

Model Optimization and Tuning Phase Template

Date	10 June 2024
Team ID	739640
Project Title	Work Force Retention System
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	<pre> ▼ hyperparametric tuning for logistic regression [] import warnings warnings.filterwarnings('ignore') [] from sklearn.model_selection import GridSearchCV [] from sklearn.model_selection import cross_val_score [] logi_final=LogisticRegression() ▶ parameters={'penalty' : ['l1', 'l2', 'elasticnet', 'none'], 'tol' : [1e-1, 1e-2, 1e-3, 1e-4], 'class_weight' : ['balanced',None], 'max_iter' : [50,100,130,150,200], 'solver' : ['newton-cg', 'lbfgs', 'liblinear', 'sag', 'saga'], 'multi_class' : ['auto', 'ovr', 'multinomial'], 'verbose' : [0,1], 'n_jobs' : [1,-1]} [] gs=GridSearchCV(estimator=logi_final, param_grid=parameters, scoring='accuracy', cv=10, n_jobs=-1) </pre>	-

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
Logistic regression	-	-
Random Forest	-	-

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Random Forest	Random Forest is often chosen as a final model due to its robustness and versatility in handling a variety of data types and complex relationships within data. It combines the power of multiple decision trees to improve predictive accuracy and reduce overfitting, making it less susceptible to noise compared to individual trees.