaf, min_samples_split, n_estimators	Entropy,15,0,75,7,3,130
Logistic regression	'C', 'max-iter', 'solver'	0.0001, 1000,lbfgs

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
KNN	AUC-ROC: 0.6477162293488825	accuracy 0.66
Random forest classifier	AUC-ROC: 0.7103624518590504	accuracy 0.68
Logistic regression	AUC-ROC: 0.6906921498758234	accuracy 0.67

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Logistic regression	Has high accuracy when compared with other two models High recall score and high precision score The model strikes a balance between interpretability and good results