

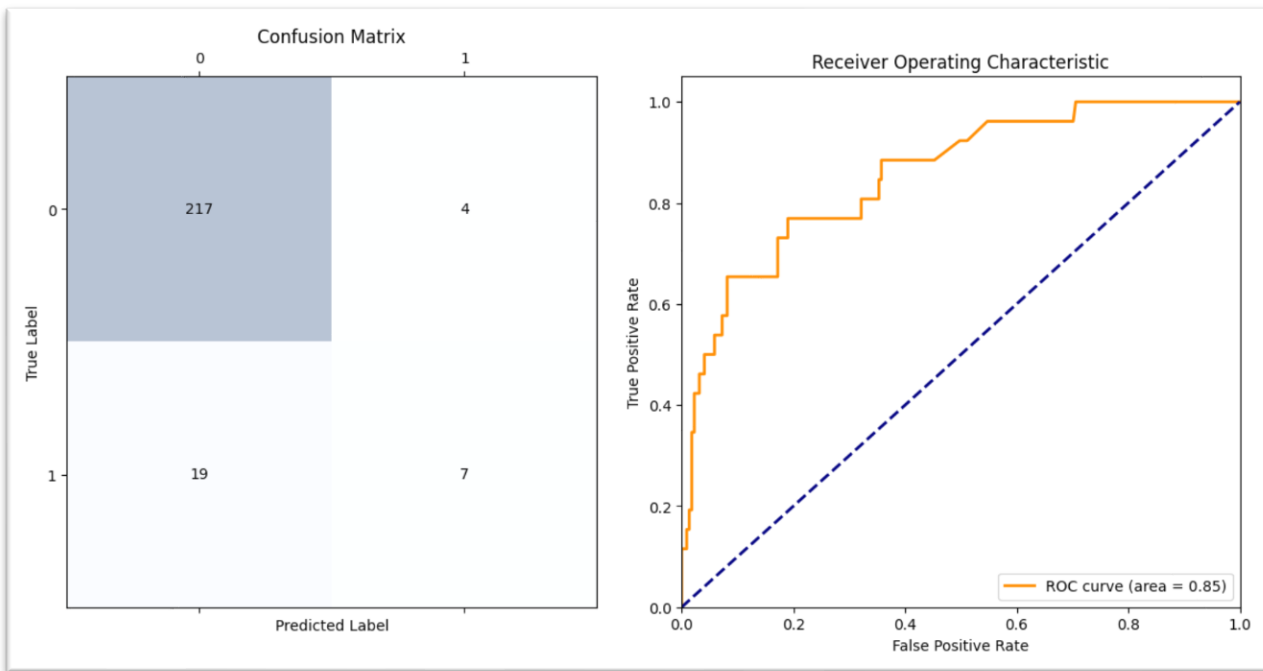
Running the GBM classification (the best model from auto H2O ML), I obtained the following results from different hyperparameters:

The classification task was performed between two classes: 26 autoinhibited (label 1), identified through literature search, and non-oncogene (label 0), derived from a pan-cancer dataset.

param_n_estimators	param_learning_rate	param_max_depth	mean_test_score
100	0.1	3	0.857303
150	0.2	3	0.854101
100	0.2	3	0.849960
50	0.2	7	0.846828
150	0.1	3	0.844242
100	0.1	5	0.839374
50	0.2	3	0.838030
50	0.2	5	0.836737
150	0.2	5	0.835727
150	0.1	7	0.834222
150	0.01	5	0.833838
150	0.1	5	0.833091
100	0.01	5	0.830328
100	0.2	5	0.830222
100	0.1	7	0.829990
50	0.1	5	0.826101
50	0.1	3	0.824515
50	0.1	7	0.822768
150	0.2	7	0.822333
150	0.01	3	0.821525
100	0.2	7	0.810455
100	0.01	3	0.795141
50	0.01	3	0.781859
50	0.01	5	0.768136
100	0.01	7	0.759369
150	0.01	7	0.736717
50	0.01	7	0.702005

Best Hyperparameters: {'learning_rate': 0.1, 'max_depth': 3, 'n_estimators': 100}

The results obtained using the best hyperparameters and 5 folds of cross validation are as follows:



Performance Metrics Based on the Best Hyperparameters:

- **Matthews Correlation Coefficient:** 0.3736
- **Accuracy:** 90.69%
- **AUC:** 0.8546

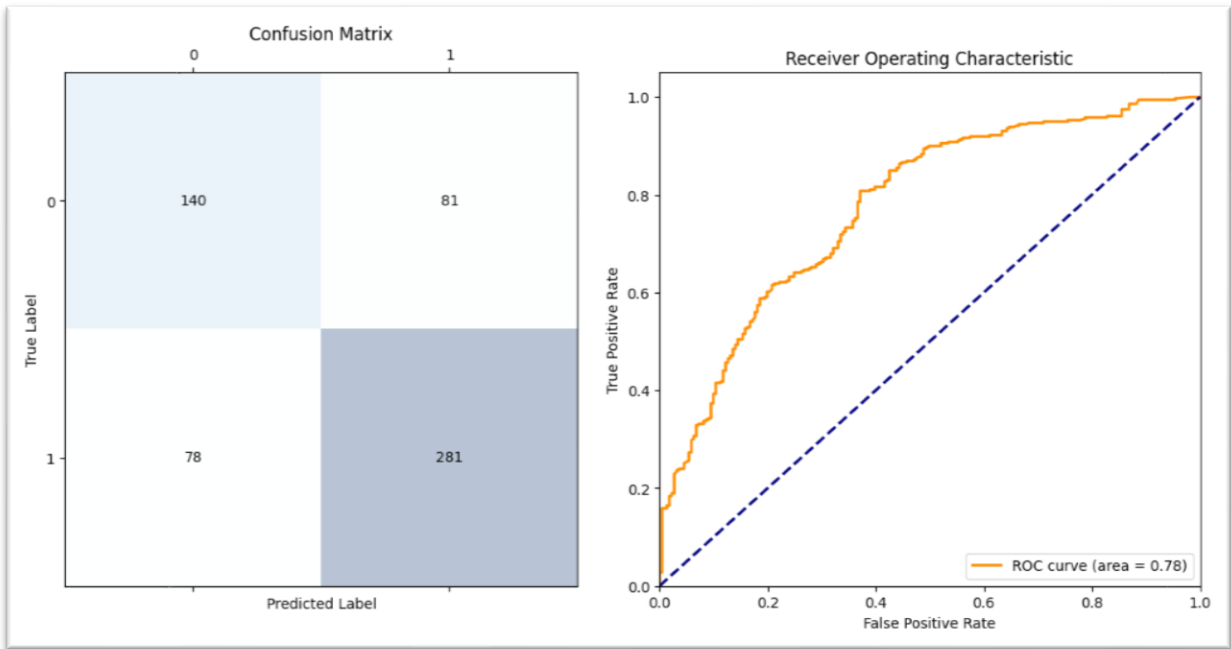
Running the GBM classification (the best model from auto H2O ML), I obtained the following results from different hyperparameters:

The classification task was performed between two classes: oncogene (label 1) and non-oncogene (label 0) derived from a pan-cancer dataset.

param_n_estimators	param_learning_rate	param_max_depth	mean_test_score
100	0.2	7	0.779420
150	0.1	7	0.776047
150	0.2	7	0.775387
100	0.1	7	0.773084
50	0.1	7	0.768732
50	0.2	7	0.766008
50	0.2	5	0.762396
100	0.2	5	0.760086
150	0.2	5	0.759584
100	0.1	5	0.756262
50	0.1	5	0.753688
150	0.1	5	0.750475
150	0.01	7	0.747334
50	0.2	3	0.744741
100	0.2	3	0.742725
150	0.2	3	0.740886
150	0.1	3	0.737074
100	0.1	3	0.735009
150	0.01	5	0.727764
50	0.1	3	0.727527
100	0.01	7	0.726321
100	0.01	5	0.713361
50	0.01	7	0.709190
150	0.01	3	0.694709
50	0.01	5	0.687681
100	0.01	3	0.685136
50	0.01	3	0.670267

Best Hyperparameters: {'learning_rate': 0.2, 'max_depth': 7, 'n_estimators': 100}

The results obtained using the best hyperparameters and 5 folds of cross validation are as follows:



Performance Metrics Based on the Best Hyperparameters:

- **Matthews Correlation Coefficient:** 0.4173
- **Accuracy:** 72.59%
- **AUC:** 0.7753