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1  #IMPORT MODULES
2  from sklearn.datasets import make_classification
3  from sklearn.model_selection import train_test_split
4  from sklearn.metrics import roc_curve
5  from sklearn.metrics import roc_auc_score
6  from matplotlib import pyplot
7  import pandas as pd
8
9  #IMPORTING DATA
10 def importing_data(path):
11     data = pd.read_excel(path)
12     return data
13
14 #CALCULATE AREA UNDER CURVE VALUE
15 def auc(references, predicted):
16     auc = roc_auc_score(references, predicted)
17     return auc
18
19 #CALCULATING TPR AND FPR
20 def fpr(references, predicted):
21     fpr, tpr, _ = roc_curve(references, predicted)
22     return fpr, tpr
23 def fpr(references, predicted):
24     fpr, tpr, _ = roc_curve(references, predicted)
25     return fpr, tpr
26
27 #PLOT ROC CURVE
28 def plot_roc(fpr, tpr):
29     pyplot.plot(fpr, tpr, marker='.', label='PLS-DA')
30     pyplot.xlabel('False Positive Rate')
31     pyplot.ylabel('True Positive Rate')
32     pyplot.legend()
33     pyplot.show()
34     return pyplot
35
36 #WRITING TABLE
37 def writing_table(tpr, fpr, auc):
38     results = {'TPR': tpr, 'FPR': fpr, 'AUC': auc}
39     return results
40
41 #CREATING DATAFRAME
42 def creating_dataframe(results):
43     df = pd.DataFrame(results)
44     print('SUCCESS: Created dataframe')
45     return df
46
47 #WRITING EXCEL FILE
48 def writing_output(df, sheet):
49     writer = pd.ExcelWriter(output_path)
50     df.to_excel(writer, sheet_name = sheet, index = False)
51     writer.save()
52     print('Dataframe saved on data_results.xlsx file')
53
54 #MODIFYING DATA
55 path = r'C:\Users\edwincaballero\Desktop\data.xlsx'
56 data = importing_data(path)
57 predicted = data['predicted']
58 references = data['reference']
59
60 #OUTPUTS
61 auc = auc(references, predicted)
62 fpr, tpr = fpr(references, predicted)
63 fpr = list(fpr)
64 tpr = list(tpr)
65
66 #FOR EXPORTING
67 results = writing_table(tpr, fpr, auc)
68 df = creating_dataframe(results)
69 output_path = r'C:\Users\edwincaballero/Desktop/data_results.xlsx'
70 sheet = 'M01'
71 writing_output(df, sheet)
72
73 #EXPORTING PLOT
74 pyplot = plot_roc(fpr, tpr)
75 print('Graph created')
76 pyplot.savefig('roc.png', bbox_inches='tight', pad_inches=2, transparent=False)
77 print('Graph saved')

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