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| --- | --- |
| Naïve Bayes | === Run information ===  Scheme: weka.classifiers.bayes.NaiveBayes  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  Naive Bayes Classifier  Class  Attribute No Yes  (0.61) (0.39)  ===================================  M107  mean 0.0006 0.0006  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  M190  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  S  mean 0.7916 53.7028  std. dev. 13.2467 115.7616  weight sum 518358 326444  precision 4.5203 4.5203  M104  mean 0.0001 0.0001  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  G28  mean 0.0001 0.0001  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  F  mean 674.0587 2172.9505  std. dev. 1507.5041 3683.9206  weight sum 518358 326444  precision 237.9483 237.9483  G1  mean 0.9743 0.9745  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  Z  mean 11.0583 15.4741  std. dev. 23.5659 35.2832  weight sum 518358 326444  precision 0.0576 0.0576  M109  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  G21  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  G90  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  M82  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  E  mean 23.2252 200.087  std. dev. 80.7799 390.545  weight sum 518358 326444  precision 0.0126 0.0126  G92  mean 0.021 0.0208  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  X  mean 93.838 124.0852  std. dev. 36.2052 76.5003  weight sum 518358 326444  precision 0.0061 0.0061  Y  mean 93.2391 123.4942  std. dev. 31.5636 74.4121  weight sum 518358 326444  precision 0.0074 0.0074  M140  mean 0.0001 0.0001  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  M106  mean 0.0035 0.0036  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  M84  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  M220  mean 0 0  std. dev. 0.1667 0.1667  weight sum 518358 326444  precision 1 1  Time taken to build model: 1.95 seconds  === Evaluation on test split ===  Time taken to test model on training split: 3.37 seconds  === Summary ===  Correctly Classified Instances 263517 91.7433 %  Incorrectly Classified Instances 23716 8.2567 %  Kappa statistic 0.8224  Mean absolute error 0.0974  Root mean squared error 0.2768  Relative absolute error 20.5493 %  Root relative squared error 56.8472 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  0.966 0.159 0.906 0.966 0.935 0.826 0.967 0.982 No  0.841 0.034 0.939 0.841 0.887 0.826 0.968 0.935 Yes  Weighted Avg. 0.917 0.111 0.919 0.917 0.916 0.826 0.967 0.964  === Confusion Matrix ===  a b <-- classified as  170252 6037 | a = No  17679 93265 | b = Yes |
| Logistic Regression | === Run information ===  Scheme: weka.classifiers.functions.Logistic -R 1.0E-8 -M -1 -num-decimal-places 4  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  Logistic Regression with ridge parameter of 1.0E-8  Coefficients...  Class  Variable No  ====================  M107 -4.4818  M190 -1.99  S -0.0422  M104 1.962  G28 -4.4598  F -0.0008  G1 3.0121  Z -0.0508  M109 4.2358  G21 -3.7412  G90 -4.7873  M82 -4.7567  E -0.008  G92 -4.2476  X -0.0325  Y -0.0346  M140 -3.1798  M106 4.3533  M84 -3.6453  M220 -2.8213  Intercept 8.2919  Odds Ratios...  Class  Variable No  ====================  M107 0.0113  M190 0.1367  S 0.9587  M104 7.1132  G28 0.0116  F 0.9992  G1 20.3295  Z 0.9505  M109 69.1143  G21 0.0237  G90 0.0083  M82 0.0086  E 0.992  G92 0.0143  X 0.968  Y 0.966  M140 0.0416  M106 77.733  M84 0.0261  M220 0.0595  Time taken to build model: 94.86 seconds  === Evaluation on test split ===  Time taken to test model on training split: 1.15 seconds  === Summary ===  Correctly Classified Instances 262871 91.5184 %  Incorrectly Classified Instances 24362 8.4816 %  Kappa statistic 0.8213  Mean absolute error 0.1307  Root mean squared error 0.2538  Relative absolute error 27.5699 %  Root relative squared error 52.1257 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  0.929 0.106 0.933 0.929 0.931 0.821 0.969 0.982 No  0.894 0.071 0.888 0.894 0.891 0.821 0.969 0.947 Yes  Weighted Avg. 0.915 0.093 0.915 0.915 0.915 0.821 0.969 0.968  === Confusion Matrix ===  a b <-- classified as  163726 12563 | a = No  11799 99145 | b = Yes |
| MLP | === Run information ===  Scheme: weka.classifiers.functions.MultilayerPerceptron -L 0.3 -M 0.2 -N 500 -V 0 -S 0 -E 20 -H a  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  Sigmoid Node 0  Inputs Weights  Threshold -54.9063177348517  Node 2 -7.2253737493357875  Node 3 7.75370046496201  Node 4 9.880673993290847  Node 5 -2.486513823037224  Node 6 -2.217530623763124  Node 7 11.335961221636325  Node 8 -1.8235259436345568  Node 9 28.347185692605876  Node 10 -13.111760792805368  Node 11 19.008726349796014  Node 12 -27.920455618003352  Sigmoid Node 1  Inputs Weights  Threshold 54.906683722595034  Node 2 7.224890070634405  Node 3 -7.754140368839117  Node 4 -9.88068510026252  Node 5 2.4796334930132553  Node 6 2.221999727239808  Node 7 -11.335508053953097  Node 8 1.8620886285895224  Node 9 -28.3475463519089  Node 10 13.111507236228984  Node 11 -19.009072414685257  Node 12 27.920819032936198  Sigmoid Node 2  Inputs Weights  Threshold 3.180460046801469  Attrib M107 -3.705792067549506  Attrib M190 -2.5515403715167264  Attrib S -2.1332744243660913  Attrib M104 -2.4843781472517024  Attrib G28 -1.8129663577832322  Attrib F -0.4391931534574337  Attrib G1 -1.7089695180281592  Attrib Z 77.36741046719904  Attrib M109 -2.445126506663382  Attrib G21 -3.145358494817599  Attrib G90 -1.5943717851776802  Attrib M82 -2.281700835544489  Attrib E -0.4844624566066574  Attrib G92 -5.513753598715925  Attrib X -9.275690927982819  Attrib Y 0.24557522821553726  Attrib M140 -2.294901876296229  Attrib M106 -2.656508425961922  Attrib M84 -3.151551796775704  Attrib M220 -3.2385182894064557  Sigmoid Node 3  Inputs Weights  Threshold -5.127186579107016  Attrib M107 3.708680947435884  Attrib M190 4.670179007973511  Attrib S -0.25971705623132  Attrib M104 4.898906016458563  Attrib G28 4.390615439278646  Attrib F -0.262460074802256  Attrib G1 3.398921375836902  Attrib Z -107.95759706019273  Attrib M109 4.572715979549093  Attrib G21 5.0998829793897436  Attrib G90 4.110908673160289  Attrib M82 4.613813057243829  Attrib E -0.9033141392818211  Attrib G92 3.398492713421221  Attrib X 0.0186713618104741  Attrib Y 0.4847277152110195  Attrib M140 4.519218892890864  Attrib M106 3.6873790488806995  Attrib M84 5.072849091710503  Attrib M220 5.128675284690467  Sigmoid Node 4  Inputs Weights  Threshold -2.0731779839360445  Attrib M107 1.1966427481502069  Attrib M190 1.7892364024237162  Attrib S -17.244418405880104  Attrib M104 1.7039862263111205  Attrib G28 1.3293736781445022  Attrib F -3.550938287254609  Attrib G1 8.039899496888722  Attrib Z 8.794735821234465  Attrib M109 1.7970865522502282  Attrib G21 1.9613558214971614  Attrib G90 1.598757304170888  Attrib M82 1.588774578701917  Attrib E 3.3215242086938184  Attrib G92 1.0204608284170997  Attrib X -144.40146498008178  Attrib Y -0.9092794588914782  Attrib M140 1.4464388606862606  Attrib M106 -2.2252231816670154  Attrib M84 1.8541026060867607  Attrib M220 2.0951282473877653  Sigmoid Node 5  Inputs Weights  Threshold 0.2357214197433678  Attrib M107 -0.21207609566454277  Attrib M190 0.18284318616277295  Attrib S -0.5370132428834532  Attrib M104 0.17550025782711506  Attrib G28 0.44030443939730374  Attrib F -7.606412043280121  Attrib G1 -0.7129725154924303  Attrib Z 24.314051871651  Attrib M109 0.09583079636389345  Attrib G21 -0.23076900868496253  Attrib G90 0.31966322874732933  Attrib M82 0.24346886894778072  Attrib E 0.5461135917153228  Attrib G92 -1.774025641113729  Attrib X -2.7459627460775002  Attrib Y -1.760156295651871  Attrib M140 0.2549025669690388  Attrib M106 -0.5547667176438058  Attrib M84 -0.15710187431249714  Attrib M220 -0.21551074034309728  Sigmoid Node 6  Inputs Weights  Threshold 0.22405966534053007  Attrib M107 -0.013984793437631772  Attrib M190 0.13274133306744199  Attrib S -0.7115115689781558  Attrib M104 0.186007511586678  Attrib G28 0.5035704286405224  Attrib F -5.296557911420218  Attrib G1 -0.8162240658595002  Attrib Z 20.89476492596632  Attrib M109 0.04341502885979132  Attrib G21 -0.19215264862361783  Attrib G90 0.3163193166012704  Attrib M82 0.2563561176198382  Attrib E -0.2415915315074604  Attrib G92 -1.729099057924977  Attrib X -1.9967681650739648  Attrib Y -1.2616637571115108  Attrib M140 0.27585584726516943  Attrib M106 -0.9221441998565343  Attrib M84 -0.17549970636152237  Attrib M220 -0.21651051779290978  Sigmoid Node 7  Inputs Weights  Threshold -6.490406486244994  Attrib M107 6.515623707882824  Attrib M190 5.3105091744667305  Attrib S 2.062533873174299  Attrib M104 5.299995955420301  Attrib G28 4.2354157199143065  Attrib F -0.34801531008591347  Attrib G1 6.393479846875511  Attrib Z -132.4381058096087  Attrib M109 5.286835759217801  Attrib G21 6.444811622378265  Attrib G90 3.951528477523643  Attrib M82 4.954792397422267  Attrib E -1.2752343681906984  Attrib G92 5.908383356841665  Attrib X -0.21901561902051772  Attrib Y 0.24564166915348637  Attrib M140 4.934920160638358  Attrib M106 5.319112851634508  Attrib M84 6.468248740561058  Attrib M220 6.501058813349972  Sigmoid Node 8  Inputs Weights  Threshold 0.20351740569279525  Attrib M107 -0.4012805099360611  Attrib M190 0.026401801711775457  Attrib S -0.17154518533372498  Attrib M104 0.10318541373631832  Attrib G28 0.3919652040108727  Attrib F -1.002638320527886  Attrib G1 -1.0536462481865456  Attrib Z 12.599201915499686  Attrib M109 0.05297856717155379  Attrib G21 -0.18722465569980248  Attrib G90 0.3184695923571764  Attrib M82 0.1622796290619551  Attrib E -1.4463688197143008  Attrib G92 -0.9393124069336499  Attrib X -0.666544982295492  Attrib Y -0.11687743468604675  Attrib M140 0.2250525356019381  Attrib M106 -0.6941064932756769  Attrib M84 -0.14347189255448584  Attrib M220 -0.14181873844791365  Sigmoid Node 9  Inputs Weights  Threshold -2.060234116627914  Attrib M107 0.1624128054670844  Attrib M190 2.0061338069937875  Attrib S -27.323733825478314  Attrib M104 1.656437688871878  Attrib G28 0.9672269583277541  Attrib F -7.900603836793032  Attrib G1 6.389958449233916  Attrib Z 11.699588554183284  Attrib M109 2.101489928630648  Attrib G21 1.561565835416782  Attrib G90 1.5437821589302334  Attrib M82 1.340198300639754  Attrib E 0.6838362605059752  Attrib G92 -2.2456957129533515  Attrib X 5.398168497419608  Attrib Y -150.63945398744931  Attrib M140 1.515369850897757  Attrib M106 4.3945187100058405  Attrib M84 1.6731271887685593  Attrib M220 1.8636942276878024  Sigmoid Node 10  Inputs Weights  Threshold 4.344279388287943  Attrib M107 -3.718880716126337  Attrib M190 -3.793824905197982  Attrib S 0.3459725196724823  Attrib M104 -3.642551388522714  Attrib G28 -3.4486789073181403  Attrib F -0.18847964048611646  Attrib G1 -3.4175246034102824  Attrib Z 93.90349969156009  Attrib M109 -3.657150059661758  Attrib G21 -4.307468926262406  Attrib G90 -3.16180798704604  Attrib M82 -3.809467097013815  Attrib E -1.758766459656239  Attrib G92 -3.300057232214649  Attrib X 1.0855925870572891  Attrib Y -0.08402116969969711  Attrib M140 -3.594020425289326  Attrib M106 -3.7634398496160775  Attrib M84 -4.353099955448286  Attrib M220 -4.353098150590404  Sigmoid Node 11  Inputs Weights  Threshold -4.07656974537732  Attrib M107 2.0539792239349532  Attrib M190 4.104078720285804  Attrib S -30.065845941266947  Attrib M104 4.083914423686243  Attrib G28 3.3098188862450373  Attrib F -23.61329890732439  Attrib G1 7.579408612185879  Attrib Z 58.521165454881675  Attrib M109 4.163719965180301  Attrib G21 3.2770793694154907  Attrib G90 3.410443643692157  Attrib M82 3.4105991595862943  Attrib E -35.44105822080448  Attrib G92 -0.15520686969924388  Attrib X -98.67255950423146  Attrib Y -2.147999870836345  Attrib M140 2.2337069838962957  Attrib M106 3.8299234081654165  Attrib M84 3.9645659906279263  Attrib M220 4.057573261338577  Sigmoid Node 12  Inputs Weights  Threshold 15.965041730523154  Attrib M107 -12.653013268960404  Attrib M190 -15.975073387179417  Attrib S 119.88203986134889  Attrib M104 -12.900797681704095  Attrib G28 -12.805252699816386  Attrib F 98.26232959802596  Attrib G1 -11.752383862681304  Attrib Z -46.89110418442302  Attrib M109 -17.209802586945862  Attrib G21 -12.267634699078753  Attrib G90 -12.999070969417641  Attrib M82 -11.508472171215011  Attrib E 133.81621988690677  Attrib G92 -9.201294498302271  Attrib X -0.707706166705328  Attrib Y -2.706330877800173  Attrib M140 -12.772268317512967  Attrib M106 -21.094466672510425  Attrib M84 -12.890295114032144  Attrib M220 -15.995754312115345  Class No  Input  Node 0  Class Yes  Input  Node 1  Time taken to build model: 1765.17 seconds  === Evaluation on test split ===  Time taken to test model on training split: 1.46 seconds  === Summary ===  Correctly Classified Instances 287130 99.9641 %  Incorrectly Classified Instances 103 0.0359 %  Kappa statistic 0.9992  Mean absolute error 0.001  Root mean squared error 0.0183  Relative absolute error 0.2168 %  Root relative squared error 3.762 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 0.999 1.000 1.000 No  1.000 0.000 0.999 1.000 1.000 0.999 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 0.999 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176202 87 | a = No  16 110928 | b = Yes |
| AdaBoostM1 | === Run information ===  Scheme: weka.classifiers.meta.AdaBoostM1 -P 100 -S 1 -I 10 -W weka.classifiers.trees.DecisionStump  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  AdaBoostM1: Base classifiers and their weights:  Decision Stump  Classifications  E <= 1000.78522 : No  E > 1000.78522 : Yes  E is missing : No  Class distributions  E <= 1000.78522  No Yes  0.6584179921196832 0.34158200788031673  E > 1000.78522  No Yes  0.0 1.0  E is missing  No Yes  0.613585195110807 0.386414804889193  Weight: 0.76  Decision Stump  Classifications  S <= 278.0 : No  S > 278.0 : Yes  S is missing : Yes  Class distributions  S <= 278.0  No Yes  0.5034088807872771 0.49659111921272286  S > 278.0  No Yes  -1.0613273549567199E-16 1.0000000000000002  S is missing  No Yes  0.4500557405824798 0.5499442594175202  Weight: 0.23  Decision Stump  Classifications  X <= 180.99450000000002 : Yes  X > 180.99450000000002 : Yes  X is missing : Yes  Class distributions  X <= 180.99450000000002  No Yes  0.4568392836517201 0.54316071634828  X > 180.99450000000002  No Yes  -1.9288610619800614E-17 1.0  X is missing  No Yes  0.4046976712915033 0.5953023287084968  Weight: 0.39  Decision Stump  Classifications  X <= 180.99450000000002 : No  X > 180.99450000000002 : Yes  X is missing : Yes  Class distributions  X <= 180.99450000000002  No Yes  0.5530138636154207 0.4469861363845794  X > 180.99450000000002  No Yes  3.6076553144598535E-16 0.9999999999999997  X is missing  No Yes  0.499999999996801 0.500000000003199  Weight: 0.39  Decision Stump  Classifications  Y <= 180.99450000000002 : Yes  Y > 180.99450000000002 : Yes  Y is missing : Yes  Class distributions  Y <= 180.99450000000002  No Yes  0.47596929256324016 0.5240307074367598  Y > 180.99450000000002  No Yes  -2.4690339719669665E-16 1.0000000000000002  Y is missing  No Yes  0.41955915323733056 0.5804408467626695  Weight: 0.32  Decision Stump  Classifications  Y <= 180.99450000000002 : No  Y > 180.99450000000002 : Yes  Y is missing : Yes  Class distributions  Y <= 180.99450000000002  No Yes  0.5568497127730323 0.4431502872269677  Y > 180.99450000000002  No Yes  -2.442774765448558E-16 1.0000000000000002  Y is missing  No Yes  0.4999999999943753 0.5000000000056247  Weight: 0.41  Decision Stump  Classifications  Z <= 89.15 : Yes  Z > 89.15 : Yes  Z is missing : Yes  Class distributions  Z <= 89.15  No Yes  0.4761216304537736 0.5238783695462264  Z > 89.15  No Yes  6.2621713759132125E-6 0.999993737828624  Z is missing  No Yes  0.4152191695890801 0.58478083041092  Weight: 0.34  Decision Stump  Classifications  Z <= 89.15 : No  Z > 89.15 : Yes  Z is missing : Yes  Class distributions  Z <= 89.15  No Yes  0.561399657606977 0.4386003423930231  Z > 89.15  No Yes  8.81941076107306E-6 0.999991180589239  Z is missing  No Yes  0.4999999999988383 0.5000000000011617  Weight: 0.44  Decision Stump  Classifications  F <= 6900.5 : Yes  F > 6900.5 : Yes  F is missing : Yes  Class distributions  F <= 6900.5  No Yes  0.4741640374674722 0.5258359625325278  F > 6900.5  No Yes  -2.6782959339780603E-17 1.0  F is missing  No Yes  0.4102611087846365 0.5897388912153636  Weight: 0.36  Decision Stump  Classifications  F <= 6900.5 : No  F > 6900.5 : Yes  F is missing : No  Class distributions  F <= 6900.5  No Yes  0.5645011095566388 0.43549889044336115  F > 6900.5  No Yes  1.387512931753765E-16 0.9999999999999999  F is missing  No Yes  0.5000000000010856 0.4999999999989144  Weight: 0.47  Number of performed Iterations: 10  Time taken to build model: 24.8 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.32 seconds  === Summary ===  Correctly Classified Instances 196854 68.5346 %  Incorrectly Classified Instances 90379 31.4654 %  Kappa statistic 0.2183  Mean absolute error 0.3605  Root mean squared error 0.4066  Relative absolute error 76.029 %  Root relative squared error 83.5098 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.815 0.661 1.000 0.796 0.350 1.000 1.000 No  0.185 0.000 1.000 0.185 0.313 0.350 1.000 1.000 Yes  Weighted Avg. 0.685 0.500 0.792 0.685 0.609 0.350 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176289 0 | a = No  90379 20565 | b = Yes |
| LogitBoost | === Run information ===  Scheme: weka.classifiers.meta.LogitBoost -P 100 -L -1.7976931348623157E308 -H 1.0 -Z 3.0 -O 1 -E 1 -S 1 -I 10 -W weka.classifiers.trees.DecisionStump -batch-size  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  LogitBoost: Base classifiers and their weights:  Iteration 1  Class 1 (Drop=No)  Decision Stump  Classifications  E <= 1000.78522 : 0.6336719684787331  E > 1000.78522 : -2.0  E is missing : 0.4543407804432281  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 2  Class 1 (Drop=No)  Decision Stump  Classifications  S <= 278.0 : 0.20058830233079725  S > 278.0 : -2.8839914541985157  S is missing : -0.015431081526797794  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 3  Class 1 (Drop=No)  Decision Stump  Classifications  X <= 180.1585 : 0.21252213001145356  X > 180.1585 : -2.998303556391079  X is missing : -0.025987803413946294  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 4  Class 1 (Drop=No)  Decision Stump  Classifications  Y <= 180.99450000000002 : 0.2533236020750814  Y > 180.99450000000002 : -2.998085589913182  Y is missing : -0.02399398385259287  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 5  Class 1 (Drop=No)  Decision Stump  Classifications  Z <= 89.15 : 0.3012858308773572  Z > 89.15 : -2.998328514859085  Z is missing : -0.027494333313456486  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 6  Class 1 (Drop=No)  Decision Stump  Classifications  F <= 6900.5 : 0.3216874394643221  F > 6900.5 : -2.8892560794271787  F is missing : -0.042781086418765886  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 7  Class 1 (Drop=No)  Decision Stump  Classifications  E <= 1000.78522 : 0.08278606712591263  E > 1000.78522 : -1.4891896527854236  E is missing : -0.08301469002412637  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 8  Class 1 (Drop=No)  Decision Stump  Classifications  S <= 278.0 : 0.08746028008979244  S > 278.0 : -1.3388675053158028  S is missing : -0.05081791684624379  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 9  Class 1 (Drop=No)  Decision Stump  Classifications  X <= 180.99450000000002 : 0.10184177720964069  X > 180.99450000000002 : -1.327055812349453  X is missing : -0.04444312906400161  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Iteration 10  Class 1 (Drop=No)  Decision Stump  Classifications  Y <= 180.99450000000002 : 0.12129147705861787  Y > 180.99450000000002 : -1.347730486337612  Y is missing : -0.0468156858351817  Two-class case: second classifier predicts additive inverse of first classifier and is not explicitly computed.  Number of performed iterations: 10  Time taken to build model: 29.49 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.46 seconds  === Summary ===  Correctly Classified Instances 287229 99.9986 %  Incorrectly Classified Instances 4 0.0014 %  Kappa statistic 1  Mean absolute error 0.1155  Root mean squared error 0.1316  Relative absolute error 24.3481 %  Root relative squared error 27.0366 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176285 4 | a = No  0 110944 | b = Yes |
| meta.MultiClassClassifier | === Run information ===  Scheme: weka.classifiers.meta.MultiClassClassifier -M 0 -R 2.0 -S 1 -W weka.classifiers.functions.Logistic -- -R 1.0E-8 -M -1 -num-decimal-places 4  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  MultiClassClassifier  Classifier 1  Logistic Regression with ridge parameter of 1.0E-8  Coefficients...  Class  Variable No  ====================  M107 -4.4818  M190 -1.99  S -0.0422  M104 1.962  G28 -4.4598  F -0.0008  G1 3.0121  Z -0.0508  M109 4.2358  G21 -3.7412  G90 -4.7873  M82 -4.7567  E -0.008  G92 -4.2476  X -0.0325  Y -0.0346  M140 -3.1798  M106 4.3533  M84 -3.6453  M220 -2.8213  Intercept 8.2919  Odds Ratios...  Class  Variable No  ====================  M107 0.0113  M190 0.1367  S 0.9587  M104 7.1132  G28 0.0116  F 0.9992  G1 20.3295  Z 0.9505  M109 69.1143  G21 0.0237  G90 0.0083  M82 0.0086  E 0.992  G92 0.0143  X 0.968  Y 0.966  M140 0.0416  M106 77.733  M84 0.0261  M220 0.0595  Time taken to build model: 70.89 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.39 seconds  === Summary ===  Correctly Classified Instances 262871 91.5184 %  Incorrectly Classified Instances 24362 8.4816 %  Kappa statistic 0.8213  Mean absolute error 0.1307  Root mean squared error 0.2538  Relative absolute error 27.5699 %  Root relative squared error 52.1257 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  0.929 0.106 0.933 0.929 0.931 0.821 0.969 0.982 No  0.894 0.071 0.888 0.894 0.891 0.821 0.969 0.947 Yes  Weighted Avg. 0.915 0.093 0.915 0.915 0.915 0.821 0.969 0.968  === Confusion Matrix ===  a b <-- classified as  163726 12563 | a = No  11799 99145 | b = Yes |
| OneR | === Run information ===  Scheme: weka.classifiers.rules.OneR -B 6  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  E:  < 13.84176 -> No  < 13.842369999999999 -> Yes  < 14.042265 -> No  < 14.04458 -> Yes  < 14.24344 -> No  < 14.244795 -> Yes  < 14.39302 -> No  < 14.3951 -> Yes  < 24.489625 -> No  < 24.496765000000003 -> Yes  < 24.84082 -> No  < 24.85111 -> Yes  < 36.146035 -> No  < 36.15603 -> Yes  < 36.548395 -> No  < 36.55815 -> Yes  < 59.201505 -> No  < 59.225145 -> Yes  < 59.920515 -> No  < 59.93567 -> Yes  < 67.7576 -> No  < 67.77168 -> Yes  < 69.81433 -> No  < 69.826145 -> Yes  < 70.149895 -> No  < 70.170745 -> Yes  < 70.311635 -> No  < 70.327045 -> Yes  < 71.10797 -> No  < 71.14335 -> Yes  < 81.408125 -> No  < 81.42616000000001 -> Yes  < 101.00479999999999 -> No  < 101.032335 -> Yes  < 101.17459 -> No  < 101.20841 -> Yes  < 111.53202999999999 -> No  < 111.557265 -> Yes  < 111.70705000000001 -> No  < 111.718395 -> Yes  < 114.909625 -> No  < 114.97967 -> Yes  < 115.10499 -> No  < 115.20228 -> Yes  < 115.23377500000001 -> No  < 115.266605 -> Yes  < 115.776555 -> No  < 115.847575 -> Yes  < 122.575425 -> No  < 122.628015 -> Yes  < 149.258775 -> No  < 149.345 -> Yes  < 155.39821 -> No  < 155.604985 -> Yes  < 160.79594500000002 -> No  < 160.89709 -> Yes  < 160.957045 -> No  < 161.08716500000003 -> Yes  < 171.24968 -> No  < 171.451785 -> Yes  < 187.762355 -> No  < 187.91027 -> Yes  < 193.74296 -> No  < 193.98691000000002 -> Yes  < 194.53761500000002 -> No  < 194.86158999999998 -> Yes  < 197.91489 -> No  < 198.09047 -> Yes  < 198.55177 -> No  < 198.67434500000002 -> Yes  < 204.43301 -> No  < 204.64257 -> Yes  < 205.070475 -> No  < 205.285375 -> Yes  < 205.428335 -> No  < 205.571875 -> Yes  < 208.668315 -> No  < 208.91586 -> Yes  < 216.183255 -> No  < 216.40845 -> Yes  < 238.247915 -> No  < 238.427605 -> Yes  < 238.59273 -> No  < 238.796565 -> Yes  < 238.97042 -> No  < 239.177305 -> Yes  < 249.03796499999999 -> No  < 249.344715 -> Yes  < 249.94111500000002 -> No  < 250.105885 -> Yes  < 260.39327000000003 -> No  < 260.584965 -> Yes  < 282.49318 -> No  < 282.683495 -> Yes  < 282.826515 -> No  < 283.04268 -> Yes  < 293.072455 -> No  < 293.23415 -> Yes  < 293.6305 -> No  < 294.09527 -> Yes  < 326.66058 -> No  < 326.81336 -> Yes  < 326.93446 -> No  < 327.161925 -> Yes  < 337.422125 -> No  < 337.623625 -> Yes  < 338.00096499999995 -> No  < 338.109465 -> Yes  < 370.603285 -> No  < 370.91857 -> Yes  < 380.76853 -> No  < 380.98308 -> Yes  < 381.32375 -> No  < 381.50106 -> Yes  < 381.69055000000003 -> No  < 381.91092000000003 -> Yes  < 414.19912999999997 -> No  < 414.436375 -> Yes  < 424.50912 -> No  < 424.77096 -> Yes  < 424.96605 -> No  < 425.16794500000003 -> Yes  < 435.52711999999997 -> No  < 435.78555 -> Yes  < 1000.78522 -> No  >= 1000.78522 -> Yes  (576013/844802 instances correct)  Time taken to build model: 1.62 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.39 seconds  === Summary ===  Correctly Classified Instances 187233 65.1851 %  Incorrectly Classified Instances 100000 34.8149 %  Kappa statistic 0.1562  Mean absolute error 0.3481  Root mean squared error 0.59  Relative absolute error 73.4215 %  Root relative squared error 121.186 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  0.937 0.801 0.650 0.937 0.768 0.207 0.568 0.648 No  0.199 0.063 0.665 0.199 0.306 0.207 0.568 0.442 Yes  Weighted Avg. 0.652 0.516 0.656 0.652 0.589 0.207 0.568 0.568  === Confusion Matrix ===  a b <-- classified as  165136 11153 | a = No  88847 22097 | b = Yes |
| Decision Table | === Run information ===  Scheme: weka.classifiers.rules.DecisionTable -X 1 -S "weka.attributeSelection.BestFirst -D 1 -N 5"  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  Decision Table:  Number of training instances: 844802  Number of Rules : 97  Non matches covered by Majority class.  Best first.  Start set: no attributes  Search direction: forward  Stale search after 5 node expansions  Total number of subsets evaluated: 169  Merit of best subset found: 99.996  Evaluation (for feature selection): CV (leave one out)  Feature set: 3,6,8,13,15,16,21  Time taken to build model: 65.44 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.3 seconds  === Summary ===  Correctly Classified Instances 287213 99.993 %  Incorrectly Classified Instances 20 0.007 %  Kappa statistic 0.9999  Mean absolute error 0.0001  Root mean squared error 0.0063  Relative absolute error 0.0301 %  Root relative squared error 1.2941 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176286 3 | a = No  17 110927 | b = Yes |
| ZeroR | === Run information ===  Scheme: weka.classifiers.rules.ZeroR  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  ZeroR predicts class value: No  Time taken to build model: 0.05 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.14 seconds  === Summary ===  Correctly Classified Instances 176289 61.3749 %  Incorrectly Classified Instances 110944 38.6251 %  Kappa statistic 0  Mean absolute error 0.4742  Root mean squared error 0.4869  Relative absolute error 100 %  Root relative squared error 100 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 1.000 0.614 1.000 0.761 0.000 0.500 0.614 No  0.000 0.000 0.000 0.000 0.000 0.000 0.500 0.386 Yes  Weighted Avg. 0.614 0.614 0.377 0.614 0.467 0.000 0.500 0.526  === Confusion Matrix ===  a b <-- classified as  176289 0 | a = No  110944 0 | b = Yes |
| J48 Tree | === Run information ===  Scheme: weka.classifiers.trees.J48 -C 0.25 -M 2  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  J48 pruned tree  ------------------  E <= 1000.57044  | S <= 255  | | X <= 180.989  | | | Y <= 180.989  | | | | Z <= 88.2  | | | | | F <= 4800: No (518357.0)  | | | | | F > 4800: Yes (48816.0)  | | | | Z > 88.2: Yes (54254.0/1.0)  | | | Y > 180.989: Yes (54397.0)  | | X > 180.989: Yes (54469.0)  | S > 255: Yes (56985.0)  E > 1000.57044: Yes (57524.0)  Number of Leaves : 7  Size of the tree : 13  Time taken to build model: 17.11 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.22 seconds  === Summary ===  Correctly Classified Instances 287230 99.999 %  Incorrectly Classified Instances 3 0.001 %  Kappa statistic 1  Mean absolute error 0  Root mean squared error 0.0032  Relative absolute error 0.0026 %  Root relative squared error 0.6638 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176286 3 | a = No  0 110944 | b = Yes |
|  |  |
| RandomForest | === Run information ===  Scheme: weka.classifiers.trees.RandomForest -P 100 -I 100 -num-slots 1 -K 0 -M 1.0 -V 0.001 -S 1  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  RandomForest  Bagging with 100 iterations and base learner  weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1 -do-not-check-capabilities  Time taken to build model: 378.47 seconds  === Evaluation on test split ===  Time taken to test model on training split: 4.57 seconds  === Summary ===  Correctly Classified Instances 287230 99.999 %  Incorrectly Classified Instances 3 0.001 %  Kappa statistic 1  Mean absolute error 0.0001  Root mean squared error 0.0035  Relative absolute error 0.0259 %  Root relative squared error 0.7174 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176286 3 | a = No  0 110944 | b = Yes |
| randomTree | === Run information ===  Scheme: weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  RandomTree  ==========  Z < 89.15  | X < 180.99  | | E < 1000.79  | | | E < 109.24  | | | | S < 278  | | | | | Z < 0.01  | | | | | | F < 6900.5  | | | | | | | Y < 179.79 : No (375998/0)  | | | | | | | Y >= 179.79 : Yes (51678/0)  | | | | | | F >= 6900.5 : Yes (46499/0)  | | | | | Z >= 0.01  | | | | | | E < 0.76  | | | | | | | F < 6925.5  | | | | | | | | Z < 28.2  | | | | | | | | | X < 9.58  | | | | | | | | | | Z < 28.17  | | | | | | | | | | | F < 25 : No (1059/0)  | | | | | | | | | | | F >= 25  | | | | | | | | | | | | Y < 90.5 : No (1380/0)  | | | | | | | | | | | | Y >= 90.5 : Yes (160/0)  | | | | | | | | | | Z >= 28.17 : Yes (1/0)  | | | | | | | | | X >= 9.58 : No (2887/0)  | | | | | | | | Z >= 28.2  | | | | | | | | | Z < 44.81  | | | | | | | | | | X < 12.81  | | | | | | | | | | | Z < 44.77  | | | | | | | | | | | | G92 < 0.5  | | | | | | | | | | | | | M106 < 0.5  | | | | | | | | | | | | | | Y < 90.5 : No (166/0)  | | | | | | | | | | | | | | Y >= 90.5 : Yes (11/0)  | | | | | | | | | | | | | M106 >= 0.5 : No (25/0)  | | | | | | | | | | | | G92 >= 0.5 : No (479/0)  | | | | | | | | | | | Z >= 44.77  | | | | | | | | | | | | Y < 90.5 : No (1/0)  | | | | | | | | | | | | Y >= 90.5 : Yes (1/0)  | | | | | | | | | | X >= 12.81 : No (1519/0)  | | | | | | | | | Z >= 44.81 : No (6406/0)  | | | | | | | F >= 6925.5 : Yes (142/0)  | | | | | | E >= 0.76  | | | | | | | Y < 181.35 : No (105440/0)  | | | | | | | Y >= 181.35 : Yes (12/0)  | | | | S >= 278 : Yes (54422/0)  | | | E >= 109.24  | | | | Z < 0.01  | | | | | S < 150.5  | | | | | | F < 6600.5  | | | | | | | E < 748.9  | | | | | | | | E < 228.04  | | | | | | | | | X < 58.27  | | | | | | | | | | X < 14.53  | | | | | | | | | | | F < 1800  | | | | | | | | | | | | Y < 266.87 : No (16/0)  | | | | | | | | | | | | Y >= 266.87 : Yes (1/0)  | | | | | | | | | | | F >= 1800 : No (16/0)  | | | | | | | | | | X >= 14.53  | | | | | | | | | | | X < 30.43  | | | | | | | | | | | | E < 171.73  | | | | | | | | | | | | | Y < 181.57 : No (72/0)  | | | | | | | | | | | | | Y >= 181.57 : Yes (47/0)  | | | | | | | | | | | | E >= 171.73  | | | | | | | | | | | | | X < 25.58  | | | | | | | | | | | | | | X < 22.17  | | | | | | | | | | | | | | | F < 900  | | | | | | | | | | | | | | | | X < 21.28  | | | | | | | | | | | | | | | | | E < 218.05  | | | | | | | | | | | | | | | | | | E < 174.11 : No (2/0)  | | | | | | | | | | | | | | | | | | E >= 174.11  | | | | | | | | | | | | | | | | | | | Y < 181.08 : No (10/0)  | | | | | | | | | | | | | | | | | | | Y >= 181.08 : Yes (6/0)  | | | | | | | | | | | | | | | | | E >= 218.05 : No (8/0)  | | | | | | | | | | | | | | | | X >= 21.28 : Yes (2/0)  | | | | | | | | | | | | | | | F >= 900 : No (2/0)  | | | | | | | | | | | | | | X >= 22.17  | | | | | | | | | | | | | | | F < 900  | | | | | | | | | | | | | | | | E < 188  | | | | | | | | | | | | | | | | | E < 178.78  | | | | | | | | | | | | | | | | | | E < 176.43  | | | | | | | | | | | | | | | | | | | Y < 118.26 : No (22/0)  | | | | | | | | | | | | | | | | | | | Y >= 118.26 : Yes (3/0)  | | | | | | | | | | | | | | | | | | E >= 176.43  | | | | | | | | | | | | | | | | | | | E < 176.45 : Yes (1/0)  | | | | | | | | | | | | | | | | | | | E >= 176.45  | | | | | | | | | | | | | | | | | | | | X < 24.58 : No (2/0)  | | | | | | | | | | | | | | | | | | | | X >= 24.58  | | | | | | | | | | | | | | | | | | | | | Y < 123.14 : No (19/0)  | | | | | | | | | | | | | | | | | | | | | Y >= 123.14 : Yes (6/0)  | | | | | | | | | | | | | | | | | E >= 178.78  | | | | | | | | | | | | | | | | | | E < 180.02 : No (11/0)  | | | | | | | | | | | | | | | | | | E >= 180.02  | | | | | | | | | | | | | | | | | | | Y < 136.94 : No (91/0)  | | | | | | | | | | | | | | | | | | | Y >= 136.94 : Yes (11/0)  | | | | | | | | | | | | | | | | E >= 188  | | | | | | | | | | | | | | | | | Y < 181.02 : No (31/0)  | | | | | | | | | | | | | | | | | Y >= 181.02 : Yes (10/0)  | | | | | | | | | | | | | | | F >= 900 : No (1/0)  | | | | | | | | | | | | | X >= 25.58  | | | | | | | | | | | | | | E < 174  | | | | | | | | | | | | | | | X < 27.75 : No (8/0)  | | | | | | | | | | | | | | | X >= 27.75  | | | | | | | | | | | | | | | | Y < 133.44 : No (12/0)  | | | | | | | | | | | | | | | | Y >= 133.44 : Yes (3/0)  | | | | | | | | | | | | | | E >= 174  | | | | | | | | | | | | | | | X < 30.34  | | | | | | | | | | | | | | | | X < 26.25  | | | | | | | | | | | | | | | | | X < 25.85  | | | | | | | | | | | | | | | | | | Y < 233.55 : No (16/0)  | | | | | | | | | | | | | | | | | | Y >= 233.55 : Yes (9/0)  | | | | | | | | | | | | | | | | | X >= 25.85  | | | | | | | | | | | | | | | | | | E < 226.45  | | | | | | | | | | | | | | | | | | | E < 224.03  | | | | | | | | | | | | | | | | | | | | Y < 205.12 : No (33/0)  | | | | | | | | | | | | | | | | | | | | Y >= 205.12 : Yes (18/0)  | | | | | | | | | | | | | | | | | | | E >= 224.03 : Yes (2/0)  | | | | | | | | | | | | | | | | | | E >= 226.45 : No (3/0)  | | | | | | | | | | | | | | | | X >= 26.25  | | | | | | | | | | | | | | | | | X < 27.82 : No (4/0)  | | | | | | | | | | | | | | | | | X >= 27.82  | | | | | | | | | | | | | | | | | | E < 174.71 : Yes (1/0)  | | | | | | | | | | | | | | | | | | E >= 174.71  | | | | | | | | | | | | | | | | | | | X < 28.12 : Yes (1/0)  | | | | | | | | | | | | | | | | | | | X >= 28.12  | | | | | | | | | | | | | | | | | | | | E < 181.96  | | | | | | | | | | | | | | | | | | | | | E < 177.82  | | | | | | | | | | | | | | | | | | | | | | Y < 160.75 : No (2/0)  | | | | | | | | | | | | | | | | | | | | | | Y >= 160.75 : Yes (1/0)  | | | | | | | | | | | | | | | | | | | | | E >= 177.82 : No (6/0)  | | | | | | | | | | | | | | | | | | | | E >= 181.96  | | | | | | | | | | | | | | | | | | | | | X < 30 : No (2/0)  | | | | | | | | | | | | | | | | | | | | | X >= 30  | | | | | | | | | | | | | | | | | | | | | | Y < 211.43 : No (28/0)  | | | | | | | | | | | | | | | | | | | | | | Y >= 211.43 : Yes (17/0)  | | | | | | | | | | | | | | | X >= 30.34  | | | | | | | | | | | | | | | | E < 204.1 : No (2/0)  | | | | | | | | | | | | | | | | E >= 204.1  | | | | | | | | | | | | | | | | | Y < 245.13 : No (7/0)  | | | | | | | | | | | | | | | | | Y >= 245.13 : Yes (6/0)  | | | | | | | | | | | X >= 30.43  | | | | | | | | | | | | F < 900  | | | | | | | | | | | | | Y < 190.45 : No (553/0)  | | | | | | | | | | | | | Y >= 190.45 : Yes (125/0)  | | | | | | | | | | | | F >= 900  | | | | | | | | | | | | | F < 2100 : No (1/0)  | | | | | | | | | | | | | F >= 2100  | | | | | | | | | | | | | | Y < 154.61 : No (5/0)  | | | | | | | | | | | | | | Y >= 154.61 : Yes (1/0)  | | | | | | | | | X >= 58.27  | | | | | | | | | | Y < 181.86 : No (5365/0)  | | | | | | | | | | Y >= 181.86 : Yes (770/0)  | | | | | | | | E >= 228.04  | | | | | | | | | Y < 180.84 : No (6586/0)  | | | | | | | | | Y >= 180.84 : Yes (1338/0)  | | | | | | | E >= 748.9  | | | | | | | | X < 45.1  | | | | | | | | | Y < 90.5 : No (4/0)  | | | | | | | | | Y >= 90.5 : Yes (1/0)  | | | | | | | | X >= 45.1  | | | | | | | | | F < 2100  | | | | | | | | | | E < 752.06 : No (16/0)  | | | | | | | | | | E >= 752.06  | | | | | | | | | | | E < 752.26  | | | | | | | | | | | | Y < 181.3 : No (1/0)  | | | | | | | | | | | | Y >= 181.3 : Yes (1/0)  | | | | | | | | | | | E >= 752.26  | | | | | | | | | | | | X < 90.76  | | | | | | | | | | | | | Y < 190.5 : No (276/0)  | | | | | | | | | | | | | Y >= 190.5 : Yes (25/0)  | | | | | | | | | | | | X >= 90.76  | | | | | | | | | | | | | Y < 223.81 : No (727/0)  | | | | | | | | | | | | | Y >= 223.81 : Yes (77/0)  | | | | | | | | | F >= 2100 : No (3/0)  | | | | | | F >= 6600.5 : Yes (2187/0)  | | | | | S >= 150.5 : Yes (2538/0)  | | | | Z >= 0.01  | | | | | X < 174.9  | | | | | | F < 270  | | | | | | | X < 25.1  | | | | | | | | X < 20.19 : No (24/0)  | | | | | | | | X >= 20.19  | | | | | | | | | X < 22.1  | | | | | | | | | | Z < 7.05 : Yes (2/0)  | | | | | | | | | | Z >= 7.05 : No (5/0)  | | | | | | | | | X >= 22.1  | | | | | | | | | | Y < 99.53 : No (2/0)  | | | | | | | | | | Y >= 99.53 : Yes (8/0)  | | | | | | | X >= 25.1 : No (8862/0)  | | | | | | F >= 270 : No (126/0)  | | | | | X >= 174.9  | | | | | | Y < 181.14 : No (15/0)  | | | | | | Y >= 181.14 : Yes (9/0)  | | E >= 1000.79 : Yes (57430/0)  | X >= 180.99 : Yes (54513/0)  Z >= 89.15  | E < 2.5  | | Z < 99.91 : Yes (6622/0)  | | Z >= 99.91  | | | X < 29.39  | | | | F < 4200  | | | | | E < 2.46 : Yes (23/0)  | | | | | E >= 2.46  | | | | | | Z < 101.06 : No (1/0)  | | | | | | Z >= 101.06 : Yes (18/0)  | | | | F >= 4200 : Yes (110/0)  | | | X >= 29.39 : Yes (47/0)  | E >= 2.5 : Yes (47528/0)  Size of the tree : 205  Time taken to build model: 4.09 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.24 seconds  === Summary ===  Correctly Classified Instances 287221 99.9958 %  Incorrectly Classified Instances 12 0.0042 %  Kappa statistic 0.9999  Mean absolute error 0  Root mean squared error 0.0065  Relative absolute error 0.0088 %  Root relative squared error 1.3275 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176280 9 | a = No  3 110941 | b = Yes |
| RepTree | === Run information ===  Scheme: weka.classifiers.trees.REPTree -M 2 -V 0.001 -N 3 -S 1 -L -1 -I 0.0  Relation: All - Fixed Malicious  Instances: 844802  Attributes: 21  M107  M190  S  M104  G28  F  G1  Z  M109  G21  G90  M82  E  G92  X  Y  M140  M106  M84  M220  Drop  Test mode: split 66.0% train, remainder test  === Classifier model (full training set) ===  REPTree  ============  E < 1000.79  | S < 278  | | X < 180.99  | | | Y < 180.99  | | | | Z < 89.15  | | | | | F < 6900.5 : No (345571/0) [172786/0]  | | | | | F >= 6900.5 : Yes (32553/0) [16263/0]  | | | | Z >= 89.15 : Yes (36137/1) [18117/0]  | | | Y >= 180.99 : Yes (36296/0) [18101/0]  | | X >= 180.99 : Yes (36338/0) [18131/0]  | S >= 278 : Yes (37817/0) [19168/0]  E >= 1000.79 : Yes (38489/0) [19035/0]  Size of the tree : 13  Time taken to build model: 10.17 seconds  === Evaluation on test split ===  Time taken to test model on training split: 0.2 seconds  === Summary ===  Correctly Classified Instances 287230 99.999 %  Incorrectly Classified Instances 3 0.001 %  Kappa statistic 1  Mean absolute error 0  Root mean squared error 0.0032  Relative absolute error 0.0026 %  Root relative squared error 0.6638 %  Total Number of Instances 287233  === Detailed Accuracy By Class ===  TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 No  1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Yes  Weighted Avg. 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000  === Confusion Matrix ===  a b <-- classified as  176286 3 | a = No  0 110944 | b = Yes |
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