**Machine Learning**

**Assignment 2**

**Decision Tree Implementation**

Report

For data\_set\_1:

Tree Parameters

|  |  |  |
| --- | --- | --- |
|  | **Average Depth** | **Number of Nodes** |
| **Tree constructed using ID3** | 4.1316 | 281 |
| **Tree Constructed using Random Attribute selection** | 9.2064 | 2175 |

Accuracy on test data

|  |  |  |
| --- | --- | --- |
| Number of Nodes Pruned | Accuracy of the tree Constructed using ID3 | Accuracy of the tree constructed using random attribute selection |
| 0 | 74.76% | 61.22% |
| 1 | 74.86% | 63.77% |
| 2 | 74.81% | 61.52% |
| 3 | 74.66% | 61.17% |
| 4 | 75.26% | 62.52% |

For data\_set\_2:

For Random attribute selection algorithm, I’m getting OutOFMemory exception since tree generated is big and unfortunately I’m saving the data on each node. Therefore, values for random attribute selection are unavailable.

Tree Parameters

|  |  |  |
| --- | --- | --- |
|  | **Average Depth** | **Number of Nodes** |
| **Tree constructed using ID3** | 4.1702 | 282 |
| **Tree Constructed using Random Attribute selection** | - | - |

Accuracy on test data

|  |  |  |
| --- | --- | --- |
| Number of Nodes Pruned | Accuracy of the tree Constructed using ID3 | Accuracy of the tree constructed using random attribute selection |
| 0 | 72.54% | - |
| 1 | 67.38% | - |
| 2 | 72.54% | - |
| 3 | 72.54% | - |
| 4 | 72.54% | - |