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22P-9278

BS-AI-4A

Task 7

In [ ]:
```
from sklearn.model_selection import train_test_split
from sklearn.neighbors import NearestNeighbors
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score
from sklearn.preprocessing import OneHotEncoder
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
```

Function for reading a file

In [ ]:
```
def read_file(Filename):
    concat="/home/shafeenkhan/Documents/My-all-programs--/Semester-4/Arit
    df=pd.read_csv(concat)
    return df
```

In [ ]:
```
df=read_file(Filename="titanic")
```

Cleaning The Data

In [ ]:
```
df["Sex"]=df["Sex"].map({'male':1,'female':0}) #hot encoding , changing d
df["Embarked"]=df["Embarked"].map({'S':2,'c':3,'Q':4}) #hot encoding , ch
df["Embarked"]=df["Embarked"].ffill()
X_train_X=df[["Pclass","Age","SibSp","Parch","Fare"]]
y_test_y=df["Survived"]
X_train_X=X_train_X.ffill()
y_test_y=y_test_y.ffill()
```

Function For putting the features and categorical Features , working on them and making them go through the model

In [ ]:
```
Acc=[]
size_k=[1,2,3,4,5] # different values of K
def Working(): # This function is to read the file and choose whether use
            try: #  using try and except for better handling of errors
                for i in range(0,len(size_k)):
```

```
                        X_train, X_test, y_train, y_test = train_test_spl
                        knn = KNeighborsClassifier()
                        knn.fit(X_train, y_train)
                        y_pred = knn.predict(X_test)
                        accuracy = accuracy_score(y_test, y_pred)
                        Acc.append(accuracy)
                        print(f"Accuracy for the value of K ( {i+1} ) is
            except:
                print("Caught An Error")
```

Calling the function

In [ ]:
```
Working()
```

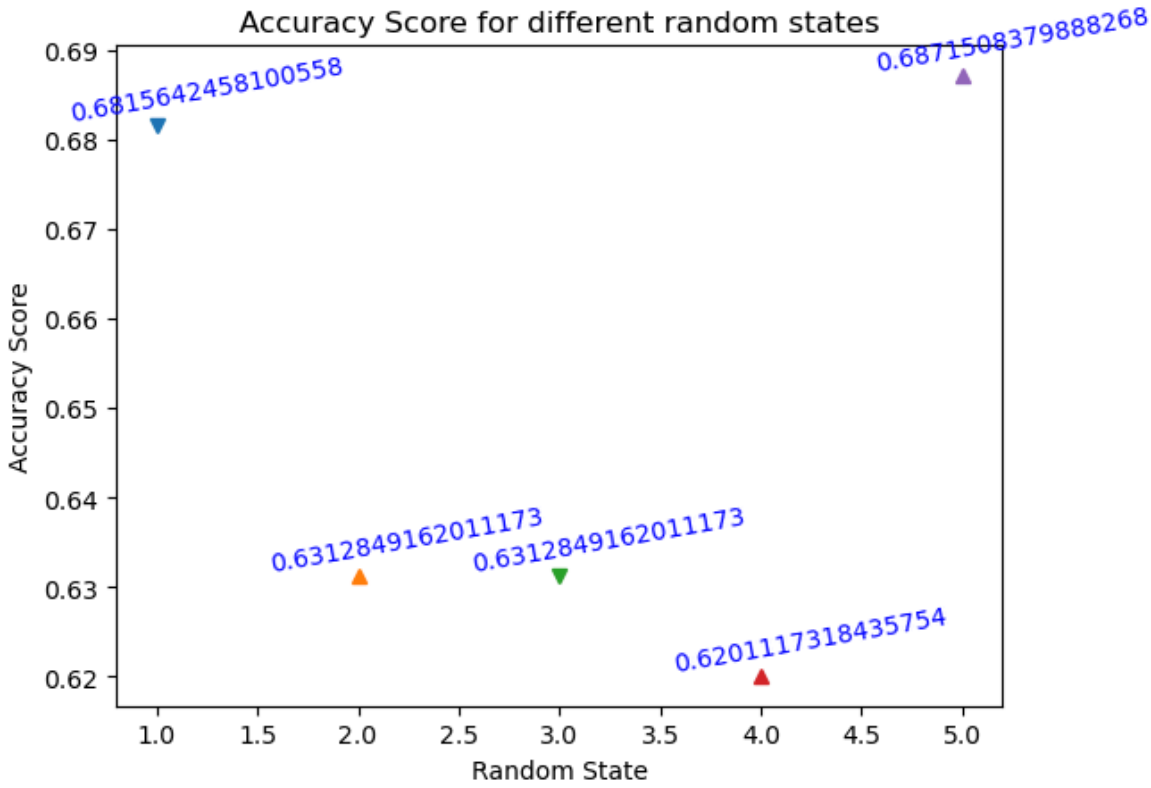
```
Accuracy for the value of K ( 1 ) is : 0.6815642458100558
Accuracy for the value of K ( 2 ) is : 0.6312849162011173
Accuracy for the value of K ( 3 ) is : 0.6312849162011173
Accuracy for the value of K ( 4 ) is : 0.6201117318435754
Accuracy for the value of K ( 5 ) is : 0.6871508379888268
```

Plotting

In [ ]:
```
def label_bars(heights, x_coords):
    for height, x_coord in zip(heights, x_coords):
        plt.annotate(f'{height}',
                     xy=(x_coord, height),
                     xytext=(20, 0),  # 4 points vertical offset.
                     textcoords='offset points',
                     ha='center', va='bottom',
                     color='b', size=10,rotation=10)
plt.plot(size_k[0], Acc[0], 'v')
plt.plot(size_k[1], Acc[1], '^')
plt.plot(size_k[2], Acc[2], 'v')
plt.plot(size_k[3], Acc[3], '^')
plt.plot(size_k[4], Acc[4], '^')
plt.xlabel('Random State')
plt.ylabel('Accuracy Score')
plt.title('Accuracy Score for different random states')

# Add text annotations for each data point
label_bars(Acc, size_k)

plt.show()
```


Accuracy Score for different random states
Accuracy Score
Random State
0.69
0.68
0.67
0.66
0.65
0.64
0.63
0.62
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
0.6815642458100558
0.6871508379888268
0.6312849162011173
0.6312849162011173
0.6201117318435754