## 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**

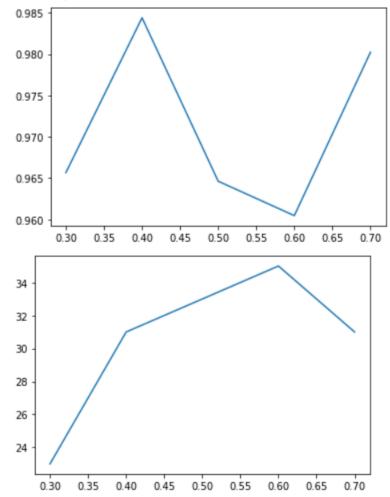
```
Training SetSize ratio is: 0.3
the accuarcy is: [0.9781553398058253, 0.9805825242718447,
0.9805825242718447, 0.9781553398058253, 0.98786407766990291
the size is: [43, 51, 55, 45, 51]
accuracy Mean is: 0.9810679611650486
Maximum accuracy is: 0.9878640776699029
Minimum accuracy is: 0.9781553398058253
tree size Mean is: 49
Maximum tree size is: 55
Minimum tree size is: 43
Training SetSize ratio is: 0.4
the accuarcy 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
Training SetSize ratio is: 0.5
the accuarcy 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
Training SetSize ratio is: 0.6
```

the accuarcy 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

```
Maximum tree size is: 47
Minimum tree size is: 31

Training SetSize ratio is: 0.7
the accuarcy 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)



tree size Mean is: 36.2