Best Hyperparameters:

* {'n\_estimators': 800, 'min\_samples\_split': 2, 'min\_samples\_leaf': 1, 'max\_features': 'auto', 'max\_depth': 40}

Metrics:

* Accuracy: 0.754934210526315
* Balanced accuracy: 0.661
* Precision: 0.7544709902785223
* Recall: 0.7523124357656732
* F1: 0.7348046334933436

The random forest classifier is an ensemble machine learning model that uses a collection of decision trees to make predictions. As each individual tree inside the random forest model outputs their prediction, the random forest model can utilize a voting method to determine the highest probable prediction. Random forests are effective because of their simplicity, versatility, and quick runtime. Their only drawback is the possibility of overfitting. For our experiments, after performing a randomized grid search to obtain the optimal hyperparameters, we discovered that 800 n-estimators(the number of total trees), a minimum samples split(the number of samples required to split an internal node) of 2, a minimum sample leaf(the number of samples required to be at a leaf node) of 1, and a max depth of 40 performs the best.