Assignment -1

CS-6375 Machine Learning

Spring’17

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The assignment implements ID3 algorithm which would calculate the entropy and information gain and based on these values, the attributes are selected. These acquired information is used to create the decision tree.

The entropy and hence the information gain is calculated using the training data. Pruning is carried out using the validation data.

The following images shows the decision tree formed for

1. Data Set 1

Decision Tree - Information Gain heuristics

Printing Tree ::

XO-13 = 0 :

| XM-11 = 0 :

| | XF-4 = 0 :

| | | XB-0 = 0 :

| | | | XG-5 = 0 : 0

| | | | XG-5 = 1 :

| | | | | XD-2 = 0 :

| | | | | | XS-17 = 0 : 0

| | | | | | XS-17 = 1 :

| | | | | | | XC-1 = 0 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XH-6 = 0 : 0

| | | | | | | | XH-6 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XE-3 = 0 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XK-9 = 0 : 0

| | | | | | | XK-9 = 1 : 1

| | | XB-0 = 1 :

| | | | XD-2 = 0 : 0

| | | | XD-2 = 1 :

| | | | | XI-7 = 0 : 0

| | | | | XI-7 = 1 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 : 1

| | XF-4 = 1 : 0

| XM-11 = 1 :

| | XB-0 = 0 :

| | | XD-2 = 0 :

| | | | XG-5 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 :

| | | | | | | | XR-16 = 0 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XC-1 = 0 :

| | | | | | | | | | XL-10 = 0 :

| | | | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | | | XU-19 = 1 :

| | | | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | | | XE-3 = 1 : 1

| | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XC-1 = 1 : 1

| | | | | | | | XT-18 = 1 : 1

| | | | XG-5 = 1 :

| | | | | XU-19 = 0 : 1

| | | | | XU-19 = 1 :

| | | | | | XI-7 = 0 : 0

| | | | | | XI-7 = 1 : 1

| | | XD-2 = 1 :

| | | | XC-1 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XS-17 = 0 : 0

| | | | | | | XS-17 = 1 :

| | | | | | | | XP-14 = 0 : 1

| | | | | | | | XP-14 = 1 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 : 1

| | | | | | XJ-8 = 1 :

| | | | | | | XE-3 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 :

| | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | XN-12 = 1 : 1

| | | | | | | XE-3 = 1 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 0

| | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XT-18 = 1 : 1

| | | | XC-1 = 1 : 0

| | XB-0 = 1 :

| | | XI-7 = 0 : 0

| | | XI-7 = 1 :

| | | | XK-9 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | | XS-17 = 1 : 0

| | | | | XC-1 = 1 : 0

| | | | XK-9 = 1 : 0

XO-13 = 1 :

| XI-7 = 0 :

| | XM-11 = 0 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XH-6 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 : 0

| | | | | | XN-12 = 1 : 0

| | | | | XH-6 = 1 : 1

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XU-19 = 0 : 0

| | | | | | | XU-19 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XH-6 = 0 : 0

| | | | | | XH-6 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 : 0

| | | | | | | XK-9 = 1 : 1

| | | | | XL-10 = 1 : 1

| | XM-11 = 1 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XC-1 = 0 : 1

| | | | | | XC-1 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XU-19 = 0 :

| | | | | | | | | XR-16 = 0 :

| | | | | | | | | | XB-0 = 0 : 1

| | | | | | | | | | XB-0 = 1 : 0

| | | | | | | | | XR-16 = 1 : 0

| | | | | | | | XU-19 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 :

| | | | | | | | XJ-8 = 0 : 1

| | | | | | | | XJ-8 = 1 : 0

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 : 0

| XI-7 = 1 :

| | XT-18 = 0 :

| | | XH-6 = 0 :

| | | | XP-14 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XR-16 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | | | XL-10 = 1 : 1

| | | | | | XR-16 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 : 0

| | | | XP-14 = 1 :

| | | | | XS-17 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XN-12 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | XC-1 = 1 : 0

| | | | | | XD-2 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | | | XS-17 = 1 : 1

| | | XH-6 = 1 :

| | | | XJ-8 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XN-12 = 0 : 1

| | | | | | XN-12 = 1 :

| | | | | | | XF-4 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XF-4 = 1 : 0

| | | | | XC-1 = 1 :

| | | | | | XM-11 = 0 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | | XK-9 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XS-17 = 0 : 1

| | | | | XS-17 = 1 :

| | | | | | XG-5 = 0 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 :

| | | | | | | | XD-2 = 0 : 1

| | | | | | | | XD-2 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 :

| | | | | | | | XM-11 = 0 : 1

| | | | | | | | XM-11 = 1 : 0

| | XT-18 = 1 :

| | | XS-17 = 0 :

| | | | XQ-15 = 0 :

| | | | | XK-9 = 0 :

| | | | | | XC-1 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XH-6 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XH-6 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | XC-1 = 1 : 1

| | | | | XK-9 = 1 :

| | | | | | XD-2 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XD-2 = 1 : 0

| | | | XQ-15 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 : 0

| | | | | | XN-12 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XB-0 = 0 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | | XB-0 = 1 : 1

| | | | | | | XP-14 = 1 : 1

| | | | | XM-11 = 1 : 0

| | | XS-17 = 1 :

| | | | XL-10 = 0 :

| | | | | XD-2 = 0 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XK-9 = 0 : 1

| | | | | | | | XK-9 = 1 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 : 1

| | | | XL-10 = 1 :

| | | | | XH-6 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 :

| | | | | | | | XR-16 = 0 : 0

| | | | | | | | XR-16 = 1 : 1

| | | | | | XQ-15 = 1 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 : 1

| | | | | XH-6 = 1 : 0

Decision Tree - Variance Impurity heuristics

Printing Tree ::

XO-13 = 0 :

| XM-11 = 0 :

| | XF-4 = 0 :

| | | XB-0 = 0 :

| | | | XG-5 = 0 : 0

| | | | XG-5 = 1 :

| | | | | XD-2 = 0 :

| | | | | | XS-17 = 0 : 0

| | | | | | XS-17 = 1 :

| | | | | | | XC-1 = 0 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XH-6 = 0 : 0

| | | | | | | | XH-6 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XE-3 = 0 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XK-9 = 0 : 0

| | | | | | | XK-9 = 1 : 1

| | | XB-0 = 1 :

| | | | XD-2 = 0 : 0

| | | | XD-2 = 1 :

| | | | | XI-7 = 0 : 0

| | | | | XI-7 = 1 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 : 1

| | XF-4 = 1 : 0

| XM-11 = 1 :

| | XB-0 = 0 :

| | | XD-2 = 0 :

| | | | XG-5 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 :

| | | | | | | | XR-16 = 0 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XI-7 = 0 : 0

| | | | | | | | | | XI-7 = 1 : 1

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XU-19 = 0 : 1

| | | | | XU-19 = 1 :

| | | | | | XI-7 = 0 : 0

| | | | | | XI-7 = 1 : 1

| | | XD-2 = 1 :

| | | | XC-1 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XS-17 = 0 : 0

| | | | | | | | XS-17 = 1 : 1

| | | | | | | XP-14 = 1 : 0

| | | | | XF-4 = 1 :

| | | | | | XQ-15 = 0 :

| | | | | | | XG-5 = 0 :

| | | | | | | | XE-3 = 0 :

| | | | | | | | | XT-18 = 0 : 1

| | | | | | | | | XT-18 = 1 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | | XG-5 = 1 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XS-17 = 0 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | XC-1 = 1 : 0

| | XB-0 = 1 :

| | | XI-7 = 0 : 0

| | | XI-7 = 1 :

| | | | XK-9 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XT-18 = 1 : 1

| | | | | | | XS-17 = 1 : 0

| | | | | XC-1 = 1 : 0

| | | | XK-9 = 1 : 0

XO-13 = 1 :

| XI-7 = 0 :

| | XM-11 = 0 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XH-6 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 : 0

| | | | | | XN-12 = 1 : 0

| | | | | XH-6 = 1 : 1

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XU-19 = 0 : 0

| | | | | | | XU-19 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XH-6 = 0 :

| | | | | | XL-10 = 0 : 0

| | | | | | XL-10 = 1 : 1

| | | | | XH-6 = 1 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XE-3 = 0 : 1

| | | | | | | XE-3 = 1 : 0

| | XM-11 = 1 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XC-1 = 0 : 1

| | | | | | XC-1 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XU-19 = 0 :

| | | | | | | | | XR-16 = 0 :

| | | | | | | | | | XK-9 = 0 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | | XR-16 = 1 : 0

| | | | | | | | XU-19 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 :

| | | | | | | | XJ-8 = 0 : 1

| | | | | | | | XJ-8 = 1 : 0

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 : 0

| XI-7 = 1 :

| | XT-18 = 0 :

| | | XH-6 = 0 :

| | | | XP-14 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XR-16 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | | | XL-10 = 1 : 1

| | | | | | XR-16 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 : 0

| | | | XP-14 = 1 :

| | | | | XS-17 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XN-12 = 0 :

| | | | | | | | | XG-5 = 0 :

| | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | XE-3 = 1 : 1

| | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | XC-1 = 1 : 0

| | | | | | XD-2 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XM-11 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XM-11 = 1 : 1

| | | | | | | XK-9 = 1 : 0

| | | | | XS-17 = 1 : 1

| | | XH-6 = 1 :

| | | | XJ-8 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XN-12 = 0 : 1

| | | | | | XN-12 = 1 :

| | | | | | | XF-4 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XF-4 = 1 : 0

| | | | | XC-1 = 1 :

| | | | | | XM-11 = 0 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XS-17 = 0 : 1

| | | | | XS-17 = 1 :

| | | | | | XG-5 = 0 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 :

| | | | | | | | XD-2 = 0 : 1

| | | | | | | | XD-2 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 :

| | | | | | | | XM-11 = 0 : 1

| | | | | | | | XM-11 = 1 : 0

| | XT-18 = 1 :

| | | XS-17 = 0 :

| | | | XQ-15 = 0 :

| | | | | XK-9 = 0 :

| | | | | | XC-1 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XH-6 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XH-6 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | XC-1 = 1 : 1

| | | | | XK-9 = 1 :

| | | | | | XD-2 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XD-2 = 1 : 0

| | | | XQ-15 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 : 0

| | | | | | XN-12 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XB-0 = 0 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | | XB-0 = 1 : 1

| | | | | | | XP-14 = 1 : 1

| | | | | XM-11 = 1 : 0

| | | XS-17 = 1 :

| | | | XL-10 = 0 :

| | | | | XD-2 = 0 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XK-9 = 0 : 1

| | | | | | | | XK-9 = 1 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 : 1

| | | | XL-10 = 1 :

| | | | | XE-3 = 0 :

| | | | | | XK-9 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XP-14 = 0 : 0

| | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | | | | XK-9 = 1 : 0

| | | | | XE-3 = 1 :

| | | | | | XM-11 = 0 :

| | | | | | | XJ-8 = 0 : 1

| | | | | | | XJ-8 = 1 : 0

| | | | | | XM-11 = 1 : 0

Decision Tree - 1 : Accuracy

Correct : 1491

Total : 2000

% Accuracy : 74.55

Decision Tree - 2 : Accuracy

Correct : 1507

Total : 2000

% Accuracy : 75.35

Pruned - Decision Tree - Information Gain heuristics

Printing Tree ::

XO-13 = 0 :

| XM-11 = 0 :

| | XF-4 = 0 :

| | | XB-0 = 0 :

| | | | XG-5 = 0 : 0

| | | | XG-5 = 1 :

| | | | | XD-2 = 0 :

| | | | | | XS-17 = 0 : 0

| | | | | | XS-17 = 1 :

| | | | | | | XC-1 = 0 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XH-6 = 0 : 0

| | | | | | | | XH-6 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XE-3 = 0 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XK-9 = 0 : 0

| | | | | | | XK-9 = 1 : 1

| | | XB-0 = 1 :

| | | | XD-2 = 0 : 0

| | | | XD-2 = 1 :

| | | | | XI-7 = 0 : 0

| | | | | XI-7 = 1 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 : 1

| | XF-4 = 1 : 0

| XM-11 = 1 :

| | XB-0 = 0 :

| | | XD-2 = 0 :

| | | | XG-5 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 :

| | | | | | | | XR-16 = 0 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XC-1 = 0 :

| | | | | | | | | | XL-10 = 0 :

| | | | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | | | XU-19 = 1 :

| | | | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | | | XE-3 = 1 : 1

| | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XC-1 = 1 : 1

| | | | | | | | XT-18 = 1 : 1

| | | | XG-5 = 1 :

| | | | | XU-19 = 0 : 1

| | | | | XU-19 = 1 :

| | | | | | XI-7 = 0 : 0

| | | | | | XI-7 = 1 : 1

| | | XD-2 = 1 :

| | | | XC-1 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XS-17 = 0 : 0

| | | | | | | XS-17 = 1 :

| | | | | | | | XP-14 = 0 : 1

| | | | | | | | XP-14 = 1 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 : 1

| | | | | | XJ-8 = 1 :

| | | | | | | XE-3 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 :

| | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | XN-12 = 1 : 1

| | | | | | | XE-3 = 1 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 0

| | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XT-18 = 1 : 1

| | | | XC-1 = 1 : 0

| | XB-0 = 1 :

| | | XI-7 = 0 : 0

| | | XI-7 = 1 :

| | | | XK-9 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | | XS-17 = 1 : 0

| | | | | XC-1 = 1 : 0

| | | | XK-9 = 1 : 0

XO-13 = 1 :

| XI-7 = 0 :

| | XM-11 = 0 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XH-6 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 : 0

| | | | | | XN-12 = 1 : 0

| | | | | XH-6 = 1 : 1

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XU-19 = 0 : 0

| | | | | | | XU-19 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XH-6 = 0 : 0

| | | | | | XH-6 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 : 0

| | | | | | | XK-9 = 1 : 1

| | | | | XL-10 = 1 : 1

| | XM-11 = 1 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XC-1 = 0 : 1

| | | | | | XC-1 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XU-19 = 0 :

| | | | | | | | | XR-16 = 0 :

| | | | | | | | | | XB-0 = 0 : 1

| | | | | | | | | | XB-0 = 1 : 0

| | | | | | | | | XR-16 = 1 : 0

| | | | | | | | XU-19 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 :

| | | | | | | | XJ-8 = 0 : 1

| | | | | | | | XJ-8 = 1 : 0

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 : 0

| XI-7 = 1 :

| | XT-18 = 0 :

| | | XH-6 = 0 :

| | | | XP-14 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XR-16 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | | | XL-10 = 1 : 1

| | | | | | XR-16 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 : 0

| | | | XP-14 = 1 :

| | | | | XS-17 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XN-12 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | XC-1 = 1 : 0

| | | | | | XD-2 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | | | XS-17 = 1 : 1

| | | XH-6 = 1 :

| | | | XJ-8 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XN-12 = 0 : 1

| | | | | | XN-12 = 1 :

| | | | | | | XF-4 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XF-4 = 1 : 0

| | | | | XC-1 = 1 :

| | | | | | XM-11 = 0 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | | XK-9 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XS-17 = 0 : 1

| | | | | XS-17 = 1 :

| | | | | | XG-5 = 0 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 :

| | | | | | | | XD-2 = 0 : 1

| | | | | | | | XD-2 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 :

| | | | | | | | XM-11 = 0 : 1

| | | | | | | | XM-11 = 1 : 0

| | XT-18 = 1 :

| | | XS-17 = 0 :

| | | | XQ-15 = 0 :

| | | | | XK-9 = 0 :

| | | | | | XC-1 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XH-6 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XH-6 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | XC-1 = 1 : 1

| | | | | XK-9 = 1 :

| | | | | | XD-2 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XD-2 = 1 : 0

| | | | XQ-15 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 : 0

| | | | | | XN-12 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XB-0 = 0 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | | XB-0 = 1 : 1

| | | | | | | XP-14 = 1 : 1

| | | | | XM-11 = 1 : 0

| | | XS-17 = 1 :

| | | | XL-10 = 0 :

| | | | | XD-2 = 0 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XK-9 = 0 : 1

| | | | | | | | XK-9 = 1 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 : 1

| | | | XL-10 = 1 :

| | | | | XH-6 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 :

| | | | | | | | XR-16 = 0 : 0

| | | | | | | | XR-16 = 1 : 1

| | | | | | XQ-15 = 1 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 : 1

| | | | | XH-6 = 1 : 0

Pruning Decision Tree1

Accuracy of Decision Tree1 after pruning

Correct : 1491

Total : 2000

% Accuracy : 74.55

Pruned - Decision Tree - Variance Impurity heuristics

Printing Tree ::

XO-13 = 0 :

| XM-11 = 0 :

| | XF-4 = 0 :

| | | XB-0 = 0 :

| | | | XG-5 = 0 : 0

| | | | XG-5 = 1 :

| | | | | XD-2 = 0 :

| | | | | | XS-17 = 0 : 0

| | | | | | XS-17 = 1 :

| | | | | | | XC-1 = 0 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XH-6 = 0 : 0

| | | | | | | | XH-6 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XE-3 = 0 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XK-9 = 0 : 0

| | | | | | | XK-9 = 1 : 1

| | | XB-0 = 1 :

| | | | XD-2 = 0 : 0

| | | | XD-2 = 1 :

| | | | | XI-7 = 0 : 0

| | | | | XI-7 = 1 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 : 1

| | XF-4 = 1 : 0

| XM-11 = 1 :

| | XB-0 = 0 :

| | | XD-2 = 0 :

| | | | XG-5 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XJ-8 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 :

| | | | | | | | XR-16 = 0 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XI-7 = 0 : 0

| | | | | | | | | | XI-7 = 1 : 1

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XU-19 = 0 : 1

| | | | | XU-19 = 1 :

| | | | | | XI-7 = 0 : 0

| | | | | | XI-7 = 1 : 1

| | | XD-2 = 1 :

| | | | XC-1 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XS-17 = 0 : 0

| | | | | | | | XS-17 = 1 : 1

| | | | | | | XP-14 = 1 : 0

| | | | | XF-4 = 1 :

| | | | | | XQ-15 = 0 :

| | | | | | | XG-5 = 0 :

| | | | | | | | XE-3 = 0 :

| | | | | | | | | XT-18 = 0 : 1

| | | | | | | | | XT-18 = 1 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | | XG-5 = 1 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XS-17 = 0 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | XC-1 = 1 : 0

| | XB-0 = 1 :

| | | XI-7 = 0 : 0

| | | XI-7 = 1 :

| | | | XK-9 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XT-18 = 1 : 1

| | | | | | | XS-17 = 1 : 0

| | | | | XC-1 = 1 : 0

| | | | XK-9 = 1 : 0

XO-13 = 1 :

| XI-7 = 0 :

| | XM-11 = 0 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XH-6 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 : 0

| | | | | | XN-12 = 1 : 0

| | | | | XH-6 = 1 : 1

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XU-19 = 0 : 0

| | | | | | | XU-19 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XH-6 = 0 :

| | | | | | XL-10 = 0 : 0

| | | | | | XL-10 = 1 : 1

| | | | | XH-6 = 1 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XE-3 = 0 : 1

| | | | | | | XE-3 = 1 : 0

| | XM-11 = 1 :

| | | XQ-15 = 0 :

| | | | XF-4 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XC-1 = 0 : 1

| | | | | | XC-1 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XU-19 = 0 :

| | | | | | | | | XR-16 = 0 :

| | | | | | | | | | XK-9 = 0 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | | XR-16 = 1 : 0

| | | | | | | | XU-19 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XT-18 = 0 : 1

| | | | | | | XT-18 = 1 :

| | | | | | | | XJ-8 = 0 : 1

| | | | | | | | XJ-8 = 1 : 0

| | | | XF-4 = 1 : 0

| | | XQ-15 = 1 : 0

| XI-7 = 1 :

| | XT-18 = 0 :

| | | XH-6 = 0 :

| | | | XP-14 = 0 :

| | | | | XF-4 = 0 : 0

| | | | | XF-4 = 1 :

| | | | | | XR-16 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | | | XL-10 = 1 : 1

| | | | | | XR-16 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 : 0

| | | | XP-14 = 1 :

| | | | | XS-17 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XN-12 = 0 :

| | | | | | | | | XG-5 = 0 :

| | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | XE-3 = 1 : 1

| | | | | | | | | XG-5 = 1 : 0

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | XC-1 = 1 : 0

| | | | | | XD-2 = 1 :

| | | | | | | XK-9 = 0 :

| | | | | | | | XM-11 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XM-11 = 1 : 1

| | | | | | | XK-9 = 1 : 0

| | | | | XS-17 = 1 : 1

| | | XH-6 = 1 :

| | | | XJ-8 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XN-12 = 0 : 1

| | | | | | XN-12 = 1 :

| | | | | | | XF-4 = 0 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XF-4 = 1 : 0

| | | | | XC-1 = 1 :

| | | | | | XM-11 = 0 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XS-17 = 0 : 1

| | | | | XS-17 = 1 :

| | | | | | XG-5 = 0 :

| | | | | | | XB-0 = 0 : 0

| | | | | | | XB-0 = 1 :

| | | | | | | | XD-2 = 0 : 1

| | | | | | | | XD-2 = 1 :

| | | | | | | | | XU-19 = 0 : 1

| | | | | | | | | XU-19 = 1 : 0

| | | | | | XG-5 = 1 :

| | | | | | | XQ-15 = 0 : 1

| | | | | | | XQ-15 = 1 :

| | | | | | | | XM-11 = 0 : 1

| | | | | | | | XM-11 = 1 : 0

| | XT-18 = 1 :

| | | XS-17 = 0 :

| | | | XQ-15 = 0 :

| | | | | XK-9 = 0 :

| | | | | | XC-1 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XH-6 = 0 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | | | | XH-6 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | XC-1 = 1 : 1

| | | | | XK-9 = 1 :

| | | | | | XD-2 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XD-2 = 1 : 0

| | | | XQ-15 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 : 0

| | | | | | XN-12 = 1 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XB-0 = 0 :

| | | | | | | | | XJ-8 = 0 : 1

| | | | | | | | | XJ-8 = 1 : 0

| | | | | | | | XB-0 = 1 : 1

| | | | | | | XP-14 = 1 : 1

| | | | | XM-11 = 1 : 0

| | | XS-17 = 1 :

| | | | XL-10 = 0 :

| | | | | XD-2 = 0 :

| | | | | | XU-19 = 0 : 1

| | | | | | XU-19 = 1 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XK-9 = 0 : 1

| | | | | | | | XK-9 = 1 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XG-5 = 0 : 1

| | | | | | | | XG-5 = 1 :

| | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | XE-3 = 1 : 1

| | | | | XD-2 = 1 :

| | | | | | XG-5 = 0 : 0

| | | | | | XG-5 = 1 : 1

| | | | XL-10 = 1 :

| | | | | XE-3 = 0 :

| | | | | | XK-9 = 0 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XP-14 = 0 : 0

| | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | | | | XK-9 = 1 : 0

| | | | | XE-3 = 1 :

| | | | | | XM-11 = 0 :

| | | | | | | XJ-8 = 0 : 1

| | | | | | | XJ-8 = 1 : 0

| | | | | | XM-11 = 1 : 0

Pruning Decision Tree2

Accuracy - Pruned - Decision Tree 1

Correct : 1507

Total : 2000

% Accuracy : 75.35

1. Data Set 2

Decision Tree - Information Gain heuristics

Printing Tree ::

XI-7 = 0 :

| XU-19 = 0 :

| | XQ-15 = 0 :

| | | XF-4 = 0 :

| | | | XO-13 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XG-5 = 0 : 0

| | | | | | | XG-5 = 1 : 1

| | | | | XB-0 = 1 : 0

| | | | XO-13 = 1 :

| | | | | XB-0 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XM-11 = 0 : 1

| | | | | | | XM-11 = 1 : 0

| | | | | | XD-2 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 : 1

| | | | | | | XL-10 = 1 :

| | | | | | | | XS-17 = 0 :

| | | | | | | | | XK-9 = 0 :

| | | | | | | | | | XC-1 = 0 : 0

| | | | | | | | | | XC-1 = 1 : 1

| | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XS-17 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XF-4 = 1 : 0

| | XQ-15 = 1 :

| | | XB-0 = 0 :

| | | | XT-18 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XR-16 = 0 :

| | | | | | | XN-12 = 0 :

| | | | | | | | XP-14 = 0 : 1

| | | | | | | | XP-14 = 1 :

| | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | XG-5 = 1 :

| | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | XE-3 = 1 :

| | | | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | | | XC-1 = 1 : 0

| | | | | | | XN-12 = 1 : 0

| | | | | | XR-16 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XF-4 = 0 : 0

| | | | | | XF-4 = 1 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XH-6 = 0 : 1

| | | | | | | | XH-6 = 1 :

| | | | | | | | | XM-11 = 0 : 0

| | | | | | | | | XM-11 = 1 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XJ-8 = 0 : 0

| | | | | | | | XJ-8 = 1 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 :

| | | | | | | | | | XM-11 = 0 : 1

| | | | | | | | | | XM-11 = 1 : 0

| | | | XT-18 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | | XN-12 = 1 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XM-11 = 1 : 0

| | | XB-0 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XF-4 = 0 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | XC-1 = 1 :

| | | | | | | | | | XK-9 = 0 :

| | | | | | | | | | | XE-3 = 0 :

| | | | | | | | | | | | XD-2 = 0 :

| | | | | | | | | | | | | XG-5 = 0 :

| | | | | | | | | | | | | | XR-16 = 0 :

| | | | | | | | | | | | | | | XJ-8 = 0 :

| | | | | | | | | | | | | | | | XN-12 = 0 :

| | | | | | | | | | | | | | | | | XS-17 = 0 :

| | | | | | | | | | | | | | | | | | XH-6 = 0 :

| | | | | | | | | | | | | | | | | | | XT-18 = 0 : 0

| | | | | | | | | | | | | | | | | | | XT-18 = 1 : 0

| | | | | | | | | | | XE-3 = 1 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | | XP-14 = 1 : 1

| | | | | | XF-4 = 1 : 0

| | | | | XM-11 = 1 : 0

| XU-19 = 1 :

| | XG-5 = 0 :

| | | XS-17 = 0 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XB-0 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XB-0 = 1 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XN-12 = 0 :

| | | | | | XQ-15 = 0 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XO-13 = 0 : 0

| | | | | | | | XO-13 = 1 : 1

| | | | | | | XM-11 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | XN-12 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XD-2 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 : 0

| | | | | | | | XT-18 = 1 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | | XE-3 = 1 : 1

| | | XS-17 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XR-16 = 0 : 0

| | | | | | | XR-16 = 1 : 1

| | | | | | XN-12 = 1 : 1

| | | | | XL-10 = 1 : 0

| | XG-5 = 1 : 0

XI-7 = 1 :

| XK-9 = 0 :

| | XC-1 = 0 :

| | | XS-17 = 0 :

| | | | XG-5 = 0 :

| | | | | XM-11 = 0 : 1

| | | | | XM-11 = 1 :

| | | | | | XT-18 = 0 : 1

| | | | | | XT-18 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XQ-15 = 0 :

| | | | | | | | | XH-6 = 0 : 0

| | | | | | | | | XH-6 = 1 :

| | | | | | | | | | XP-14 = 0 : 1

| | | | | | | | | | XP-14 = 1 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XQ-15 = 0 : 1

| | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | XS-17 = 1 :

| | | | XR-16 = 0 :

| | | | | XN-12 = 0 : 1

| | | | | XN-12 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XJ-8 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 :

| | | | | | | | | XD-2 = 0 : 0

| | | | | | | | | XD-2 = 1 : 1

| | | | | | | XJ-8 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XT-18 = 0 : 0

| | | | | | | XT-18 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | XR-16 = 1 :

| | | | | XG-5 = 0 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XF-4 = 0 : 1

| | | | | | | | | XF-4 = 1 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | XG-5 = 1 : 0

| | XC-1 = 1 :

| | | XD-2 = 0 :

| | | | XS-17 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XE-3 = 0 : 0

| | | | | | | XE-3 = 1 : 1

| | | | | XF-4 = 1 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XO-13 = 0 : 1

| | | | | | | | | XO-13 = 1 :

| | | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | | XN-12 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | XS-17 = 1 :

| | | | | XJ-8 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XM-11 = 0 : 0

| | | | | | | XM-11 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XU-19 = 0 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 :

| | | | | | | | | | | XL-10 = 0 : 1

| | | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XU-19 = 1 : 1

| | | | | | XQ-15 = 1 : 0

| | | | | XJ-8 = 1 :

| | | | | | XO-13 = 0 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | XO-13 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | XD-2 = 1 :

| | | | XF-4 = 0 : 0

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 0

| | | | | XO-13 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 : 1

| XK-9 = 1 :

| | XD-2 = 0 :

| | | XT-18 = 0 :

| | | | XF-4 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XR-16 = 0 : 0

| | | | | | XR-16 = 1 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 :

| | | | | | | | XO-13 = 0 : 1

| | | | | | | | XO-13 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XO-13 = 0 : 0

| | | | | | XO-13 = 1 : 1

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XG-5 = 0 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | XT-18 = 1 :

| | | | XB-0 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XM-11 = 0 : 1

| | | | | | XM-11 = 1 :

| | | | | | | XJ-8 = 0 : 0

| | | | | | | XJ-8 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | XC-1 = 1 :

| | | | | | XH-6 = 0 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XL-10 = 0 : 1

| | | | | | | XL-10 = 1 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 : 0

| | | | XB-0 = 1 : 0

| | XD-2 = 1 : 0

Decision Tree - Variance Impurity heuristics

Printing Tree ::

XI-7 = 0 :

| XU-19 = 0 :

| | XQ-15 = 0 :

| | | XF-4 = 0 :

| | | | XO-13 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XG-5 = 0 : 0

| | | | | | | XG-5 = 1 : 1

| | | | | XB-0 = 1 : 0

| | | | XO-13 = 1 :

| | | | | XB-0 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XM-11 = 0 : 1

| | | | | | | XM-11 = 1 : 0

| | | | | | XD-2 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XJ-8 = 0 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | | | XJ-8 = 1 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XL-10 = 0 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XF-4 = 1 : 0

| | XQ-15 = 1 :

| | | XB-0 = 0 :

| | | | XF-4 = 0 :

| | | | | XG-5 = 0 : 0

| | | | | XG-5 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XS-17 = 0 : 0

| | | | | | | XS-17 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | | XF-4 = 1 :

| | | | | XT-18 = 0 :

| | | | | | XL-10 = 0 :

| | | | | | | XS-17 = 0 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XC-1 = 0 : 0

| | | | | | | | XC-1 = 1 : 1

| | | | | | XL-10 = 1 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XH-6 = 0 : 1

| | | | | | | | XH-6 = 1 :

| | | | | | | | | XE-3 = 0 : 1

| | | | | | | | | XE-3 = 1 : 0

| | | | | | | XC-1 = 1 :

| | | | | | | | XJ-8 = 0 : 0

| | | | | | | | XJ-8 = 1 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 :

| | | | | | | | | | XM-11 = 0 : 1

| | | | | | | | | | XM-11 = 1 : 0

| | | | | XT-18 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XO-13 = 0 : 1

| | | | | | | XO-13 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XR-16 = 0 : 1

| | | | | | | | | | XR-16 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XB-0 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XF-4 = 0 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | XC-1 = 1 :

| | | | | | | | | | XK-9 = 0 :

| | | | | | | | | | | XG-5 = 0 :

| | | | | | | | | | | | XD-2 = 0 :

| | | | | | | | | | | | | XN-12 = 0 :

| | | | | | | | | | | | | | XE-3 = 0 :

| | | | | | | | | | | | | | | XJ-8 = 0 :

| | | | | | | | | | | | | | | | XR-16 = 0 :

| | | | | | | | | | | | | | | | | XS-17 = 0 :

| | | | | | | | | | | | | | | | | | XH-6 = 0 :

| | | | | | | | | | | | | | | | | | | XT-18 = 0 : 0

| | | | | | | | | | | | | | | | | | | XT-18 = 1 : 0

| | | | | | | | | | | XG-5 = 1 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | | XP-14 = 1 : 1

| | | | | | XF-4 = 1 : 0

| | | | | XM-11 = 1 : 0

| XU-19 = 1 :

| | XG-5 = 0 :

| | | XS-17 = 0 :

| | | | XJ-8 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XN-12 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 : 0

| | | | | | XH-6 = 1 :

| | | | | | | XP-14 = 0 : 0

| | | | | | | XP-14 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XN-12 = 0 :

| | | | | | XQ-15 = 0 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XO-13 = 0 : 0

| | | | | | | | XO-13 = 1 : 1

| | | | | | | XM-11 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | XN-12 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XD-2 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 : 0

| | | | | | | | XT-18 = 1 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | | XE-3 = 1 : 1

| | | XS-17 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XR-16 = 0 : 0

| | | | | | | XR-16 = 1 : 1

| | | | | | XN-12 = 1 : 1

| | | | | XL-10 = 1 : 0

| | XG-5 = 1 : 0

XI-7 = 1 :

| XK-9 = 0 :

| | XC-1 = 0 :

| | | XS-17 = 0 :

| | | | XG-5 = 0 :

| | | | | XM-11 = 0 : 1

| | | | | XM-11 = 1 :

| | | | | | XT-18 = 0 : 1

| | | | | | XT-18 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XQ-15 = 0 :

| | | | | | | | | XH-6 = 0 : 0

| | | | | | | | | XH-6 = 1 :

| | | | | | | | | | XP-14 = 0 : 1

| | | | | | | | | | XP-14 = 1 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XQ-15 = 0 : 1

| | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | XS-17 = 1 :

| | | | XR-16 = 0 :

| | | | | XN-12 = 0 : 1

| | | | | XN-12 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XJ-8 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 :

| | | | | | | | | XD-2 = 0 : 0

| | | | | | | | | XD-2 = 1 : 1

| | | | | | | XJ-8 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XT-18 = 0 : 0

| | | | | | | XT-18 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | XR-16 = 1 :

| | | | | XG-5 = 0 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XF-4 = 0 : 1

| | | | | | | | | XF-4 = 1 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | XG-5 = 1 : 0

| | XC-1 = 1 :

| | | XD-2 = 0 :

| | | | XS-17 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XE-3 = 0 : 0

| | | | | | | XE-3 = 1 : 1

| | | | | XF-4 = 1 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XO-13 = 0 : 1

| | | | | | | | | XO-13 = 1 :

| | | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | | XN-12 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | XS-17 = 1 :

| | | | | XJ-8 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XM-11 = 0 : 0

| | | | | | | XM-11 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XU-19 = 0 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 :

| | | | | | | | | | | XL-10 = 0 : 1

| | | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XU-19 = 1 : 1

| | | | | | XQ-15 = 1 : 0

| | | | | XJ-8 = 1 :

| | | | | | XO-13 = 0 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | XO-13 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | XD-2 = 1 :

| | | | XF-4 = 0 : 0

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 0

| | | | | XO-13 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 : 1

| XK-9 = 1 :

| | XD-2 = 0 :

| | | XT-18 = 0 :

| | | | XF-4 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XR-16 = 0 : 0

| | | | | | XR-16 = 1 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 :

| | | | | | | | XO-13 = 0 : 1

| | | | | | | | XO-13 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XO-13 = 0 : 0

| | | | | | XO-13 = 1 : 1

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XG-5 = 0 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | XT-18 = 1 :

| | | | XB-0 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XM-11 = 0 : 1

| | | | | | XM-11 = 1 :

| | | | | | | XJ-8 = 0 : 0

| | | | | | | XJ-8 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | XC-1 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XS-17 = 0 : 0

| | | | | | | | XS-17 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | | XB-0 = 1 : 0

| | XD-2 = 1 : 0

Decision Tree - 1 : Accuracy

Correct : 441

Total : 600

% Accuracy : 73.5

Decision Tree - 2 : Accuracy

Correct : 439

Total : 600

% Accuracy : 73.16666666666667

Pruned - Decision Tree - Information Gain heuristics

Printing Tree ::

XI-7 = 0 :

| XU-19 = 0 :

| | XQ-15 = 0 :

| | | XF-4 = 0 :

| | | | XO-13 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XG-5 = 0 : 0

| | | | | | | XG-5 = 1 : 1

| | | | | XB-0 = 1 : 0

| | | | XO-13 = 1 :

| | | | | XB-0 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XM-11 = 0 : 1

| | | | | | | XM-11 = 1 : 0

| | | | | | XD-2 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 : 1

| | | | | | | XL-10 = 1 :

| | | | | | | | XS-17 = 0 :

| | | | | | | | | XK-9 = 0 :

| | | | | | | | | | XC-1 = 0 : 0

| | | | | | | | | | XC-1 = 1 : 1

| | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XS-17 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XF-4 = 1 : 0

| | XQ-15 = 1 :

| | | XB-0 = 0 :

| | | | XT-18 = 0 :

| | | | | XL-10 = 0 :

| | | | | | XR-16 = 0 :

| | | | | | | XN-12 = 0 :

| | | | | | | | XP-14 = 0 : 1

| | | | | | | | XP-14 = 1 :

| | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | XG-5 = 1 :

| | | | | | | | | | XE-3 = 0 : 0

| | | | | | | | | | XE-3 = 1 :

| | | | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | | | XC-1 = 1 : 0

| | | | | | | XN-12 = 1 : 0

| | | | | | XR-16 = 1 : 1

| | | | | XL-10 = 1 :

| | | | | | XF-4 = 0 : 0

| | | | | | XF-4 = 1 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XH-6 = 0 : 1

| | | | | | | | XH-6 = 1 :

| | | | | | | | | XM-11 = 0 : 0

| | | | | | | | | XM-11 = 1 : 1

| | | | | | | XC-1 = 1 :

| | | | | | | | XJ-8 = 0 : 0

| | | | | | | | XJ-8 = 1 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 :

| | | | | | | | | | XM-11 = 0 : 1

| | | | | | | | | | XM-11 = 1 : 0

| | | | XT-18 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | | XN-12 = 1 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XM-11 = 1 : 0

| | | XB-0 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XF-4 = 0 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | XC-1 = 1 :

| | | | | | | | | | XK-9 = 0 :

| | | | | | | | | | | XE-3 = 0 :

| | | | | | | | | | | | XD-2 = 0 :

| | | | | | | | | | | | | XG-5 = 0 :

| | | | | | | | | | | | | | XR-16 = 0 :

| | | | | | | | | | | | | | | XJ-8 = 0 :

| | | | | | | | | | | | | | | | XN-12 = 0 :

| | | | | | | | | | | | | | | | | XS-17 = 0 :

| | | | | | | | | | | | | | | | | | XH-6 = 0 :

| | | | | | | | | | | | | | | | | | | XT-18 = 0 : 0

| | | | | | | | | | | | | | | | | | | XT-18 = 1 : 0

| | | | | | | | | | | XE-3 = 1 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | | XP-14 = 1 : 1

| | | | | | XF-4 = 1 : 0

| | | | | XM-11 = 1 : 0

| XU-19 = 1 :

| | XG-5 = 0 :

| | | XS-17 = 0 :

| | | | XJ-8 = 0 :

| | | | | XN-12 = 0 :

| | | | | | XB-0 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XB-0 = 1 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XD-2 = 0 : 0

| | | | | | | | XD-2 = 1 : 1

| | | | | XN-12 = 1 : 0

| | | | XJ-8 = 1 :

| | | | | XN-12 = 0 :

| | | | | | XQ-15 = 0 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XO-13 = 0 : 0

| | | | | | | | XO-13 = 1 : 1

| | | | | | | XM-11 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | XN-12 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XD-2 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 : 0

| | | | | | | | XT-18 = 1 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | | XE-3 = 1 : 1

| | | XS-17 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XR-16 = 0 : 0

| | | | | | | XR-16 = 1 : 1

| | | | | | XN-12 = 1 : 1

| | | | | XL-10 = 1 : 0

| | XG-5 = 1 : 0

XI-7 = 1 :

| XK-9 = 0 :

| | XC-1 = 0 :

| | | XS-17 = 0 :

| | | | XG-5 = 0 :

| | | | | XM-11 = 0 : 1

| | | | | XM-11 = 1 :

| | | | | | XT-18 = 0 : 1

| | | | | | XT-18 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XQ-15 = 0 :

| | | | | | | | | XH-6 = 0 : 0

| | | | | | | | | XH-6 = 1 :

| | | | | | | | | | XP-14 = 0 : 1

| | | | | | | | | | XP-14 = 1 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XQ-15 = 0 : 1

| | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | XS-17 = 1 :

| | | | XR-16 = 0 :

| | | | | XN-12 = 0 : 1

| | | | | XN-12 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XJ-8 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 :

| | | | | | | | | XD-2 = 0 : 0

| | | | | | | | | XD-2 = 1 : 1

| | | | | | | XJ-8 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XT-18 = 0 : 0

| | | | | | | XT-18 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | XR-16 = 1 :

| | | | | XG-5 = 0 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XF-4 = 0 : 1

| | | | | | | | | XF-4 = 1 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | XG-5 = 1 : 0

| | XC-1 = 1 :

| | | XD-2 = 0 :

| | | | XS-17 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XE-3 = 0 : 0

| | | | | | | XE-3 = 1 : 1

| | | | | XF-4 = 1 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XO-13 = 0 : 1

| | | | | | | | | XO-13 = 1 :

| | | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | | XN-12 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | XS-17 = 1 :

| | | | | XJ-8 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XM-11 = 0 : 0

| | | | | | | XM-11 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XU-19 = 0 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 :

| | | | | | | | | | | XL-10 = 0 : 1

| | | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XU-19 = 1 : 1

| | | | | | XQ-15 = 1 : 0

| | | | | XJ-8 = 1 :

| | | | | | XO-13 = 0 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | XO-13 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | XD-2 = 1 :

| | | | XF-4 = 0 : 0

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 0

| | | | | XO-13 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 : 1

| XK-9 = 1 :

| | XD-2 = 0 :

| | | XT-18 = 0 :

| | | | XF-4 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XR-16 = 0 : 0

| | | | | | XR-16 = 1 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 :

| | | | | | | | XO-13 = 0 : 1

| | | | | | | | XO-13 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XO-13 = 0 : 0

| | | | | | XO-13 = 1 : 1

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XG-5 = 0 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | XT-18 = 1 :

| | | | XB-0 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XM-11 = 0 : 1

| | | | | | XM-11 = 1 :

| | | | | | | XJ-8 = 0 : 0

| | | | | | | XJ-8 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | XC-1 = 1 :

| | | | | | XH-6 = 0 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XL-10 = 0 : 1

| | | | | | | XL-10 = 1 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 : 0

| | | | XB-0 = 1 : 0

| | XD-2 = 1 : 0

Pruning Decision Tree1

Accuracy of Decision Tree1 after pruning

Correct : 441

Total : 600

% Accuracy : 73.5

Pruned - Decision Tree - Variance Impurity heuristics

Printing Tree ::

XI-7 = 0 :

| XU-19 = 0 :

| | XQ-15 = 0 :

| | | XF-4 = 0 :

| | | | XO-13 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XJ-8 = 0 : 0

| | | | | | XJ-8 = 1 :

| | | | | | | XG-5 = 0 : 0

| | | | | | | XG-5 = 1 : 1

| | | | | XB-0 = 1 : 0

| | | | XO-13 = 1 :

| | | | | XB-0 = 0 :

| | | | | | XD-2 = 0 :

| | | | | | | XM-11 = 0 : 1

| | | | | | | XM-11 = 1 : 0

| | | | | | XD-2 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XS-17 = 0 :

| | | | | | | | XJ-8 = 0 :

| | | | | | | | | XN-12 = 0 : 1

| | | | | | | | | XN-12 = 1 : 0

| | | | | | | | XJ-8 = 1 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XL-10 = 0 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XF-4 = 1 : 0

| | XQ-15 = 1 :

| | | XB-0 = 0 :

| | | | XF-4 = 0 :

| | | | | XG-5 = 0 : 0

| | | | | XG-5 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XS-17 = 0 : 0

| | | | | | | XS-17 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | | XF-4 = 1 :

| | | | | XT-18 = 0 :

| | | | | | XL-10 = 0 :

| | | | | | | XS-17 = 0 : 1

| | | | | | | XS-17 = 1 :

| | | | | | | | XC-1 = 0 : 0

| | | | | | | | XC-1 = 1 : 1

| | | | | | XL-10 = 1 :

| | | | | | | XC-1 = 0 :

| | | | | | | | XH-6 = 0 : 1

| | | | | | | | XH-6 = 1 :

| | | | | | | | | XE-3 = 0 : 1

| | | | | | | | | XE-3 = 1 : 0

| | | | | | | XC-1 = 1 :

| | | | | | | | XJ-8 = 0 : 0

| | | | | | | | XJ-8 = 1 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 :

| | | | | | | | | | XM-11 = 0 : 1

| | | | | | | | | | XM-11 = 1 : 0

| | | | | XT-18 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XO-13 = 0 : 1

| | | | | | | XO-13 = 1 :

| | | | | | | | XL-10 = 0 : 0

| | | | | | | | XL-10 = 1 :

| | | | | | | | | XS-17 = 0 : 1

| | | | | | | | | XS-17 = 1 :

| | | | | | | | | | XR-16 = 0 : 1

| | | | | | | | | | XR-16 = 1 : 0

| | | | | | XH-6 = 1 : 1

| | | XB-0 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XM-11 = 0 :

| | | | | | XF-4 = 0 :

| | | | | | | XP-14 = 0 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XC-1 = 0 : 1

| | | | | | | | | XC-1 = 1 :

| | | | | | | | | | XK-9 = 0 :

| | | | | | | | | | | XG-5 = 0 :

| | | | | | | | | | | | XD-2 = 0 :

| | | | | | | | | | | | | XN-12 = 0 :

| | | | | | | | | | | | | | XE-3 = 0 :

| | | | | | | | | | | | | | | XJ-8 = 0 :

| | | | | | | | | | | | | | | | XR-16 = 0 :

| | | | | | | | | | | | | | | | | XS-17 = 0 :

| | | | | | | | | | | | | | | | | | XH-6 = 0 :

| | | | | | | | | | | | | | | | | | | XT-18 = 0 : 0

| | | | | | | | | | | | | | | | | | | XT-18 = 1 : 0

| | | | | | | | | | | XG-5 = 1 : 0

| | | | | | | | | | XK-9 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | | | | XP-14 = 1 : 1

| | | | | | XF-4 = 1 : 0

| | | | | XM-11 = 1 : 0

| XU-19 = 1 :

| | XG-5 = 0 :

| | | XS-17 = 0 :

| | | | XJ-8 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XF-4 = 0 : 0

| | | | | | | XF-4 = 1 : 1

| | | | | | XN-12 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XH-6 = 0 : 0

| | | | | | XH-6 = 1 :

| | | | | | | XP-14 = 0 : 0

| | | | | | | XP-14 = 1 : 1

| | | | XJ-8 = 1 :

| | | | | XN-12 = 0 :

| | | | | | XQ-15 = 0 : 0

| | | | | | XQ-15 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XO-13 = 0 : 0

| | | | | | | | XO-13 = 1 : 1

| | | | | | | XM-11 = 1 :

| | | | | | | | XR-16 = 0 : 1

| | | | | | | | XR-16 = 1 : 0

| | | | | XN-12 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XD-2 = 0 :

| | | | | | | | XT-18 = 0 :

| | | | | | | | | XK-9 = 0 : 1

| | | | | | | | | XK-9 = 1 : 0

| | | | | | | | XT-18 = 1 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | | XE-3 = 1 : 1

| | | XS-17 = 1 :

| | | | XO-13 = 0 : 0

| | | | XO-13 = 1 :

| | | | | XL-10 = 0 :

| | | | | | XN-12 = 0 :

| | | | | | | XR-16 = 0 : 0

| | | | | | | XR-16 = 1 : 1

| | | | | | XN-12 = 1 : 1

| | | | | XL-10 = 1 : 0

| | XG-5 = 1 : 0

XI-7 = 1 :

| XK-9 = 0 :

| | XC-1 = 0 :

| | | XS-17 = 0 :

| | | | XG-5 = 0 :

| | | | | XM-11 = 0 : 1

| | | | | XM-11 = 1 :

| | | | | | XT-18 = 0 : 1

| | | | | | XT-18 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XQ-15 = 0 :

| | | | | | | | | XH-6 = 0 : 0

| | | | | | | | | XH-6 = 1 :

| | | | | | | | | | XP-14 = 0 : 1

| | | | | | | | | | XP-14 = 1 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XR-16 = 1 :

| | | | | | | | XQ-15 = 0 : 1

| | | | | | | | XQ-15 = 1 : 0

| | | | XG-5 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XL-10 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 : 1

| | | | | | XL-10 = 1 : 0

| | | XS-17 = 1 :

| | | | XR-16 = 0 :

| | | | | XN-12 = 0 : 1

| | | | | XN-12 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XJ-8 = 0 :

| | | | | | | | XU-19 = 0 : 1

| | | | | | | | XU-19 = 1 :

| | | | | | | | | XD-2 = 0 : 0

| | | | | | | | | XD-2 = 1 : 1

| | | | | | | XJ-8 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XT-18 = 0 : 0

| | | | | | | XT-18 = 1 :

| | | | | | | | XF-4 = 0 : 0

| | | | | | | | XF-4 = 1 : 1

| | | | XR-16 = 1 :

| | | | | XG-5 = 0 :

| | | | | | XM-11 = 0 :

| | | | | | | XH-6 = 0 : 0

| | | | | | | XH-6 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XF-4 = 0 : 1

| | | | | | | | | XF-4 = 1 : 0

| | | | | | XM-11 = 1 :

| | | | | | | XD-2 = 0 : 0

| | | | | | | XD-2 = 1 : 1

| | | | | XG-5 = 1 : 0

| | XC-1 = 1 :

| | | XD-2 = 0 :

| | | | XS-17 = 0 :

| | | | | XF-4 = 0 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 :

| | | | | | | XE-3 = 0 : 0

| | | | | | | XE-3 = 1 : 1

| | | | | XF-4 = 1 :

| | | | | | XP-14 = 0 : 1

| | | | | | XP-14 = 1 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XL-10 = 0 :

| | | | | | | | | XO-13 = 0 : 1

| | | | | | | | | XO-13 = 1 :

| | | | | | | | | | XN-12 = 0 : 0

| | | | | | | | | | XN-12 = 1 : 1

| | | | | | | | XL-10 = 1 : 0

| | | | XS-17 = 1 :

| | | | | XJ-8 = 0 :

| | | | | | XQ-15 = 0 :

| | | | | | | XM-11 = 0 : 0

| | | | | | | XM-11 = 1 :

| | | | | | | | XB-0 = 0 : 1

| | | | | | | | XB-0 = 1 :

| | | | | | | | | XU-19 = 0 :

| | | | | | | | | | XG-5 = 0 : 1

| | | | | | | | | | XG-5 = 1 :

| | | | | | | | | | | XL-10 = 0 : 1

| | | | | | | | | | | XL-10 = 1 : 0

| | | | | | | | | XU-19 = 1 : 1

| | | | | | XQ-15 = 1 : 0

| | | | | XJ-8 = 1 :

| | | | | | XO-13 = 0 :

| | | | | | | XH-6 = 0 : 1

| | | | | | | XH-6 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | | XO-13 = 1 :

| | | | | | | XR-16 = 0 :

| | | | | | | | XN-12 = 0 : 1

| | | | | | | | XN-12 = 1 :

| | | | | | | | | XP-14 = 0 : 0

| | | | | | | | | XP-14 = 1 : 1

| | | | | | | XR-16 = 1 : 1

| | | XD-2 = 1 :

| | | | XF-4 = 0 : 0

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 0

| | | | | XO-13 = 1 :

| | | | | | XP-14 = 0 : 0

| | | | | | XP-14 = 1 : 1

| XK-9 = 1 :

| | XD-2 = 0 :

| | | XT-18 = 0 :

| | | | XF-4 = 0 :

| | | | | XB-0 = 0 :

| | | | | | XR-16 = 0 : 0

| | | | | | XR-16 = 1 :

| | | | | | | XU-19 = 0 : 1

| | | | | | | XU-19 = 1 :

| | | | | | | | XO-13 = 0 : 1

| | | | | | | | XO-13 = 1 : 0

| | | | | XB-0 = 1 :

| | | | | | XO-13 = 0 : 0

| | | | | | XO-13 = 1 : 1

| | | | XF-4 = 1 :

| | | | | XO-13 = 0 : 1

| | | | | XO-13 = 1 :

| | | | | | XH-6 = 0 :

| | | | | | | XL-10 = 0 :

| | | | | | | | XG-5 = 0 :

| | | | | | | | | XQ-15 = 0 : 1

| | | | | | | | | XQ-15 = 1 : 0

| | | | | | | | XG-5 = 1 : 0

| | | | | | | XL-10 = 1 : 1

| | | | | | XH-6 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XQ-15 = 0 : 0

| | | | | | | | XQ-15 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | XT-18 = 1 :

| | | | XB-0 = 0 :

| | | | | XC-1 = 0 :

| | | | | | XM-11 = 0 : 1

| | | | | | XM-11 = 1 :

| | | | | | | XJ-8 = 0 : 0

| | | | | | | XJ-8 = 1 :

| | | | | | | | XE-3 = 0 : 0

| | | | | | | | XE-3 = 1 : 1

| | | | | XC-1 = 1 :

| | | | | | XE-3 = 0 :

| | | | | | | XN-12 = 0 : 1

| | | | | | | XN-12 = 1 : 0

| | | | | | XE-3 = 1 :

| | | | | | | XM-11 = 0 :

| | | | | | | | XS-17 = 0 : 0

| | | | | | | | XS-17 = 1 : 1

| | | | | | | XM-11 = 1 : 1

| | | | XB-0 = 1 : 0

| | XD-2 = 1 : 0

Pruning Decision Tree2

Accuracy - Pruned - Decision Tree 1

Correct : 439

Total : 600

% Accuracy : 73.16666666666667