| Sample | True | Predict |
|---|---|---|
| 1 | [0 0 1] | [0.1 0.2 0.7] |
| 2 | [0 1 0] | [0.1 0.6 0.3] |
| 3 | [1 0 0] | [0.5 0.2 0.3] |
| 4 | [0 0 1] | [0.1 0.1 0.8] |
| 5 | [1 0 0] | [0.4 0.2 0.4] |
| 6 | [0 1 0] | [0.6 0.3 0.1] |
| 7 | [0 1 0] | [0.4 0.2 0.4] |
| 8 | [0 1 0] | [0.4 0.1 0.5] |
| 9 | [0 0 1] | [0.1 0.1 0.8] |
| 10 | [0 1 0] | [0.1 0.8 0.1] |

## Lazy Coding ↓↓

```python
1.  import matplotlib.pyplot as plt
2.  import numpy as np
3.  from sklearn.metrics import roc_curve
4.
5.  source_data = [ [ [0, 0, 1], [0.1, 0.2, 0.7] ],
6.                  [ [0, 1, 0], [0.1, 0.6, 0.3] ],
7.                  [ [1, 0, 0], [0.5, 0.2, 0.3] ],
8.                  [ [0, 0, 1], [0.1, 0.1, 0.8] ],
9.                  [ [1, 0, 0], [0.4, 0.2, 0.4] ],
10.                 [ [0, 1, 0], [0.6, 0.3, 0.1] ],
11.                 [ [0, 1, 0], [0.4, 0.2, 0.4] ],
12.                 [ [0, 1, 0], [0.4, 0.1, 0.5] ],
13.                 [ [0, 0, 1], [0.1, 0.1, 0.8] ],
14.                 [ [0, 1, 0], [0.1, 0.8, 0.1] ] ] ]
15.
16. true_label = np.array([])
17. predicted_score = np.array([])
18.
19. sep_true_label_list = []
20. sep_predicted_score_list = []
21. sep_fpr_list = []
22. sep_tpr_list = []
23.
24. for i in range(3):
25.     for data_list_tuple in source_data:
26.         true_label = np.append(true_label, data_list_tuple[0][i])
27.         predicted_score = np.append(predicted_score, data_list_tuple[1][i])
28.
29.     sep_true_label_list.append(true_label)
```

```python
30.        sep_predicted_score_list.append(predicted_score)
31.     fpr, tpr, threshold = roc_curve(true_label,
32.                                     predicted_score,
33.                                     pos_label=1,
34.                                     drop_intermediate=False)
35.
36.     sep_fpr_list.append(fpr)
37.     sep_tpr_list.append(tpr)
38.     plt.plot(fpr, tpr, marker='o', label='Class '+str(i+1), alpha=1)
39.
40.     del true_label
41.     del predicted_score
42.     true_label = np.array([])
43.     predicted_score = np.array([])
44.
45. plt.xlabel('FPR', fontsize=16)
46. plt.ylabel('TPR', fontsize=16)
47. plt.title('OvR ROC Curves', fontsize=20)
48. plt.legend()
49. plt.grid(True)
50. plt.show()
51.
52. for i in range(3):
53.     true_label = np.concatenate((true_label, sep_true_label_list[i]), axis=0)
54.     predicted_score = np.concatenate((predicted_score, sep_predicted_score_list[i]), axis=0)
55.
56. fpr, tpr, threshold = roc_curve(true_label,
57.                                 predicted_score,
58.                                 pos_label=1,
59.                                 drop_intermediate=False)
60. del true_label
61. del predicted_score
62.
63. plt.plot(fpr, tpr, marker='o', markerfacecolor='r')
64. plt.xlabel('FPR', fontsize=16)
65. plt.ylabel('TPR', fontsize=16)
66. plt.title('Micro-avg ROC Curve', fontsize=20)
67. plt.grid(True)
68. plt.show()
69.
70. fpr_grid = np.linspace(0.0, 1.0, 10)
71. mean_tpr = np.zeros_like(fpr_grid)
72.
73. for i in range(3):
74.     mean_tpr += np.interp(fpr_grid, sep_fpr_list[i], sep_tpr_list[i]) / 3.0
75.
76. fpr = fpr_grid
77. tpr = mean_tpr
78. plt.plot(fpr, tpr, marker='o', markerfacecolor='r')
```
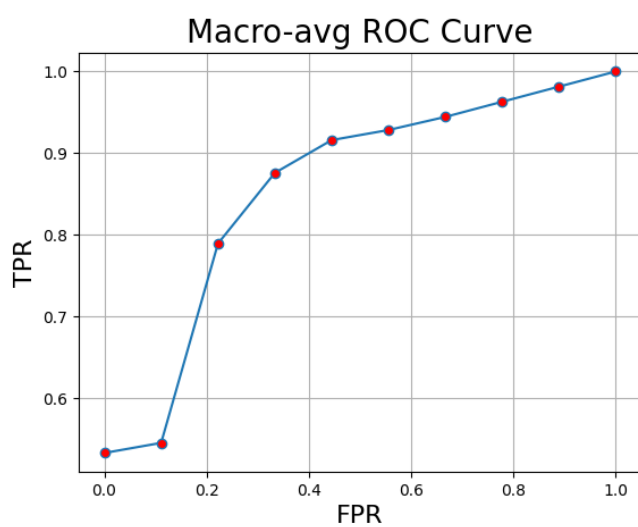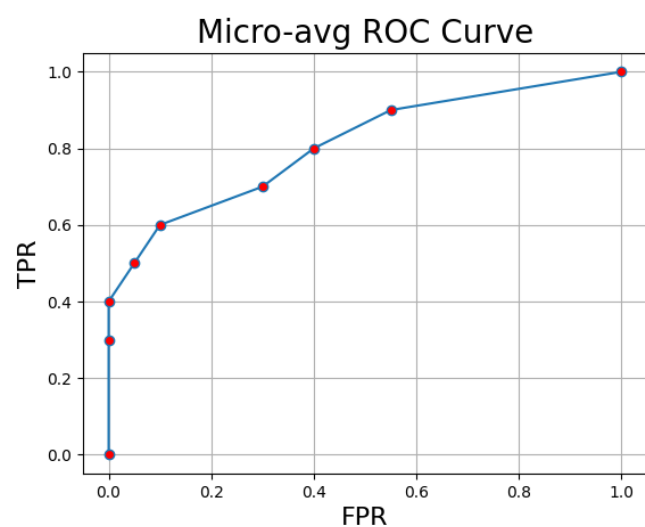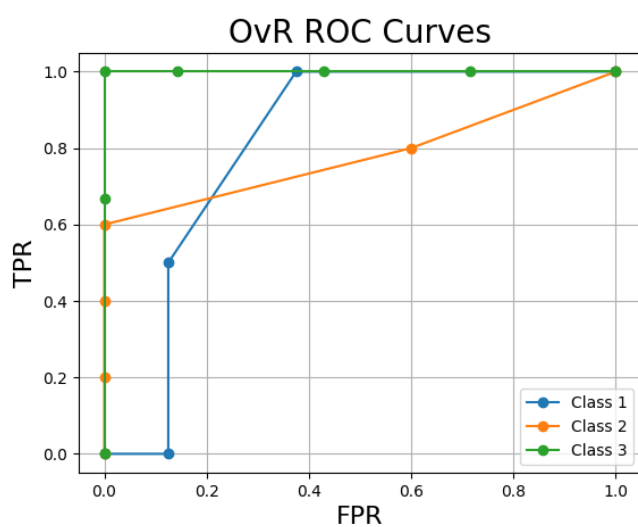
```
79. plt.xlabel('FPR', fontsize=16)
80. plt.ylabel('TPR', fontsize=16)
81. plt.title('Macro-avg ROC Curve', fontsize=20)
82. plt.grid(True)
83. plt.show()
84.
85. del fpr_grid
86. del mean_tpr
87. del sep_fpr_list
88. del sep_tpr_list
89. del sep_true_label_list
90. del sep_predicted_score_list
```

## Run to Get ↓↓



← The Marco one, looks quite strange.