

VAIBHAV PATEL

211112262

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In [ ]: import pandas as pd
from sklearn import preprocessing
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
from sklearn.tree import DecisionTreeClassifier
from sklearn import tree
from matplotlib import pyplot as plt

data=pd.read_csv('PlayTennis.csv')
le = preprocessing.LabelEncoder()
data_train_df = pd.DataFrame(data)
data_train_df_encoded = data_train_df.apply(le.fit_transform)
x=data_train_df_encoded[["Outlook","Temperature","Humidity","Wind"]]
y=data_train_df_encoded["Play Tennis"]

#x.train,x.test,y.train,y.test=train_test_split(x,y,test_size=0.3,random_
DTmodel=DecisionTreeClassifier()
DTmodel.fit(x,y)

#print(confusion_matrix(y.test,y_pred))
text_representation = tree.export_text(DTmodel)
print(text_representation)
fig = plt.figure(figsize=(10,10))
tree.plot_tree(DTmodel, feature_names=["Outlook","Temperature","Humidity"

|--- feature_0 <= 0.50
|   |--- class: 1
|--- feature_0 > 0.50
|   |--- feature_2 <= 0.50
|       |--- feature_0 <= 1.50
|           |--- feature_3 <= 0.50
|               |--- class: 0
|               |--- feature_3 > 0.50
|                   |--- class: 1
|           |--- feature_0 > 1.50
|               |--- class: 0
|       |--- feature_2 > 0.50
|           |--- feature_3 <= 0.50
|               |--- feature_1 <= 1.00
|                   |--- class: 0
|                   |--- feature_1 > 1.00
|                       |--- class: 1
|               |--- feature_3 > 0.50
|                   |--- class: 1
```

```
Out[ ]: [Text(0.4444444444444444, 0.9, 'Outlook <= 0.5\ngini = 0.459\nsamples = 14\nvalue = [5, 9]\nclass = NO'),
Text(0.3333333333333333, 0.7, 'gini = 0.0\nsamples = 4\nvalue = [0, 4]\nclass = NO'),
Text(0.5555555555555556, 0.7, 'Humidity <= 0.5\ngini = 0.5\nsamples = 10\nvalue = [5, 5]\nclass = YES'),
Text(0.3333333333333333, 0.5, 'Outlook <= 1.5\ngini = 0.32\nsamples = 5\nvalue = [4, 1]\nclass = YES'),
Text(0.2222222222222222, 0.3, 'Wind <= 0.5\ngini = 0.5\nsamples = 2\nvalue = [1, 1]\nclass = YES'),
Text(0.1111111111111111, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [1, 0]\nclass = YES'),
Text(0.3333333333333333, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [0, 1]\nclass = NO'),
Text(0.4444444444444444, 0.3, 'gini = 0.0\nsamples = 3\nvalue = [3, 0]\nclass = YES'),
Text(0.7777777777777778, 0.5, 'Wind <= 0.5\ngini = 0.32\nsamples = 5\nvalue = [1, 4]\nclass = NO'),
Text(0.6666666666666666, 0.3, 'Temperature <= 1.0\ngini = 0.5\nsamples = 2\nvalue = [1, 1]\nclass = YES'),
Text(0.5555555555555556, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [1, 0]\nclass = YES'),
Text(0.7777777777777778, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [0, 1]\nclass = NO'),
Text(0.8888888888888888, 0.3, 'gini = 0.0\nsamples = 3\nvalue = [0, 3]\nclass = NO')]
```

