lab13-ai-alishba-waqar-46997

April 29, 2025

```python
[2]: #import libraries
     import pandas as pd
     from sklearn import tree
     import matplotlib.pyplot as plt
```

```python
[3]: #Upload the CSV
     from google.colab import files
     uploaded = files.upload()
```

```
<IPython.core.display.HTML object>

Saving study_dataset.csv to study_dataset (1).csv
```

```python
[4]: #read file
     data = pd.read_csv("study_dataset.csv")
```

```python
[10]: data.columns
```

```python
[10]: Index(['Hours_Studied', 'Sleep_Hours', 'Tuition_Attended', 'Pass'],
      dtype='object')
```

```python
[5]: #separate features and labels
     X = data.drop("Pass", axis=1)  # Features: Hours_Studied, Sleep_Hours,␣
      ↪Tuition_Attended
     Y = data["Pass"]               # Labels: Pass (0/1)
```

```python
[6]: #create and train the decision tree model
     clf = tree.DecisionTreeClassifier()
     clf = clf.fit(X, Y)
```

```python
[7]: #make a prediction
     sample = [[3, 7, 1]]  # Studied 3 hours, Slept 7 hours, Attended tuition
     prediction = clf.predict(sample)
```

```
/usr/local/lib/python3.11/dist-packages/sklearn/utils/validation.py:2739:
UserWarning: X does not have valid feature names, but DecisionTreeClassifier was
fitted with feature names
  warnings.warn(
```

```
[8]: print("Will the student pass? (1 = Yes, 0 = No):", prediction[0])
```

Will the student pass? (1 = Yes, 0 = No): 0

```
[11]: # visualize the Decision Tree
      plt.figure(figsize=(12, 8))
      tree.plot_tree(clf,
                     feature_names=["Hours_Studied", "Sleep_Hours",
        ↪"Tuition_Attended"],
                     class_names=["Fail", "Pass"],
                     filled=True)
      plt.title("Decision Tree - Student Pass Prediction")
      plt.show()
```


Decision Tree - Student Pass Prediction