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Student ID : 100 140 8665

Training Phase Output

> Optimized
> tree= 0, node= 1, feature=15, thr= 21.57, gain=0.621424
> tree= 0, node= 2, feature= 4, thr= 41.18, gain=0.587628
> tree= 0, node= 3, feature=13, thr= 58.82, gain=0.697235
> tree= 0, node= 4, feature= 9, thr= 15.69, gain=0.670083
> tree= 0, node= 5, feature=10, thr= 39.22, gain=0.629044
> tree= 0, node= 6, feature= 0, thr= 35.29, gain=0.712500
> tree= 0, node= 7, feature= 8, thr= 56.86, gain=0.814218
> tree= 0, node= 8, feature=14, thr= 60.78, gain=0.475710
> tree= 0, node= 9, feature= 5, thr= 64.71, gain=0.620325
> tree= 0, node= 10, feature=14, thr= 37.25, gain=0.224713
> tree= 0, node= 11, feature= 3, thr= 90.20, gain=0.686759
> tree= 0, node= 12, feature=14, thr= 37.25, gain=0.281171
> tree= 0, node= 13, feature=10, thr= 29.41, gain=0.584898
> tree= 0, node= 14, feature=14, thr= 96.08, gain=0.737506
> tree= 0, node= 15, feature= 7, thr= 24.33, gain=0.205385
> tree= 0, node= 16, feature= 1, thr= 73.53, gain=0.027989
> tree= 0, node= 17, feature=-1, thr= -1.00, gain=-1.000000
> tree= 0, node= 18, feature=15, thr= 0.41, gain=0.188928
> tree= 0, node= 19, feature= 9, thr= 60.47, gain=0.530651
> tree= 0, node= 20, feature=12, thr= 30.06, gain=0.640257
> tree= 0, node= 21, feature= 8, thr= 34.59, gain=0.140904
> tree= 0, node= 22, feature= 6, thr= 72.55, gain=0.509615
> tree= 0, node= 23, feature= 7, thr= 77.10, gain=0.409412
> tree= 0, node= 24, feature= 1, thr= 84.51, gain=0.550957
> tree= 0, node= 25, feature=13, thr= 14.78, gain=0.131381
> tree= 0, node= 26, feature=15, thr= 31.18, gain=0.222560
> tree= 0, node= 27, feature= 9, thr= 19.61, gain=0.464511
> tree= 0, node= 28, feature=11, thr= 31.67, gain=0.157508
> tree= 0, node= 29, feature=13, thr= 71.06, gain=0.344859
> tree= 0, node= 30, feature= 2, thr= 54.90, gain=0.092930
> tree= 0, node= 31, feature= 9, thr= 58.82, gain=0.918296
> tree= 0, node= 32, feature=-1, thr= -1.00, gain=-1.000000
> tree= 0, node= 33, feature=-1, thr= -1.00, gain=-1.000000
> tree= 0, node= 36, feature= 7, thr= 66.47, gain=0.110097
> tree= 0, node= 37, feature=-1, thr= -1.00, gain=-1.000000
> tree= 0, node= 38, feature=14, thr= 25.49, gain=0.773333
> tree= 0, node= 39, feature= 0, thr= 39.22, gain=0.203813

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tree= 0, node= 40, feature= 3, thr= 96.71, gain=0.374672
tree= 0, node= 41, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 42, feature= 9, thr=  1.43, gain=0.077936
tree= 0, node= 43, feature= 6, thr= 68.14, gain=0.274080
tree= 0, node= 44, feature=14, thr= 96.08, gain=0.341335
tree= 0, node= 45, feature= 1, thr= 82.35, gain=0.324193
tree= 0, node= 46, feature= 2, thr= 88.59, gain=0.253482
tree= 0, node= 47, feature= 5, thr= 89.29, gain=0.811518
tree= 0, node= 48, feature= 8, thr= 76.47, gain=0.650022
tree= 0, node= 49, feature= 6, thr= 50.47, gain=0.757526
tree= 0, node= 50, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 51, feature= 3, thr= 87.45, gain=0.051386
tree= 0, node= 52, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 53, feature= 0, thr= 53.57, gain=0.129949
tree= 0, node= 54, feature=15, thr= 67.29, gain=0.265884
tree= 0, node= 55, feature=10, thr= 67.06, gain=0.773029
tree= 0, node= 56, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 57, feature=12, thr= 21.57, gain=0.159034
tree= 0, node= 58, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 59, feature= 5, thr= 54.41, gain=0.006884
tree= 0, node= 60, feature= 6, thr= 96.08, gain=0.024998
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tree= 0, node= 72, feature= 5, thr= 13.35, gain=0.035341
tree= 0, node= 73, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 76, feature= 7, thr= 71.86, gain=0.496889
tree= 0, node= 77, feature=10, thr= 60.78, gain=0.864204
tree= 0, node= 78, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 79, feature= 1, thr= 92.47, gain=0.078528
tree= 0, node= 80, feature= 5, thr= 68.63, gain=0.135036
tree= 0, node= 81, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 84, feature= 8, thr= 18.67, gain=0.368566
tree= 0, node= 85, feature= 7, thr= 73.02, gain=0.050120
tree= 0, node= 86, feature=12, thr= 55.47, gain=0.287642
tree= 0, node= 87, feature= 8, thr= 49.82, gain=0.208356
tree= 0, node= 88, feature= 1, thr= 39.18, gain=0.308576
tree= 0, node= 89, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 90, feature= 5, thr= 15.69, gain=0.106446
tree= 0, node= 91, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 92, feature= 0, thr= 78.43, gain=0.174910
tree= 0, node= 93, feature= 5, thr= 84.31, gain=0.901825
tree= 0, node= 94, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 95, feature= 6, thr= 70.59, gain=0.988057
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tree= 0, node= 96, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=106, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=107, feature=14, thr=  1.96, gain=0.057144
tree= 0, node=108, feature= 4, thr= 62.75, gain=0.149994
tree= 0, node=109, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=115, feature= 1, thr= 26.47, gain=0.028970
tree= 0, node=118, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=119, feature= 6, thr= 45.33, gain=0.097300
tree= 0, node=120, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=145, feature=13, thr=  6.08, gain=0.024501
tree= 0, node=152, feature=13, thr=  5.10, gain=0.465185
tree= 0, node=153, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=170, feature= 9, thr=  5.61, gain=0.007149
tree= 0, node=171, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=173, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=174, feature= 0, thr= 73.33, gain=0.054012
tree= 0, node=175, feature=11, thr=  9.06, gain=0.541116
tree= 0, node=176, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=177, feature= 7, thr= 67.06, gain=0.321696
tree= 0, node=180, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=181, feature= 0, thr= 60.78, gain=0.098830
tree= 0, node=184, feature= 9, thr= 18.55, gain=0.134335
tree= 0, node=185, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=186, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=187, feature= 1, thr= 79.29, gain=0.678954
tree= 0, node=190, feature= 4, thr= 48.04, gain=0.291818
tree= 0, node=191, feature=11, thr= 39.69, gain=0.517478
tree= 0, node=206, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=207, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=214, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=215, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=231, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=238, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=239, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=290, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=291, feature= 9, thr= 88.47, gain=0.008575
tree= 0, node=304, feature= 6, thr= 67.45, gain=0.250919
tree= 0, node=305, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=310, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=311, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=337, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=340, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=341, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=344, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=345, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=348, feature= 1, thr= 89.59, gain=0.025926
tree= 0, node=349, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=354, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=355, feature= 3, thr= 89.02, gain=0.028237
tree= 0, node=362, feature= 8, thr= 24.51, gain=0.021367
tree= 0, node=363, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=368, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=369, feature=14, thr= 52.94, gain=0.111623
tree= 0, node=374, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=375, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=380, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=381, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=382, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=383, feature= 2, thr= 45.71, gain=0.103275
tree= 0, node=582, feature= 7, thr= 17.69, gain=0.008314
tree= 0, node=583, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=608, feature= 1, thr= 81.37, gain=0.056120
tree= 0, node=609, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=696, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=697, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=710, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=711, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=724, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=725, feature=15, thr=  9.12, gain=0.021405
tree= 0, node=738, feature= 6, thr= 21.57, gain=0.053910
tree= 0, node=739, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=766, feature= 1, thr= 66.67, gain=0.077022
tree= 0, node=767, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1164, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1165, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1216, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1217, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1450, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1451, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1476, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1477, feature= 3, thr= 99.12, gain=0.041635
tree= 0, node=1532, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=1533, feature= 2, thr= 41.47, gain=0.067329
tree= 0, node=2954, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=2955, feature= 2, thr= 86.33, gain=0.018695
tree= 0, node=3066, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=3067, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=5910, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=5911, feature=-1, thr= -1.00, gain=-1.000000
```

- ➢ Randomized
  tree= 0, node= 1, feature= 7, thr= 47.06, gain=0.473234
  tree= 0, node= 2, feature= 6, thr= 23.53, gain=0.342295
  tree= 0, node= 3, feature=12, thr= 33.33, gain=0.125263
  tree= 0, node= 4, feature= 9, thr= 17.33, gain=0.758642
  tree= 0, node= 5, feature= 3, thr= 90.20, gain=0.721673
  tree= 0, node= 6, feature=12, thr= 18.12, gain=0.148542
  tree= 0, node= 7, feature=15, thr= 20.24, gain=0.183958
  tree= 0, node= 8, feature= 3, thr= 99.22, gain=0.079472
  tree= 0, node= 9, feature= 2, thr= 56.86, gain=0.223101
  tree= 0, node= 10, feature=15, thr= 1.96, gain=0.755290
  tree= 0, node= 11, feature= 4, thr= 39.22, gain=0.493044
  tree= 0, node= 12, feature= 4, thr= 92.16, gain=0.201499
  tree= 0, node= 13, feature=11, thr= 33.33, gain=0.376538
  tree= 0, node= 14, feature= 7, thr= 77.57, gain=0.461659
  tree= 0, node= 15, feature=15, thr= 47.76, gain=0.248058
  tree= 0, node= 16, feature= 1, thr= 97.06, gain=0.160580
  tree= 0, node= 17, feature=10, thr= 41.18, gain=0.645744
  tree= 0, node= 18, feature=11, thr= 61.18, gain=0.571571
  tree= 0, node= 19, feature=14, thr= 43.14, gain=0.378617
  tree= 0, node= 20, feature= 9, thr= 11.94, gain=0.105119
  tree= 0, node= 21, feature=13, thr= 51.69, gain=0.190659
  tree= 0, node= 22, feature= 1, thr= 99.04, gain=0.190134
  tree= 0, node= 23, feature= 1, thr= 79.73, gain=0.301565
  tree= 0, node= 24, feature= 5, thr= 66.27, gain=0.398073
  tree= 0, node= 25, feature= 1, thr= 77.41, gain=0.576599
  tree= 0, node= 26, feature= 8, thr= 87.29, gain=0.371152
  tree= 0, node= 27, feature=11, thr= 52.12, gain=0.261888
  tree= 0, node= 28, feature= 0, thr= 68.63, gain=0.386153
  tree= 0, node= 29, feature=11, thr= 39.25, gain=0.175481
  tree= 0, node= 30, feature=14, thr= 64.71, gain=0.730963
  tree= 0, node= 31, feature= 5, thr= 38.51, gain=0.791525
  tree= 0, node= 32, feature=-1, thr= -1.00, gain=-1.000000
  tree= 0, node= 33, feature=15, thr= 64.71, gain=0.397441
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  tree= 0, node= 35, feature=11, thr= 10.14, gain=0.258839
  tree= 0, node= 36, feature= 3, thr= 97.29, gain=0.112604
  tree= 0, node= 37, feature=11, thr= 70.20, gain=0.272627
  tree= 0, node= 38, feature= 3, thr= 77.10, gain=0.697765
  tree= 0, node= 39, feature=-1, thr= -1.00, gain=-1.000000
  tree= 0, node= 40, feature=-1, thr= -1.00, gain=-1.000000
  tree= 0, node= 41, feature=10, thr= 37.25, gain=0.022186
  tree= 0, node= 42, feature=-1, thr= -1.00, gain=-1.000000
  tree= 0, node= 43, feature= 7, thr= 3.37, gain=0.015368

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tree= 0, node= 44, feature= 1, thr= 76.41, gain=0.109160
tree= 0, node= 45, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 46, feature= 1, thr= 74.41, gain=0.054359
tree= 0, node= 47, feature=11, thr= 21.18, gain=0.082065
tree= 0, node= 48, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 49, feature= 8, thr= 50.29, gain=0.148882
tree= 0, node= 50, feature= 9, thr= 54.00, gain=0.164288
tree= 0, node= 51, feature= 9, thr= 37.41, gain=0.539998
tree= 0, node= 52, feature= 9, thr= 33.65, gain=0.348823
tree= 0, node= 53, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 54, feature= 1, thr= 85.12, gain=0.731832
tree= 0, node= 55, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 56, feature= 9, thr= 33.33, gain=0.410713
tree= 0, node= 57, feature=11, thr= 32.67, gain=0.434816
tree= 0, node= 58, feature=15, thr=  1.18, gain=0.319878
tree= 0, node= 59, feature= 1, thr= 72.55, gain=0.471897
tree= 0, node= 60, feature= 7, thr= 59.22, gain=0.582965
tree= 0, node= 61, feature=11, thr= 18.12, gain=0.098638
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tree= 0, node= 63, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 66, feature=10, thr= 34.71, gain=0.031433
tree= 0, node= 67, feature=13, thr= 58.43, gain=0.119381
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tree= 0, node= 73, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 74, feature= 8, thr= 52.94, gain=0.775513
tree= 0, node= 75, feature= 6, thr=  1.35, gain=0.120621
tree= 0, node= 76, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node= 83, feature= 6, thr= 70.20, gain=0.007045
tree= 0, node= 86, feature= 1, thr= 97.61, gain=0.020777
tree= 0, node= 87, feature=11, thr= 76.16, gain=0.824662
tree= 0, node= 88, feature=13, thr=  5.88, gain=0.373951
tree= 0, node= 89, feature=12, thr= 49.02, gain=0.101848
tree= 0, node= 92, feature= 1, thr= 71.12, gain=0.043746
tree= 0, node= 93, feature=12, thr= 45.10, gain=0.385868
tree= 0, node= 94, feature=11, thr=  1.24, gain=0.026117
tree= 0, node= 95, feature=10, thr= 41.18, gain=0.067012
tree= 0, node= 98, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 99, feature=14, thr= 25.49, gain=0.290127
tree= 0, node=100, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=101, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=102, feature=12, thr=  0.35, gain=0.049335
tree= 0, node=103, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=104, feature=15, thr= 13.65, gain=0.955511
tree= 0, node=105, feature= 1, thr= 86.06, gain=0.390410
tree= 0, node=108, feature= 3, thr= 90.39, gain=0.194731
tree= 0, node=109, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=112, feature= 1, thr= 74.06, gain=0.166118
tree= 0, node=113, feature=15, thr=  0.39, gain=0.163766
tree= 0, node=114, feature= 3, thr= 87.25, gain=0.083277
tree= 0, node=115, feature= 7, thr= 58.24, gain=0.263584
tree= 0, node=116, feature= 2, thr= 76.47, gain=0.585184
tree= 0, node=117, feature=13, thr=  0.16, gain=0.048533
tree= 0, node=118, feature=10, thr= 88.18, gain=0.073043
tree= 0, node=119, feature= 8, thr= 64.71, gain=0.238165
tree= 0, node=120, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=121, feature=10, thr= 58.82, gain=0.453665
tree= 0, node=122, feature=12, thr= 50.29, gain=0.040620
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tree= 0, node=173, feature= 9, thr= 17.84, gain=0.052451
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tree= 0, node=7554, feature= 8, thr= 97.88, gain=0.099962
tree= 0, node=7555, feature=11, thr= 51.43, gain=0.100587
tree= 0, node=11818, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=11819, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=11824, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=11825, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=12158, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=12159, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=12194, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=12195, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14416, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14417, feature=13, thr=  0.41, gain=0.019270
tree= 0, node=14518, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14519, feature= 5, thr= 83.29, gain=0.008275
tree= 0, node=14522, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14523, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14524, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14525, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14560, feature=10, thr= 94.35, gain=0.028766
tree= 0, node=14561, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=14572, feature=11, thr= 11.06, gain=0.040035
tree= 0, node=14573, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=15108, feature= 4, thr= 19.61, gain=0.040222
tree= 0, node=15109, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=15110, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=15111, feature= 3, thr= 63.27, gain=0.020574
tree= 0, node=28834, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=28835, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=29038, feature=14, thr= 39.22, gain=0.120681
tree= 0, node=29039, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=29120, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=29121, feature=-1, thr= -1.00, gain=-1.000000
```

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tree= 0, node=29144, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=29145, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=30216, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=30217, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=30222, feature= 5, thr= 75.12, gain=0.073154
tree= 0, node=30223, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=58076, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=58077, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=60444, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=60445, feature=-1, thr= -1.00, gain=-1.000000
```

➢ Forest3
tree= 0, node= 1, feature= 7, thr= 47.06, gain=0.473234
tree= 0, node= 2, feature= 6, thr= 23.53, gain=0.342295
tree= 0, node= 3, feature=12, thr= 33.33, gain=0.125263
tree= 0, node= 4, feature= 9, thr= 17.33, gain=0.758642
tree= 0, node= 5, feature= 3, thr= 90.20, gain=0.721673
tree= 0, node= 6, feature=12, thr= 18.12, gain=0.148542
tree= 0, node= 7, feature=15, thr= 20.24, gain=0.183958
tree= 0, node= 8, feature= 3, thr= 99.22, gain=0.079472
tree= 0, node= 9, feature= 2, thr= 56.86, gain=0.223101
tree= 0, node= 10, feature=15, thr= 1.96, gain=0.755290
tree= 0, node= 11, feature= 4, thr= 39.22, gain=0.493044
tree= 0, node= 12, feature= 4, thr= 92.16, gain=0.201499
tree= 0, node= 13, feature=11, thr= 33.33, gain=0.376538
tree= 0, node= 14, feature= 7, thr= 77.57, gain=0.461659
tree= 0, node= 15, feature=15, thr= 47.76, gain=0.248058
tree= 0, node= 16, feature= 1, thr= 97.06, gain=0.160580
tree= 0, node= 17, feature=10, thr= 41.18, gain=0.645744
tree= 0, node= 18, feature=11, thr= 61.18, gain=0.571571
tree= 0, node= 19, feature=14, thr= 43.14, gain=0.378617
tree= 0, node= 20, feature= 9, thr= 11.94, gain=0.105119
tree= 0, node= 21, feature=13, thr= 51.69, gain=0.190659
tree= 0, node= 22, feature= 1, thr= 99.04, gain=0.190134
tree= 0, node= 23, feature= 1, thr= 79.73, gain=0.301565
tree= 0, node= 24, feature= 5, thr= 66.27, gain=0.398073
tree= 0, node= 25, feature= 1, thr= 77.41, gain=0.576599
tree= 0, node= 26, feature= 8, thr= 87.29, gain=0.371152
tree= 0, node= 27, feature=11, thr= 52.12, gain=0.261888
tree= 0, node= 28, feature= 0, thr= 68.63, gain=0.386153
tree= 0, node= 29, feature=11, thr= 39.25, gain=0.175481
tree= 0, node= 30, feature=14, thr= 64.71, gain=0.730963
tree= 0, node= 31, feature= 5, thr= 38.51, gain=0.791525
tree= 0, node= 32, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 33, feature=15, thr= 64.71, gain=0.397441
tree= 0, node= 34, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 35, feature=11, thr= 10.14, gain=0.258839
tree= 0, node= 36, feature= 3, thr= 97.29, gain=0.112604
tree= 0, node= 37, feature=11, thr= 70.20, gain=0.272627
tree= 0, node= 38, feature= 3, thr= 77.10, gain=0.697765
tree= 0, node= 39, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 40, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 41, feature=10, thr= 37.25, gain=0.022186
tree= 0, node= 42, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 43, feature= 7, thr= 3.37, gain=0.015368

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tree= 0, node= 44, feature= 1, thr= 76.41, gain=0.109160
tree= 0, node= 45, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 46, feature= 1, thr= 74.41, gain=0.054359
tree= 0, node= 47, feature=11, thr= 21.18, gain=0.082065
tree= 0, node= 48, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 49, feature= 8, thr= 50.29, gain=0.148882
tree= 0, node= 50, feature= 9, thr= 54.00, gain=0.164288
tree= 0, node= 51, feature= 9, thr= 37.41, gain=0.539998
tree= 0, node= 52, feature= 9, thr= 33.65, gain=0.348823
tree= 0, node= 53, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 54, feature= 1, thr= 85.12, gain=0.731832
tree= 0, node= 55, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 56, feature= 9, thr= 33.33, gain=0.410713
tree= 0, node= 57, feature=11, thr= 32.67, gain=0.434816
tree= 0, node= 58, feature=15, thr=  1.18, gain=0.319878
tree= 0, node= 59, feature= 1, thr= 72.55, gain=0.471897
tree= 0, node= 60, feature= 7, thr= 59.22, gain=0.582965
tree= 0, node= 61, feature=11, thr= 18.12, gain=0.098638
tree= 0, node= 62, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 63, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 66, feature=10, thr= 34.71, gain=0.031433
tree= 0, node= 67, feature=13, thr= 58.43, gain=0.119381
tree= 0, node= 70, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 71, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 72, feature= 6, thr=  8.12, gain=0.105841
tree= 0, node= 73, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 74, feature= 8, thr= 52.94, gain=0.775513
tree= 0, node= 75, feature= 6, thr=  1.35, gain=0.120621
tree= 0, node= 76, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 77, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 82, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 83, feature= 6, thr= 70.20, gain=0.007045
tree= 0, node= 86, feature= 1, thr= 97.61, gain=0.020777
tree= 0, node= 87, feature=11, thr= 76.16, gain=0.824662
tree= 0, node= 88, feature=13, thr=  5.88, gain=0.373951
tree= 0, node= 89, feature=12, thr= 49.02, gain=0.101848
tree= 0, node= 92, feature= 1, thr= 71.12, gain=0.043746
tree= 0, node= 93, feature=12, thr= 45.10, gain=0.385868
tree= 0, node= 94, feature=11, thr=  1.24, gain=0.026117
tree= 0, node= 95, feature=10, thr= 41.18, gain=0.067012
tree= 0, node= 98, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node= 99, feature=14, thr= 25.49, gain=0.290127
tree= 0, node=100, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=101, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=102, feature=12, thr=  0.35, gain=0.049335
tree= 0, node=103, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=104, feature=15, thr= 13.65, gain=0.955511
tree= 0, node=105, feature= 1, thr= 86.06, gain=0.390410
tree= 0, node=108, feature= 3, thr= 90.39, gain=0.194731
tree= 0, node=109, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=112, feature= 1, thr= 74.06, gain=0.166118
tree= 0, node=113, feature=15, thr=  0.39, gain=0.163766
tree= 0, node=114, feature= 3, thr= 87.25, gain=0.083277
tree= 0, node=115, feature= 7, thr= 58.24, gain=0.263584
tree= 0, node=116, feature= 2, thr= 76.47, gain=0.585184
tree= 0, node=117, feature=13, thr=  0.16, gain=0.048533
tree= 0, node=118, feature=10, thr= 88.18, gain=0.073043
tree= 0, node=119, feature= 8, thr= 64.71, gain=0.238165
tree= 0, node=120, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=121, feature=10, thr= 58.82, gain=0.453665
tree= 0, node=122, feature=12, thr= 50.29, gain=0.040620
tree= 0, node=123, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=132, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=133, feature=12, thr= 70.67, gain=0.052936
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tree= 0, node=135, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=144, feature=12, thr= 98.00, gain=0.036416
tree= 0, node=145, feature= 2, thr= 42.06, gain=0.119980
tree= 0, node=148, feature= 7, thr=  2.06, gain=0.031374
tree= 0, node=149, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=150, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=151, feature=10, thr= 39.22, gain=0.530425
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tree= 0, node=167, feature= 2, thr= 41.00, gain=0.060299
tree= 0, node=172, feature= 8, thr= 62.75, gain=0.984200
tree= 0, node=173, feature= 9, thr= 17.84, gain=0.052451
tree= 0, node=174, feature= 4, thr= 54.90, gain=0.089913
tree= 0, node=175, feature=14, thr= 42.82, gain=0.045995
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tree= 0, node=178, feature= 7, thr=  0.84, gain=0.133040
tree= 0, node=179, feature= 9, thr= 30.59, gain=0.643639
tree= 0, node=184, feature=12, thr= 42.39, gain=0.149194
tree= 0, node=185, feature=15, thr= 18.39, gain=0.518736
tree= 0, node=186, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=187, feature=10, thr= 33.33, gain=0.249300
tree= 0, node=188, feature= 2, thr= 68.41, gain=0.074325
tree= 0, node=189, feature= 4, thr= 61.33, gain=0.174488
```

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tree= 0, node=190, feature=10, thr=  0.78, gain=0.017426
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tree= 0, node=198, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=199, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=204, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=205, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=208, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=209, feature= 5, thr= 97.02, gain=0.104797
tree= 0, node=210, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=211, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=216, feature= 5, thr= 91.18, gain=0.025559
tree= 0, node=217, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=224, feature=10, thr= 45.10, gain=0.036942
tree= 0, node=225, feature=11, thr= 20.27, gain=0.155618
tree= 0, node=226, feature= 3, thr= 96.39, gain=0.609281
tree= 0, node=227, feature= 4, thr= 54.90, gain=0.194408
tree= 0, node=228, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=230, feature= 5, thr= 73.41, gain=0.871418
tree= 0, node=231, feature=12, thr= 83.76, gain=0.029205
tree= 0, node=232, feature= 9, thr= 64.06, gain=0.264407
tree= 0, node=233, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=235, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=236, feature=12, thr= 88.35, gain=0.085385
tree= 0, node=237, feature=10, thr= 97.20, gain=0.090349
tree= 0, node=238, feature= 8, thr= 58.98, gain=0.106905
tree= 0, node=239, feature= 0, thr= 15.69, gain=0.792527
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tree= 0, node=243, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=244, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=245, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=291, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=296, feature=13, thr= 94.04, gain=0.556580
tree= 0, node=297, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=302, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=303, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=334, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=335, feature=-1, thr= -1.00, gain=-1.000000
```

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tree= 0, node=344, feature= 3, thr= 72.75, gain=0.133263
tree= 0, node=345, feature= 7, thr=  0.06, gain=0.000507
tree= 0, node=346, feature=14, thr= 78.43, gain=0.814828
tree= 0, node=347, feature=11, thr= 62.00, gain=0.147005
tree= 0, node=348, feature= 4, thr= 52.94, gain=0.142570
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tree= 0, node=350, feature= 2, thr= 46.12, gain=0.114204
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tree= 0, node=356, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=357, feature= 0, thr= 98.24, gain=0.025600
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tree= 0, node=368, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=374, feature=12, thr= 50.24, gain=0.089191
tree= 0, node=375, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=453, feature= 4, thr= 39.22, gain=0.229118
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tree= 0, node=458, feature= 3, thr= 99.14, gain=0.064140
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tree= 0, node=462, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=463, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=464, feature=10, thr= 60.78, gain=0.308923
tree= 0, node=465, feature=-1, thr= -1.00, gain=-1.000000
```

```
tree= 0, node=468, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=469, feature=11, thr= 22.41, gain=0.246450
tree= 0, node=472, feature=15, thr=  0.08, gain=0.000475
tree= 0, node=473, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=474, feature=14, thr= 60.78, gain=0.476801
tree= 0, node=475, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=476, feature= 2, thr= 74.51, gain=0.431454
tree= 0, node=477, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=478, feature= 9, thr= 82.65, gain=0.259458
tree= 0, node=479, feature= 4, thr= 41.18, gain=0.028633
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tree= 0, node=580, feature= 8, thr= 67.53, gain=0.119519
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tree= 0, node=593, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=689, feature= 5, thr= 43.18, gain=0.068564
tree= 0, node=690, feature= 8, thr= 76.29, gain=0.018136
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tree= 0, node=716, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=717, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=738, feature=14, thr= 99.02, gain=0.004498
tree= 0, node=739, feature=10, thr= 23.53, gain=0.612743
tree= 0, node=740, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=741, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=748, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=749, feature= 0, thr=  1.22, gain=0.060532
tree= 0, node=752, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=753, feature=12, thr= 48.65, gain=0.035364
tree= 0, node=756, feature=-1, thr= -1.00, gain=-1.000000
tree= 0, node=757, feature=-1, thr= -1.00, gain=-1.000000
```

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tree= 0, node=910, feature= 1, thr= 87.49, gain=0.065158
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tree= 0, node=1477, feature= 1, thr= 68.18, gain=0.043878
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tree= 0, node=1820, feature=14, thr= 41.18, gain=0.278171
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tree= 0, node=3035, feature=10, thr= 29.41, gain=0.421620
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tree= 0, node=3039, feature=11, thr=  3.12, gain=0.037169
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tree= 0, node=3622, feature=-1, thr= -1.00, gain=-1.000000
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tree= 0, node=3640, feature= 9, thr= 56.00, gain=0.045800
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tree= 0, node=7208, feature= 4, thr= 51.82, gain=0.065977
tree= 0, node=7209, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node= 34, feature= 5, thr= 47.06, gain=0.261627
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tree= 1, node= 88, feature=12, thr= 29.25, gain=0.047564
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tree= 1, node= 90, feature= 9, thr= 47.33, gain=0.952040
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tree= 1, node=170, feature= 9, thr=  9.41, gain=0.142536
tree= 1, node=171, feature= 3, thr= 63.25, gain=0.140076
tree= 1, node=172, feature=13, thr= 24.06, gain=0.047916
tree= 1, node=173, feature= 4, thr= 47.06, gain=0.122713
tree= 1, node=174, feature= 6, thr= 59.37, gain=0.307421
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tree= 1, node=177, feature=11, thr= 68.16, gain=0.292585
tree= 1, node=178, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node=185, feature= 3, thr= 65.53, gain=0.262865
tree= 1, node=186, feature= 4, thr= 47.06, gain=0.155052
tree= 1, node=187, feature=10, thr= 77.31, gain=0.140345
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tree= 1, node=288, feature= 3, thr= 67.59, gain=0.078360
tree= 1, node=289, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=296, feature= 5, thr= 37.53, gain=0.034591
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tree= 1, node=332, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node=340, feature= 2, thr= 13.00, gain=0.011932
tree= 1, node=341, feature= 6, thr= 41.29, gain=0.173374
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tree= 1, node=355, feature= 0, thr= 28.63, gain=0.041525
tree= 1, node=358, feature=14, thr= 43.14, gain=0.062875
tree= 1, node=359, feature= 5, thr= 27.76, gain=0.502513
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tree= 1, node=390, feature= 8, thr= 58.27, gain=0.498263
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tree= 1, node=423, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=438, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node=461, feature= 5, thr= 55.33, gain=0.123650
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tree= 1, node=1308, feature=10, thr=  0.00, gain=0.000000
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tree= 1, node=5234, feature= 5, thr= 87.45, gain=0.062105
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tree= 1, node=11949, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=11956, feature= 4, thr= 82.86, gain=0.040528
tree= 1, node=11957, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=11962, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node=12196, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=12197, feature= 5, thr= 96.47, gain=0.272024
tree= 1, node=12198, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=12199, feature= 8, thr= 86.20, gain=0.053334
tree= 1, node=20936, feature=-1, thr= -1.00, gain=-1.000000
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tree= 1, node=23912, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=23913, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=23934, feature= 6, thr= 56.08, gain=0.349867
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tree= 1, node=24394, feature= 5, thr= 93.45, gain=0.046062
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tree= 1, node=47868, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=47869, feature= 3, thr= 99.04, gain=0.005593
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tree= 1, node=191478, feature=10, thr= 63.82, gain=0.067482
tree= 1, node=191479, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=382956, feature=-1, thr= -1.00, gain=-1.000000
tree= 1, node=382957, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=  2, feature= 4, thr= 45.10, gain=0.491874
tree= 2, node=  3, feature=15, thr=  9.80, gain=0.893777
tree= 2, node=  4, feature= 6, thr= 33.33, gain=0.541793
tree= 2, node=  5, feature= 7, thr= 45.10, gain=0.332738
tree= 2, node=  6, feature=13, thr= 16.71, gain=0.326655
tree= 2, node=  7, feature= 7, thr= 11.76, gain=0.467405
tree= 2, node=  8, feature=10, thr= 35.29, gain=0.363757
tree= 2, node=  9, feature=15, thr= 19.61, gain=0.810492
tree= 2, node= 10, feature= 9, thr= 22.12, gain=0.317470
tree= 2, node= 11, feature=12, thr= 32.00, gain=0.173570
tree= 2, node= 12, feature= 9, thr= 56.86, gain=0.549477
tree= 2, node= 13, feature=12, thr= 79.33, gain=0.029944
tree= 2, node= 14, feature=15, thr= 79.41, gain=0.006486
tree= 2, node= 15, feature= 1, thr= 98.27, gain=0.394525
tree= 2, node= 16, feature= 1, thr= 98.76, gain=0.271166
tree= 2, node= 17, feature= 2, thr= 46.75, gain=0.114930
tree= 2, node= 18, feature=15, thr=  0.37, gain=0.301359
tree= 2, node= 19, feature= 2, thr= 25.49, gain=0.480413
tree= 2, node= 20, feature= 1, thr= 80.59, gain=0.291879
tree= 2, node= 21, feature=10, thr= 31.37, gain=0.937722
tree= 2, node= 22, feature= 9, thr= 37.25, gain=0.265426
tree= 2, node= 23, feature= 1, thr= 70.59, gain=0.397443
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tree= 2, node= 24, feature=12, thr= 69.61, gain=0.170323
tree= 2, node= 25, feature=14, thr= 33.33, gain=0.546223
tree= 2, node= 26, feature=12, thr= 72.14, gain=0.024878
tree= 2, node= 27, feature= 2, thr= 64.71, gain=0.214469
tree= 2, node= 28, feature=14, thr= 20.33, gain=0.280565
tree= 2, node= 29, feature= 4, thr= 21.57, gain=0.842455
tree= 2, node= 30, feature= 3, thr= 96.08, gain=0.478834
tree= 2, node= 31, feature=13, thr= 45.88, gain=0.261006
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tree= 2, node= 35, feature= 7, thr= 45.10, gain=0.668769
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tree= 2, node= 37, feature= 3, thr= 68.63, gain=0.287125
tree= 2, node= 38, feature=12, thr= 52.00, gain=0.045934
tree= 2, node= 39, feature=10, thr= 47.06, gain=0.466893
tree= 2, node= 40, feature= 5, thr= 56.08, gain=0.213241
tree= 2, node= 41, feature= 6, thr= 49.02, gain=0.204806
tree= 2, node= 42, feature= 9, thr= 32.31, gain=0.025545
tree= 2, node= 43, feature= 2, thr= 45.10, gain=0.793756
tree= 2, node= 44, feature=11, thr=  0.35, gain=0.383804
tree= 2, node= 45, feature=14, thr= 37.25, gain=0.418644
tree= 2, node= 46, feature= 6, thr= 98.04, gain=0.316572
tree= 2, node= 47, feature=14, thr= 25.49, gain=0.749073
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tree= 2, node= 53, feature= 4, thr= 35.29, gain=0.726442
tree= 2, node= 54, feature= 6, thr= 68.63, gain=0.369178
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tree= 2, node= 60, feature= 1, thr= 82.82, gain=0.063428
tree= 2, node= 61, feature=12, thr= 79.33, gain=0.183900
tree= 2, node= 62, feature=14, thr=  8.35, gain=0.047736
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tree= 2, node= 64, feature= 3, thr= 92.16, gain=0.207542
tree= 2, node= 65, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node= 68, feature= 3, thr= 98.75, gain=0.201656
tree= 2, node= 69, feature=15, thr=  1.96, gain=0.767167
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tree= 2, node= 70, feature= 6, thr=  7.53, gain=0.037173
tree= 2, node= 71, feature= 1, thr= 80.39, gain=0.418818
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tree= 2, node= 73, feature= 6, thr= 97.41, gain=0.103052
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tree= 2, node= 94, feature= 5, thr= 91.00, gain=0.193411
tree= 2, node= 95, feature=14, thr= 63.73, gain=0.364184
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tree= 2, node=101, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=105, feature=11, thr= 13.49, gain=0.391244
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tree= 2, node=187, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=188, feature= 2, thr= 62.75, gain=0.084920
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tree= 2, node=191, feature=15, thr= 17.57, gain=0.699681
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tree= 2, node=259, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=282, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=283, feature= 8, thr= 63.82, gain=0.139571
tree= 2, node=286, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=287, feature=13, thr= 11.18, gain=0.333522
tree= 2, node=292, feature= 5, thr= 59.06, gain=0.771424
tree= 2, node=293, feature= 4, thr=  8.82, gain=0.228120
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tree= 2, node=314, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=315, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=324, feature= 4, thr= 89.41, gain=0.189154
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tree= 2, node=370, feature= 9, thr= 47.06, gain=0.408518
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tree= 2, node=439, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=501, feature=14, thr= 21.16, gain=0.197586
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tree= 2, node=545, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=546, feature=10, thr= 41.18, gain=0.082143
tree= 2, node=547, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=562, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=705, feature=10, thr= 65.10, gain=0.113274
tree= 2, node=724, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=725, feature= 5, thr= 97.16, gain=0.032440
tree= 2, node=740, feature=10, thr= 37.25, gain=0.209257
tree= 2, node=741, feature= 1, thr= 55.12, gain=0.104771
tree= 2, node=752, feature= 1, thr= 93.18, gain=0.052665
tree= 2, node=753, feature= 3, thr= 75.53, gain=0.019697
tree= 2, node=754, feature=14, thr=  0.49, gain=0.133830
tree= 2, node=755, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=756, feature=14, thr=  0.43, gain=0.151549
tree= 2, node=757, feature=11, thr= 37.33, gain=0.212836
tree= 2, node=758, feature= 6, thr= 76.47, gain=0.640621
tree= 2, node=759, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=764, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=765, feature=11, thr= 26.35, gain=0.081848
tree= 2, node=766, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=767, feature=-1, thr= -1.00, gain=-1.000000
```

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tree= 2, node=852, feature= 2, thr= 17.14, gain=0.087102
tree= 2, node=853, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=866, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=867, feature=13, thr= 22.12, gain=0.042237
tree= 2, node=870, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=871, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=876, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=877, feature= 0, thr=  3.65, gain=0.503258
tree= 2, node=1000, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1001, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1002, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1003, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1092, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1093, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1126, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1127, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1132, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1133, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1148, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1149, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1168, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1169, feature= 7, thr= 23.86, gain=0.100001
tree= 2, node=1170, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1171, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1214, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1215, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1296, feature= 5, thr= 80.33, gain=0.037529
tree= 2, node=1297, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1310, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1311, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1312, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1313, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1314, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1315, feature= 2, thr= 28.71, gain=0.237286
tree= 2, node=1328, feature= 7, thr= 12.06, gain=0.080167
tree= 2, node=1329, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1330, feature= 8, thr= 17.65, gain=0.114115
tree= 2, node=1331, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1334, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1335, feature= 3, thr= 70.43, gain=0.944387
tree= 2, node=1340, feature= 7, thr= 25.59, gain=0.090324
tree= 2, node=1341, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1410, feature= 4, thr= 91.16, gain=0.094007
tree= 2, node=1411, feature=-1, thr= -1.00, gain=-1.000000
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tree= 2, node=1450, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1451, feature= 3, thr= 94.39, gain=0.358679
tree= 2, node=1480, feature= 9, thr= 11.73, gain=0.229128
tree= 2, node=1481, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1482, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1483, feature= 3, thr= 89.65, gain=0.318833
tree= 2, node=1504, feature=12, thr= 44.71, gain=0.023242
tree= 2, node=1505, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1506, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1507, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1508, feature= 9, thr= 52.71, gain=0.375051
tree= 2, node=1509, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1512, feature=11, thr= 48.53, gain=0.130098
tree= 2, node=1513, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1514, feature=14, thr=  0.49, gain=0.018605
tree= 2, node=1515, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1516, feature=10, thr= 81.41, gain=0.544328
tree= 2, node=1517, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1530, feature= 1, thr= 89.20, gain=0.016335
tree= 2, node=1531, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1704, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1705, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1734, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1735, feature= 0, thr= 78.24, gain=0.017513
tree= 2, node=1754, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=1755, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2338, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2339, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2592, feature=10, thr= 33.33, gain=0.078619
tree= 2, node=2593, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2630, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2631, feature= 4, thr= 66.06, gain=0.060777
tree= 2, node=2656, feature=10, thr=  0.45, gain=0.036050
tree= 2, node=2657, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2660, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2661, feature=15, thr= 65.12, gain=0.215449
tree= 2, node=2670, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2671, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2680, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2681, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2820, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2821, feature= 8, thr= 78.88, gain=0.152538
tree= 2, node=2902, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2903, feature=-1, thr= -1.00, gain=-1.000000
```

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tree= 2, node=2960, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2961, feature= 5, thr= 98.24, gain=0.118660
tree= 2, node=2966, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=2967, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3008, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3009, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3016, feature=12, thr= 34.12, gain=0.017796
tree= 2, node=3017, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3024, feature= 9, thr= 64.47, gain=0.134917
tree= 2, node=3025, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3028, feature=10, thr= 57.00, gain=0.156381
tree= 2, node=3029, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3032, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3033, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3060, feature=13, thr=  3.29, gain=0.009807
tree= 2, node=3061, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=3470, feature= 0, thr=  1.51, gain=0.021599
tree= 2, node=3471, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5184, feature= 2, thr= 65.18, gain=0.216237
tree= 2, node=5185, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5262, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5263, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5312, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5313, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5322, feature= 1, thr= 84.35, gain=0.083802
tree= 2, node=5323, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5642, feature= 1, thr= 48.04, gain=0.072537
tree= 2, node=5643, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5922, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=5923, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6032, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6033, feature= 2, thr= 63.71, gain=0.011755
tree= 2, node=6048, feature=15, thr= 14.43, gain=0.068990
tree= 2, node=6049, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6056, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6057, feature= 5, thr= 96.02, gain=0.019916
tree= 2, node=6120, feature=14, thr= 98.12, gain=0.002439
tree= 2, node=6121, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6940, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=6941, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=10368, feature=10, thr=  0.63, gain=0.021137
tree= 2, node=10369, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=10644, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=10645, feature= 9, thr=  0.14, gain=0.001847
```

```
tree= 2, node=11284, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=11285, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=12066, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=12067, feature= 1, thr= 84.08, gain=0.005925
tree= 2, node=12096, feature= 1, thr= 88.47, gain=0.178991
tree= 2, node=12097, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=12114, feature= 7, thr= 73.12, gain=0.122292
tree= 2, node=12115, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=12240, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=12241, feature= 3, thr= 62.27, gain=0.108283
tree= 2, node=20736, feature=12, thr= 35.49, gain=0.069360
tree= 2, node=20737, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=21290, feature= 3, thr= 99.12, gain=0.004973
tree= 2, node=21291, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24134, feature=13, thr=  0.27, gain=0.003233
tree= 2, node=24135, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24192, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24193, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24228, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24229, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24482, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=24483, feature=11, thr=  7.22, gain=0.016048
tree= 2, node=41472, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=41473, feature= 9, thr=  0.39, gain=0.090289
tree= 2, node=42580, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=42581, feature= 0, thr= 22.51, gain=0.072522
tree= 2, node=48268, feature= 1, thr= 83.06, gain=0.040173
tree= 2, node=48269, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=48966, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=48967, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=82946, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=82947, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=85162, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=85163, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=96536, feature=-1, thr= -1.00, gain=-1.000000
tree= 2, node=96537, feature=-1, thr= -1.00, gain=-1.000000
```

Classification Output
- Optimized
  - classification accuracy=0.8382
- Randomized
  - classification accuracy=0.6913
- Forest3
  - classification accuracy=0.8096