

# Assignment 2 Report

## Machine Learning

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# Experiment 1

Random state [478, 168, 221, 219, 434]  
Train data accuracy: [1.0, 1.0, 1.0, 1.0, 1.0]  
Test data accuracy: [0.9854227405247813, 0.9504373177842566,  
0.9698736637512148, 0.9611273080660836, 0.9523809523809523]  
the accuracy is: [0.9854227405247813, 0.9504373177842566,  
0.9698736637512148, 0.9611273080660836, 0.9523809523809523]  
the size is: [35, 37, 29, 27, 39]

# Experiment 2

Training SetSize ratio is: 0.3  
the accuracy is: [0.9781553398058253, 0.9805825242718447,  
0.9805825242718447, 0.9781553398058253, 0.9878640776699029]  
the size is: [43, 51, 55, 45, 51]  
accuracy Mean is: 0.9810679611650486  
Maximum accuracy is: 0.9878640776699029  
Minimum accuracy is: 0.9781553398058253  
tree size Mean is: 49  
Maximum tree size is: 55  
Minimum tree size is: 43

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Training SetSize ratio is: 0.4  
the accuracy is: [0.9836065573770492, 0.9854280510018215,  
0.9726775956284153, 0.9726775956284153, 0.9799635701275046]  
the size is: [45, 35, 43, 49, 49]  
accuracy Mean is: 0.9788706739526412  
Maximum accuracy is: 0.9854280510018215  
Minimum accuracy is: 0.9726775956284153  
tree size Mean is: 44.2  
Maximum tree size is: 49  
Minimum tree size is: 35

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Training SetSize ratio is: 0.5  
the accuracy is: [0.9620991253644315, 0.9868804664723032,  
0.9766763848396501, 0.9766763848396501, 0.9635568513119533]  
the size is: [47, 33, 35, 51, 49]  
accuracy Mean is: 0.9731778425655977  
Maximum accuracy is: 0.9868804664723032  
Minimum accuracy is: 0.9620991253644315  
tree size Mean is: 43  
Maximum tree size is: 51  
Minimum tree size is: 33

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Training SetSize ratio is: 0.6  
the accuracy is: [0.9769417475728155, 0.9830097087378641,  
0.970873786407767, 0.9587378640776699, 0.9842233009708737]  
the size is: [33, 37, 31, 47, 33]  
accuracy Mean is: 0.974757281553398  
Minimum accuracy is: 0.9587378640776699

tree size Mean is: 36.2  
Maximum tree size is: 47  
Minimum tree size is: 31

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Training SetSize ratio is: 0.7  
the accuracy is: [0.9656607700312175, 0.9843912591050988,  
0.9646201873048907, 0.9604578563995838, 0.9802289281997919]  
the size is: [23, 31, 33, 35, 31]  
accuracy Mean is: 0.9710718002081166  
Maximum accuracy is: 0.9843912591050988  
Minimum accuracy is: 0.9604578563995838  
tree size Mean is: 30.6  
Maximum tree size is: 35  
Minimum tree size is: 23

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Plot1(accuracy and training set size)

Plot2(number of nodes and training set size)

