Base Classifiers:

Classifier: Decision Tree

Classification Report

precision recall f1-score support

0 0.82 0.84 0.83 12768

1 0.78 0.79 0.79 12768

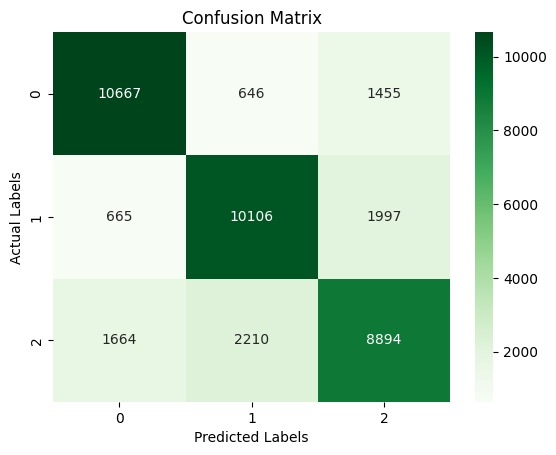
2 0.72 0.70 0.71 12768

accuracy 0.77 38304

macro avg 0.77 0.77 0.77 38304

weighted avg 0.77 0.77 0.77 38304

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Classifier: KNN

Classification Report

precision recall f1-score support

0 0.82 0.98 0.89 12768

1 0.84 0.92 0.88 12768

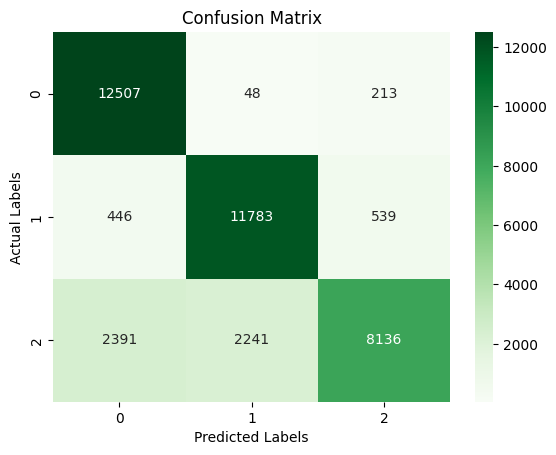
2 0.92 0.64 0.75 12768

accuracy 0.85 38304

macro avg 0.86 0.85 0.84 38304

weighted avg 0.86 0.85 0.84 38304

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Classifier: Gaussian NB

Classification Report

precision recall f1-score support

0 0.62 0.87 0.73 12768

1 0.73 0.73 0.73 12768

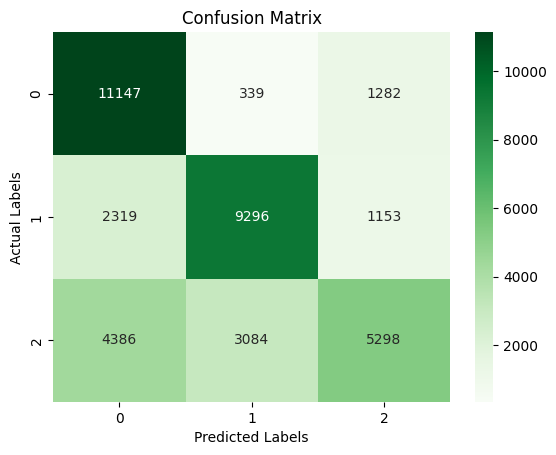
2 0.69 0.41 0.52 12768

accuracy 0.67 38304

macro avg 0.68 0.67 0.66 38304

weighted avg 0.68 0.67 0.66 38304

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Classifier: Logistic Regression

/usr/local/lib/python3.10/dist-packages/sklearn/linear\_model/\_logistic.py:458: ConvergenceWarning: lbfgs failed to converge (status=1):

STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max\_iter) or scale the data as shown in:

<https://scikit-learn.org/stable/modules/preprocessing.html>

Please also refer to the documentation for alternative solver options:

<https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression>

n\_iter\_i = \_check\_optimize\_result(

Classification Report

precision recall f1-score support

0 0.68 0.81 0.74 12768

1 0.73 0.68 0.70 12768

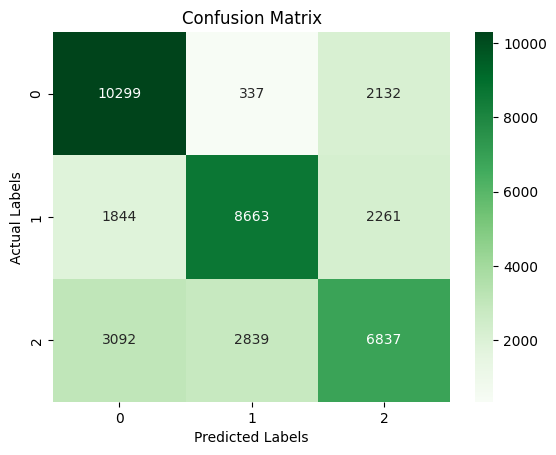
2 0.61 0.54 0.57 12768

accuracy 0.67 38304

macro avg 0.67 0.67 0.67 38304

weighted avg 0.67 0.67 0.67 38304

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Ensemble Classifiers:

Classifier: Random Forest

Classification Report

precision recall f1-score support

0 0.88 0.96 0.92 12768

1 0.88 0.92 0.90 12768

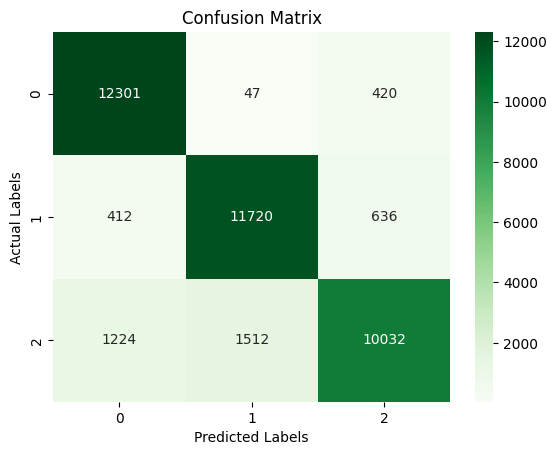
2 0.90 0.79 0.84 12768

accuracy 0.89 38304

macro avg 0.89 0.89 0.89 38304

weighted avg 0.89 0.89 0.89 38304

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Classifier: Gradient Boosting

Classification Report

precision recall f1-score support

0 0.74 0.87 0.80 12768

1 0.79 0.76 0.77 12768

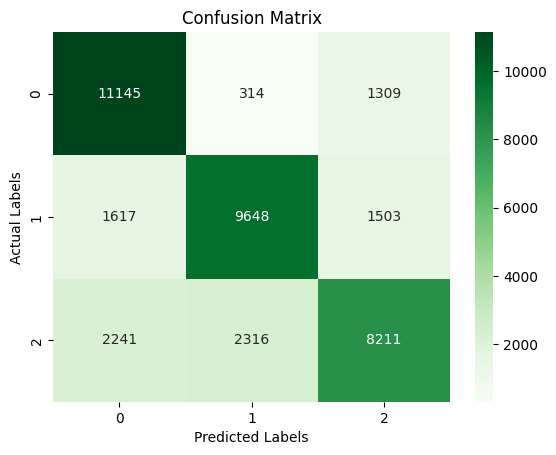
2 0.74 0.64 0.69 12768

accuracy 0.76 38304

macro avg 0.76 0.76 0.75 38304

weighted avg 0.76 0.76 0.75 38304

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Classifier: AdaBoost

/usr/local/lib/python3.10/dist-packages/sklearn/ensemble/\_base.py:166: FutureWarning: `base\_estimator` was renamed to `estimator` in version 1.2 and will be removed in 1.4.

warnings.warn(

Classification Report

precision recall f1-score support

0 0.71 0.85 0.78 12768

1 0.74 0.72 0.73 12768

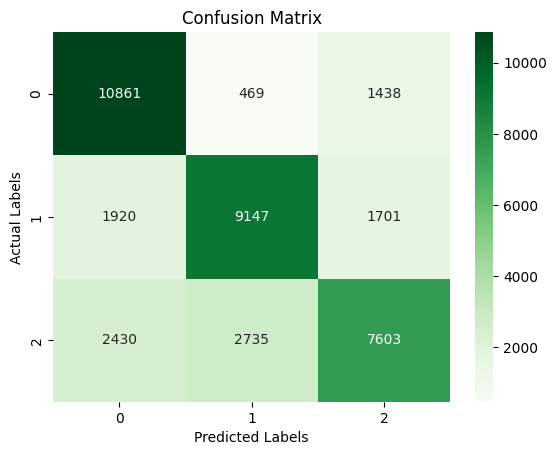
2 0.71 0.60 0.65 12768

accuracy 0.72 38304

macro avg 0.72 0.72 0.72 38304

weighted avg 0.72 0.72 0.72 38304

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Boosting Classifiers:

Classifier: XGBoost

Classification Report

precision recall f1-score support

0 0.82 0.91 0.87 12768

1 0.85 0.82 0.83 12768

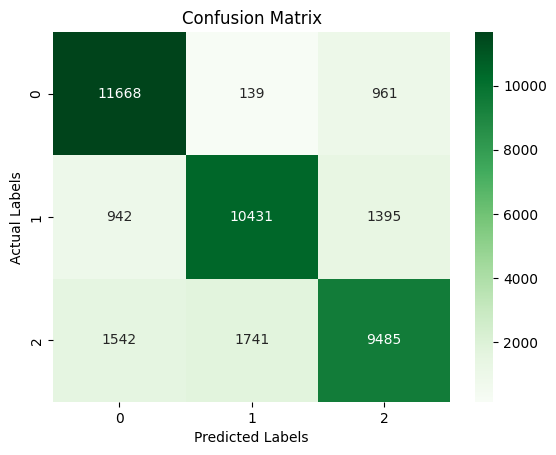
2 0.80 0.74 0.77 12768

accuracy 0.82 38304

macro avg 0.82 0.82 0.82 38304

weighted avg 0.82 0.82 0.82 38304

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Classifier: LightGBM

[LightGBM] [Info] Auto-choosing col-wise multi-threading, the overhead of testing was 0.083711 seconds.

You can set `force\_col\_wise=true` to remove the overhead.

[LightGBM] [Info] Total Bins 5864

[LightGBM] [Info] Number of data points in the train set: 153216, number of used features: 23

[LightGBM] [Info] Start training from score -1.098612

[LightGBM] [Info] Start training from score -1.098612

[LightGBM] [Info] Start training from score -1.098612

Classification Report

precision recall f1-score support

0 0.79 0.90 0.84 12768

1 0.82 0.78 0.80 12768

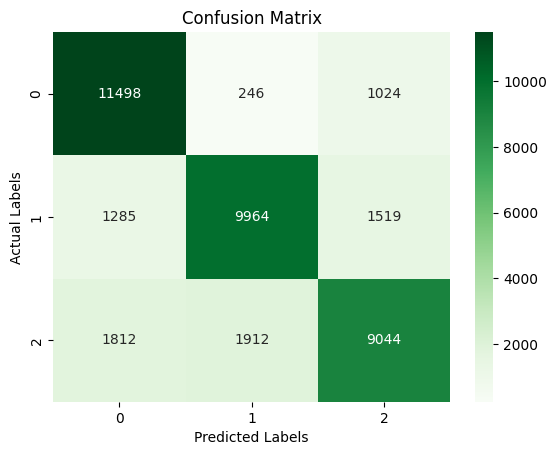
2 0.78 0.71 0.74 12768

accuracy 0.80 38304

macro avg 0.80 0.80 0.79 38304

weighted avg 0.80 0.80 0.79 38304

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