**Assignment 6**

**Decision Tree Classification Results**

A screenshot of a graph

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Q: What is the overall accuracy of the Decision Tree Model?

A: The overall accuracy of the Decision Tree Model is 0.91, which means that 91% of the predictions made by the model were correct.

Q: What was the total number of samples evaluated?

A: The total number of instances evaluated was 120.

Q: For Class 0 (not purchased) what are the precision, recall and f1-score?

A:

|  |  |
| --- | --- |
| Precision | 0.96 |
| Recall | 0.90 |
| F1-Score | 0.93 |

This indicates that when the model predicted a customer would *not purchase*, it was correct 96% of the time. Out of all the customers who actually *did not* purchase, the model correctly identified 90% of them.

Q: For the "purchased" class (class 1), what are the precision, recall, and f1-score?

A:

|  |  |
| --- | --- |
| Precision | 0.83 |
| Recall | 0.93 |
| F1-Score | 0.87 |

This indicates that when the model predicted a customer *would* purchase, it was correct 83% of the time. Out of all the customers who actually *did* purchase, the model correctly identified 93% of them.

Q: How many actual instances of "not purchased" (class 0) were there in the dataset?

A: There were 79 actual instances of "not purchased" (class 0) in the dataset, as indicated by the 'support' for class 0.

Q: How many actual instances of "purchased" (class 1) were there in the dataset?

A: There were 41 actual instances of "purchased" (class 1) in the dataset, as indicated by the 'support' for class 1.

Q: Which class (purchased or not purchased) did the model have higher precision for?

A: The model had significantly higher precision for the "not purchased" class (class 0) at 0.96, compared to the "purchased" class (class 1) at 0.83. This implies that when the model predicts "not purchased," it is very likely to be correct.

Q: Which class (purchased or not purchased) did the model have higher recall for?

A: The model had higher recall for the "purchased" class (class 1) at 0.93, compared to the "not purchased" class (class 0) at 0.90. This means the model is better at identifying most of the actual "purchased" instances.

**Random Forest Results**

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Q: What is the overall accuracy of the model?

A: The overall accuracy of the model is 0.92 (or 92%). This signifies that the model correctly classified 92% of the total instances.

Q: What is the total number of samples or instances evaluated by the model?

A: The total number of instances evaluated was 120, as indicated by the 'support' column for accuracy, macro avg, and weighted avg.

Q: For the "not purchased" class (class 0), what are its precision, recall, and f1-score?

A:

|  |  |
| --- | --- |
| Precision | 0.95 |
| Recall | 0.92 |
| F1-Score | 0.94 |

This means that when the model predicted a customer would *not* purchase, it was correct 95% of the time. Out of all the customers who actually did *not* purchase, the model correctly identified 92% of them.

Q: For the "purchased" class (class 1), what are its precision, recall, and f1-score?

A:

|  |  |
| --- | --- |
| Precision | 0.86 |
| Recall | 0.90 |
| F1-Score | 0.88 |

This indicates that when the model predicted a customer *would* purchase, it was correct 86% of the time. Out of all the customers who actually *did* purchase, the model correctly identified 90% of them.

Q: How many actual instances of "not purchased" (class 0) were present in the dataset?

A: There were 79 actual instances of "not purchased" (class 0) in the dataset, as indicated by the 'support' for class 0.

Q: How many actual instances of "purchased" (class 1) were present in the dataset?

A: There were 41 actual instances of "purchased" (class 1) in the dataset, as indicated by the 'support' for class 1.