



Model Optimization and Tuning Phase Report

| Date | 15 July 2024 |
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| Team ID | 866654 |
| Project Title | Thyroid disease classification using machine learning |
| Maximum Marks | 10 Marks |

Model Optimization and Tuning Phase

The model optimization and tuning phase in thyroid classification using Machine Learning, adjustments are made to the model parameters to improve its performance in accurately predicting thyroid-related issues.

| Model | Optimized Metric | |
|-------|------------------------------------|--|
| | Evaluating the model using metrics | |



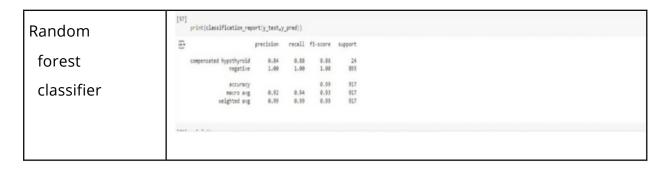


| Classification report |
|-----------------------|
| |

Hyperparameter Tuning Documentation(6Marks):

| Model | Tuned Hyperparameters | Optimal Values |
|--------------------------------|---|--|
| Random forest classifier | Building the machine learning model Random forest classifier | Testing the model |
| | | <pre>60] train_accuracy = accuracy_score(y_train, x_pred) print(f'Training Accuracy: (train_accuracy * 100:.2f)%') # Calculate accuracy for testing set test_accuracy = accuracy_score(y_test, y_pred) print(f'Testing Accuracy: (test_accuracy * 100:.2f)%')</pre> |
| | orf = RandomForestClassifier(random_state=62, bootstrap=False, max_depth=None, max_features=1spt*, min_samples_leaf=2, min_samples_split=2, n_estimators=100) f.fit(x_train,y_train) RandomForestClassifier RandomForestClassifier(bootstrap=False, min_samples_leaf=2, random_state=42) | Training Accuracy: 99.86% Testing Accuracy: 99.24% |

Performance Metrics Comparison Report (2 Marks):



Final Model Selection Justification (2 Marks):





| Final Model | Reasoning |
|-----------------------------|--|
| | |
| Random forest classifier | A Random Forest Classifier for thyroid classification using Machine Learning is a model that can predict whether a person has thyroidrelated issues based on various input features by using a collection of decision trees. |