

Project Development Phase
Model Performance Test

| | |
|---------------|--|
| Date | 16 November 2022 |
| Team ID | PNT2022TMID00517 |
| Project Name | Project - Developing a Flight Delay Prediction Model |
| Maximum Marks | 10 Marks |

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

| S.No. | Parameter | Values | Screenshot |
|-------|-----------|--------|------------|
|-------|-----------|--------|------------|

| 1. | Metrics | Classification Model: Confusion Matrix , Accuracy Score & Classification Report | <pre>In [24]: #Model Evaluation from sklearn.metrics import accuracy_score,confusion_matrix, classification_report print(accuracy_score(y_test, pred)) 0.9163899788711138 In [26]: print(confusion_matrix(y_test, pred)) [[2732 164] [113 304]] In [27]: print(classification_report(y_test, pred))</pre> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0.0</td><td>0.96</td><td>0.94</td><td>0.95</td><td>2896</td></tr><tr><td>1.0</td><td>0.65</td><td>0.73</td><td>0.69</td><td>417</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.92</td><td>3313</td></tr><tr><td>macro avg</td><td>0.80</td><td>0.84</td><td>0.82</td><td>3313</td></tr><tr><td>weighted avg</td><td>0.92</td><td>0.92</td><td>0.92</td><td>3313</td></tr></tbody></table> | | precision | recall | f1-score | support | 0.0 | 0.96 | 0.94 | 0.95 | 2896 | 1.0 | 0.65 | 0.73 | 0.69 | 417 | accuracy | | | 0.92 | 3313 | macro avg | 0.80 | 0.84 | 0.82 | 3313 | weighted avg | 0.92 | 0.92 | 0.92 | 3313 |
|--------------|----------------|---|--|---------|-----------|--------|----------|---------|-----|------|------|------|------|-----|------|------|------|-----|----------|--|--|------|------|-----------|------|------|------|------|--------------|------|------|------|------|
| | precision | recall | f1-score | support | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 0.96 | 0.94 | 0.95 | 2896 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | 0.65 | 0.73 | 0.69 | 417 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| accuracy | | | 0.92 | 3313 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| macro avg | 0.80 | 0.84 | 0.82 | 3313 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| weighted avg | 0.92 | 0.92 | 0.92 | 3313 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | Tune the Model | Hyperparameter Tuning , Validation Method | <pre>In [31]: from sklearn.model_selection import cross_val_score, KFold, GridSearchCV kf = KFold(n_splits = 6, shuffle = True, random_state = 25) params = {'max_depth': [4,5,6], 'min_samples_split': [2,3,4], 'criterion': ['gini', 'entropy', 'log_loss']} In [32]: grid_cv = GridSearchCV(clf, params, cv = kf) grid_cv.fit(X_train,y_train) Out[32]:</pre> <div><pre>GridSearchCV estimator: DecisionTreeClassifier DecisionTreeClassifier</pre></div> <pre>In [35]: grid_cv.best_params_ Out[35]: {'criterion': 'entropy', 'max_depth': 6, 'min_samples_split': 2} In [34]: cv_results = cross_val_score(clf, X_train,y_train, cv = kf) print(cv_results) [0.92552366 0.9193173 0.91925466 0.92934783 0.92313665 0.9060559]</pre> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

