Model Details

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H2OStackedEnsembleEstimator : Stacked Ensemble

Model Key: StackedEnsemble\_AllModels\_AutoML\_20210528\_061710

No model summary for this model

ModelMetricsBinomialGLM: stackedensemble

\*\* Reported on train data. \*\*

MSE: 0.08650724292190123

RMSE: 0.2941211364759446

LogLoss: 0.2874831484579681

Null degrees of freedom: 10050

Residual degrees of freedom: 10044

Null deviance: 12311.739370630861

Residual deviance: 5778.986250302074

AIC: 5792.986250302074

AUC: 0.9538420395181154

AUCPR: 0.9041127762990673

Gini: 0.9076840790362308

Confusion Matrix (Act/Pred) for max f1 @ threshold = 0.4189203634519596:

|  |  | **false** | **true** | **Error** | **Rate** |
| --- | --- | --- | --- | --- | --- |
| **0** | false | 6310.0 | 707.0 | 0.1008 | (707.0/7017.0) |
| **1** | true | 430.0 | 2604.0 | 0.1417 | (430.0/3034.0) |
| **2** | Total | 6740.0 | 3311.0 | 0.1131 | (1137.0/10051.0) |

Maximum Metrics: Maximum metrics at their respective thresholds

|  | **metric** | **threshold** | **value** | **idx** |
| --- | --- | --- | --- | --- |
| **0** | max f1 | 0.418920 | 0.820804 | 198.0 |
| **1** | max f2 | 0.302755 | 0.869886 | 243.0 |
| **2** | max f0point5 | 0.575095 | 0.845452 | 142.0 |
| **3** | max accuracy | 0.497913 | 0.890260 | 170.0 |
| **4** | max precision | 0.974528 | 1.000000 | 0.0 |
| **5** | max recall | 0.039182 | 1.000000 | 367.0 |
| **6** | max specificity | 0.974528 | 1.000000 | 0.0 |
| **7** | max absolute\_mcc | 0.449960 | 0.740427 | 186.0 |
| **8** | max min\_per\_class\_accuracy | 0.390189 | 0.880433 | 209.0 |
| **9** | max mean\_per\_class\_accuracy | 0.379330 | 0.882769 | 213.0 |
| **10** | max tns | 0.974528 | 7017.000000 | 0.0 |
| **11** | max fns | 0.974528 | 3031.000000 | 0.0 |
| **12** | max fps | 0.003134 | 7017.000000 | 399.0 |
| **13** | max tps | 0.039182 | 3034.000000 | 367.0 |
| **14** | max tnr | 0.974528 | 1.000000 | 0.0 |
| **15** | max fnr | 0.974528 | 0.999011 | 0.0 |
| **16** | max fpr | 0.003134 | 1.000000 | 399.0 |
| **17** | max tpr | 0.039182 | 1.000000 | 367.0 |

Gains/Lift Table: Avg response rate: 30.19 %, avg score: 30.54 %

|  | **group** | **cumulative\_data\_fraction** | **lower\_threshold** | **lift** | **cumulative\_lift** | **response\_rate** | **score** | **cumulative\_response\_rate** | **cumulative\_score** | **capture\_rate** | **cumulative\_capture\_rate** | **gain** | **cumulative\_gain** | **kolmogorov\_smirnov** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | 1 | 0.010049 | 0.927209 | 3.312788 | 3.312788 | 1.000000 | 0.945343 | 1.000000 | 0.945343 | 0.033289 | 0.033289 | 231.278840 | 231.278840 | 0.033289 |
| **1** | 2 | 0.020098 | 0.904970 | 3.312788 | 3.312788 | 1.000000 | 0.914873 | 1.000000 | 0.930108 | 0.033289 | 0.066579 | 231.278840 | 231.278840 | 0.066579 |
| **2** | 3 | 0.030047 | 0.886254 | 3.312788 | 3.312788 | 1.000000 | 0.894465 | 1.000000 | 0.918306 | 0.032960 | 0.099539 | 231.278840 | 231.278840 | 0.099539 |
| **3** | 4 | 0.040096 | 0.867489 | 3.181589 | 3.279907 | 0.960396 | 0.876064 | 0.990074 | 0.907719 | 0.031971 | 0.131510 | 218.158886 | 227.990712 | 0.130940 |
| **4** | 5 | 0.050045 | 0.851382 | 3.279661 | 3.279858 | 0.990000 | 0.858894 | 0.990060 | 0.898012 | 0.032630 | 0.164140 | 227.966051 | 227.985810 | 0.163427 |
| **5** | 6 | 0.100090 | 0.772752 | 3.207411 | 3.243635 | 0.968191 | 0.809886 | 0.979125 | 0.853949 | 0.160514 | 0.324654 | 220.741143 | 224.363476 | 0.321661 |
| **6** | 7 | 0.150035 | 0.700132 | 3.009226 | 3.165602 | 0.908367 | 0.738196 | 0.955570 | 0.815416 | 0.150297 | 0.474951 | 200.922611 | 216.560218 | 0.465402 |
| **7** | 8 | 0.200080 | 0.620309 | 2.693699 | 3.047568 | 0.813121 | 0.661551 | 0.919940 | 0.776931 | 0.134806 | 0.609756 | 169.369872 | 204.756765 | 0.586812 |
| **8** | 9 | 0.300070 | 0.464755 | 2.040414 | 2.711961 | 0.615920 | 0.543442 | 0.818634 | 0.699127 | 0.204021 | 0.813777 | 104.041395 | 171.196106 | 0.735824 |
| **9** | 10 | 0.400060 | 0.316539 | 1.114152 | 2.312608 | 0.336318 | 0.388493 | 0.698085 | 0.621488 | 0.111404 | 0.925181 | 11.415172 | 131.260807 | 0.752173 |
| **10** | 11 | 0.500050 | 0.207099 | 0.481261 | 1.946411 | 0.145274 | 0.258995 | 0.587545 | 0.549004 | 0.048121 | 0.973303 | -51.873920 | 94.641149 | 0.677877 |
| **11** | 12 | 0.600040 | 0.121346 | 0.210964 | 1.657218 | 0.063682 | 0.161457 | 0.500249 | 0.484423 | 0.021094 | 0.994397 | -78.903636 | 65.721814 | 0.564869 |
| **12** | 13 | 0.700030 | 0.058792 | 0.052741 | 1.428040 | 0.015920 | 0.088064 | 0.431069 | 0.427809 | 0.005274 | 0.999670 | -94.725909 | 42.803968 | 0.429199 |
| **13** | 14 | 0.800020 | 0.021974 | 0.003296 | 1.249969 | 0.000995 | 0.038180 | 0.377316 | 0.379111 | 0.000330 | 1.000000 | -99.670369 | 24.996891 | 0.286447 |
| **14** | 15 | 0.900010 | 0.009440 | 0.000000 | 1.111099 | 0.000000 | 0.014584 | 0.335397 | 0.338612 | 0.000000 | 1.000000 | -100.000000 | 11.109883 | 0.143224 |
| **15** | 16 | 1.000000 | 0.002554 | 0.000000 | 1.000000 | 0.000000 | 0.006254 | 0.301861 | 0.305380 | 0.000000 | 1.000000 | -100.000000 | 0.000000 | 0.000000 |

ModelMetricsBinomialGLM: stackedensemble

\*\* Reported on cross-validation data. \*\*

MSE: 0.13380359504990866

RMSE: 0.3657917372630342

LogLoss: 0.40513002313124813

Null degrees of freedom: 18027

Residual degrees of freedom: 18021

Null deviance: 21973.615935551534

Residual deviance: 14607.368114020283

AIC: 14621.368114020283

AUC: 0.86747107770566

AUCPR: 0.7217905216811624

Gini: 0.73494215541132

Confusion Matrix (Act/Pred) for max f1 @ threshold = 0.35604976499101815:

|  |  | **false** | **true** | **Error** | **Rate** |
| --- | --- | --- | --- | --- | --- |
| **0** | false | 10016.0 | 2635.0 | 0.2083 | (2635.0/12651.0) |
| **1** | true | 1241.0 | 4136.0 | 0.2308 | (1241.0/5377.0) |
| **2** | Total | 11257.0 | 6771.0 | 0.215 | (3876.0/18028.0) |

Maximum Metrics: Maximum metrics at their respective thresholds

|  | **metric** | **threshold** | **value** | **idx** |
| --- | --- | --- | --- | --- |
| **0** | max f1 | 0.356050 | 0.680935 | 224.0 |
| **1** | max f2 | 0.120672 | 0.791223 | 324.0 |
| **2** | max f0point5 | 0.524412 | 0.672153 | 157.0 |
| **3** | max accuracy | 0.524412 | 0.800588 | 157.0 |
| **4** | max precision | 0.981574 | 1.000000 | 0.0 |
| **5** | max recall | 0.011920 | 1.000000 | 389.0 |
| **6** | max specificity | 0.981574 | 1.000000 | 0.0 |
| **7** | max absolute\_mcc | 0.367843 | 0.530751 | 219.0 |
| **8** | max min\_per\_class\_accuracy | 0.342223 | 0.780808 | 230.0 |
| **9** | max mean\_per\_class\_accuracy | 0.275598 | 0.781794 | 257.0 |
| **10** | max tns | 0.981574 | 12651.000000 | 0.0 |
| **11** | max fns | 0.981574 | 5376.000000 | 0.0 |
| **12** | max fps | 0.003425 | 12651.000000 | 399.0 |
| **13** | max tps | 0.011920 | 5377.000000 | 389.0 |
| **14** | max tnr | 0.981574 | 1.000000 | 0.0 |
| **15** | max fnr | 0.981574 | 0.999814 | 0.0 |
| **16** | max fpr | 0.003425 | 1.000000 | 399.0 |
| **17** | max tpr | 0.011920 | 1.000000 | 389.0 |

Gains/Lift Table: Avg response rate: 29.83 %, avg score: 29.83 %

|  | **group** | **cumulative\_data\_fraction** | **lower\_threshold** | **lift** | **cumulative\_lift** | **response\_rate** | **score** | **cumulative\_response\_rate** | **cumulative\_score** | **capture\_rate** | **cumulative\_capture\_rate** | **gain** | **cumulative\_gain** | **kolmogorov\_smirnov** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | 1 | 0.010040 | 0.909022 | 3.130514 | 3.130514 | 0.933702 | 0.933374 | 0.933702 | 0.933374 | 0.031430 | 0.031430 | 213.051394 | 213.051394 | 0.030482 |
| **1** | 2 | 0.020024 | 0.885657 | 3.054772 | 3.092748 | 0.911111 | 0.896438 | 0.922438 | 0.914957 | 0.030500 | 0.061930 | 205.477238 | 209.274807 | 0.059717 |
| **2** | 3 | 0.030009 | 0.859976 | 2.943012 | 3.042928 | 0.877778 | 0.872478 | 0.907579 | 0.900824 | 0.029384 | 0.091315 | 194.301242 | 204.292844 | 0.087363 |
| **3** | 4 | 0.040049 | 0.841492 | 3.019371 | 3.037023 | 0.900552 | 0.850637 | 0.905817 | 0.888242 | 0.030314 | 0.121629 | 201.937144 | 203.702288 | 0.116254 |
| **4** | 5 | 0.050033 | 0.821851 | 2.663613 | 2.962506 | 0.794444 | 0.831180 | 0.883592 | 0.876855 | 0.026595 | 0.148224 | 166.361251 | 196.250640 | 0.139924 |
| **5** | 6 | 0.100011 | 0.736056 | 2.563905 | 2.763316 | 0.764706 | 0.777556 | 0.824182 | 0.827233 | 0.128138 | 0.276362 | 156.390509 | 176.331628 | 0.251305 |
| **6** | 7 | 0.150044 | 0.660804 | 2.338038 | 2.621505 | 0.697339 | 0.697129 | 0.781885 | 0.783849 | 0.116980 | 0.393342 | 133.803830 | 162.150455 | 0.346705 |
| **7** | 8 | 0.200022 | 0.586668 | 1.975956 | 2.460207 | 0.589345 | 0.623198 | 0.733777 | 0.743709 | 0.098754 | 0.492096 | 97.595588 | 146.020689 | 0.416213 |
| **8** | 9 | 0.300033 | 0.449115 | 1.729397 | 2.216604 | 0.515807 | 0.517508 | 0.661120 | 0.668308 | 0.172959 | 0.665055 | 72.939713 | 121.660364 | 0.520165 |
| **9** | 10 | 0.399989 | 0.326906 | 1.294977 | 1.986293 | 0.386238 | 0.386662 | 0.592428 | 0.597926 | 0.129440 | 0.794495 | 29.497673 | 98.629277 | 0.562181 |
| **10** | 11 | 0.500000 | 0.215317 | 0.942800 | 1.777571 | 0.281198 | 0.270164 | 0.530175 | 0.532366 | 0.094290 | 0.888786 | -5.719963 | 77.757114 | 0.554029 |
| **11** | 12 | 0.600011 | 0.127478 | 0.615517 | 1.583877 | 0.183583 | 0.168450 | 0.472405 | 0.471708 | 0.061558 | 0.950344 | -38.448339 | 58.387748 | 0.499233 |
| **12** | 13 | 0.699967 | 0.060519 | 0.353514 | 1.408181 | 0.105438 | 0.091542 | 0.420002 | 0.417420 | 0.035336 | 0.985680 | -64.648624 | 40.818088 | 0.407148 |
| **13** | 14 | 0.799978 | 0.023126 | 0.132029 | 1.248640 | 0.039379 | 0.039266 | 0.372417 | 0.370144 | 0.013204 | 0.998884 | -86.797076 | 24.863980 | 0.283447 |
| **14** | 15 | 0.899989 | 0.009908 | 0.011157 | 1.111125 | 0.003328 | 0.015264 | 0.331402 | 0.330708 | 0.001116 | 1.000000 | -98.884260 | 11.112481 | 0.142518 |
| **15** | 16 | 1.000000 | 0.002580 | 0.000000 | 1.000000 | 0.000000 | 0.006593 | 0.298258 | 0.298293 | 0.000000 | 1.000000 | -100.000000 | 0.000000 | 0.000000 |

Out[25]:

<bound method H2OBinomialModel.confusion\_matrix of >