

table_results

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```
[1]: import pandas as pd
import numpy as np
import pickle

[2]: result_folder = "results"
exps = ['cn_ad', 'cn_mci', 'mci_ad']
fts = ['t1', 'gm', 'wm', 'csf', 'tissues', 'all']
folds = range(10)

[3]: class ColumnExtractor(object):
    def __init__(self, str_):
        self.str_ = str_

    def transform(self, X):
        return X.iloc[:, X.columns.str.contains(self.str_)]

    def fit(self, X, y=None):
        return self

[4]: results = []
for exp in exps:
    for fold in folds:
        path = result_folder + "/clf_concatenated_" + \
            str(fold) + "_" + exp + ".pickle"

        infile = open(path, 'rb')
        new_dict = pickle.load(infile)
        infile.close()
        for j in range(len(new_dict)):
            res = new_dict[j]['scores']
            res['exp'] = exp
            res['fold'] = fold
            res['ft'] = new_dict[j]['fts']

            results.append(res)
results = pd.DataFrame(results)
results.head(10)
```

```
[4]:      train      f1      acc      bacc      sens      spe      auc  \
0  0.945294  0.904762  0.923077  0.920123  0.904762  0.935484  0.963134
1  0.904602  0.782609  0.807692  0.815668  0.857143  0.774194  0.937020
2  0.959781  0.857143  0.884615  0.880184  0.857143  0.903226  0.958525
3  0.968706  0.857143  0.884615  0.880184  0.857143  0.903226  0.975422
4  0.954671  0.772727  0.803922  0.804762  0.809524  0.800000  0.915873
5  0.908500  0.780488  0.823529  0.814286  0.761905  0.866667  0.898413
6  0.958598  0.818182  0.843137  0.845238  0.857143  0.833333  0.952381
7  0.973023  0.850000  0.882353  0.871429  0.809524  0.933333  0.946032
8  0.938757  0.878049  0.901961  0.895238  0.857143  0.933333  0.969841
9  0.895245  0.829268  0.862745  0.854762  0.809524  0.900000  0.934921
```

```
      exp  fold      ft
0  cn_ad     0      gm
1  cn_ad     0      wm
2  cn_ad     0     csf
3  cn_ad     0  tissues
4  cn_ad     1      gm
5  cn_ad     1      wm
6  cn_ad     1     csf
7  cn_ad     1  tissues
8  cn_ad     2      gm
9  cn_ad     2      wm
```

```
[5]: def print_mean_results(dt, exp, round=3):
      cols = ['auc', 'acc', 'sens', 'spe', 'f1', 'ft']
      dt = dt[dt['exp']==exp][cols]
      means = (dt.groupby(['ft']).mean()*100).round(round)
      stds = (dt.groupby(['ft']).std(ddof=0)*100).round(round)
      metrics = means.columns.values
      fts = means.index.values
      results = means.copy()
      for metric in metrics:
          for ft in fts:
              if metric in ['auc', 'f1']:
                  means.loc[ft, metric] = (means.loc[ft, metric]/100).round(round)
                  stds.loc[ft, metric] = (stds.loc[ft, metric]/100).round(round)
                  results.loc[ft, metric] = str(means.loc[ft, metric]) + \
                      ' +- ' + str(stds.loc[ft, metric])
      return results
```

```
[6]: def get_latex_table(dt, exp, round=3):

      fts_name = {'gm': 'GM',
                  'wm': 'WM',
                  'csf': 'CSF',
                  'tissues': 'GM\&WM\&CSF'}
```

```

cols = ['auc', 'acc', 'sens', 'spe', 'f1', 'ft']
dt = dt[dt['exp']==exp][cols]
means = (dt.groupby(['ft']).mean()*100).round(round)
stds = (dt.groupby(['ft']).std(ddof=0)*100).round(round)
metrics = means.columns.values
fts = means.index.values

for ft in fts:
    text = "\\textbf{"+fts_name[ft]+"}"
    for metric in metrics:
        if metric in ['auc', 'f1']:
            means.loc[ft, metric] = (means.loc[ft, metric]/100).round(round)
            stds.loc[ft, metric] = (stds.loc[ft, metric]/100).round(round)

            text += ' & $' + str(means.loc[ft, metric]).replace(".", ',') + \
                    "\pm" + str(stds.loc[ft, metric]).replace(".", ',')+"$ "
    text += "\\tabularnewline"
    print(text)
    print("\\midrule")

```

```

[7]: for exp in exps:
    print(exp)
    display(print_mean_results(results, exp, round=2))

```

cn_ad

	auc	acc	sens	spe \
ft				
csf	0.94 +- 0.04	86.3 +- 4.12	83.67 +- 7.97	88.08 +- 6.0
gm	0.94 +- 0.03	87.47 +- 3.96	85.1 +- 6.52	89.04 +- 6.0
tissues	0.95 +- 0.03	89.24 +- 4.04	85.57 +- 8.5	91.72 +- 5.0
wm	0.9 +- 0.03	80.82 +- 4.19	80.86 +- 3.7	80.78 +- 8.54

f1

ft	
csf	0.83 +- 0.05
gm	0.85 +- 0.05
tissues	0.87 +- 0.05
wm	0.78 +- 0.03

cn_mci

	auc	acc	sens	spe \
ft				
csf	0.82 +- 0.04	74.87 +- 3.44	74.14 +- 7.03	75.51 +- 6.12
gm	0.8 +- 0.06	74.69 +- 5.3	70.57 +- 9.76	78.12 +- 8.36
tissues	0.83 +- 0.05	75.58 +- 3.57	72.94 +- 8.41	77.81 +- 6.84

wm 0.77 +- 0.04 70.35 +- 4.52 69.69 +- 9.22 70.87 +- 7.66

f1

ft

csf 0.73 +- 0.04

gm 0.72 +- 0.06

tissues 0.73 +- 0.04

wm 0.68 +- 0.06

mci_ad

auc

acc

sens

spe \

ft

csf 0.72 +- 0.07 66.96 +- 8.34 66.14 +- 10.45 67.9 +- 8.69

gm 0.66 +- 0.15 66.75 +- 6.03 73.74 +- 12.95 58.36 +- 17.47

tissues 0.73 +- 0.07 69.8 +- 6.73 74.09 +- 6.3 64.57 +- 11.17

wm 0.7 +- 0.09 67.64 +- 8.08 74.2 +- 11.75 59.79 +- 10.12

f1

ft

csf 0.68 +- 0.09

gm 0.7 +- 0.06

tissues 0.73 +- 0.06

wm 0.71 +- 0.08

```
[8]: for exp in exps:
      print(exp)
      display(get_latex_table(results, exp, round=2))
```

cn_ad

\textbf{CSF} & \$0,94\pm0,04\$ & \$86,3\pm4,12\$ & \$83,67\pm7,97\$ & \$88,08\pm6,0\$
& \$0,83\pm0,05\$ \tabularnewline

\midrule

\textbf{GM} & \$0,94\pm0,03\$ & \$87,47\pm3,96\$ & \$85,1\pm6,52\$ & \$89,04\pm6,0\$
& \$0,85\pm0,05\$ \tabularnewline

\midrule

\textbf{GM\&WM\&CSF} & \$0,95\pm0,03\$ & \$89,24\pm4,04\$ & \$85,57\pm8,5\$ &
\$91,72\pm5,0\$ & \$0,87\pm0,05\$ \tabularnewline

\midrule

\textbf{WM} & \$0,9\pm0,03\$ & \$80,82\pm4,19\$ & \$80,86\pm3,7\$ & \$80,78\pm8,54\$
& \$0,78\pm0,03\$ \tabularnewline

\midrule

None

cn_mci

\textbf{CSF} & \$0,82\pm0,04\$ & \$74,87\pm3,44\$ & \$74,14\pm7,03\$ &

$\$75,51 \pm \$0,73 \pm \$0,04$ \tabularnewline
 \midrule
 \textbf{GM} & $\$0,8 \pm \$0,06$ & $\$74,69 \pm \$5,3$ & $\$70,57 \pm \$9,76$ & $\$78,12 \pm \$8,36$ & $\$0,72 \pm \$0,06$ \tabularnewline
 \midrule
 \textbf{GM\&WM\&CSF} & $\$0,83 \pm \$0,05$ & $\$75,58 \pm \$3,57$ & $\$72,94 \pm \$8,41$ & $\$77,81 \pm \$6,84$ & $\$0,73 \pm \$0,04$ \tabularnewline
 \midrule
 \textbf{WM} & $\$0,77 \pm \$0,04$ & $\$70,35 \pm \$4,52$ & $\$69,69 \pm \$9,22$ & $\$70,87 \pm \$7,66$ & $\$0,68 \pm \$0,06$ \tabularnewline
 \midrule

None

mci_ad
 \textbf{CSF} & $\$0,72 \pm \$0,07$ & $\$66,96 \pm \$8,34$ & $\$66,14 \pm \$10,45$ & $\$67,9 \pm \$8,69$ & $\$0,68 \pm \$0,09$ \tabularnewline
 \midrule
 \textbf{GM} & $\$0,66 \pm \$0,15$ & $\$66,75 \pm \$6,03$ & $\$73,74 \pm \$12,95$ & $\$58,36 \pm \$17,47$ & $\$0,7 \pm \$0,06$ \tabularnewline
 \midrule
 \textbf{GM\&WM\&CSF} & $\$0,73 \pm \$0,07$ & $\$69,8 \pm \$6,73$ & $\$74,09 \pm \$6,3$ & $\$64,57 \pm \$11,17$ & $\$0,73 \pm \$0,06$ \tabularnewline
 \midrule
 \textbf{WM} & $\$0,7 \pm \$0,09$ & $\$67,64 \pm \$8,08$ & $\$74,2 \pm \$11,75$ & $\$59,79 \pm \$10,12$ & $\$0,71 \pm \$0,08$ \tabularnewline
 \midrule

None

[]: