ABU 量化系统 简介（版本 0.1）

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第九部分 解决方案C

‘非均衡胜负收益’带来的必然’非均衡胜负比例‘，目标由’因子‘的能力解决一部分，’模式识别‘提升关键的一部分

`python import ZEnv import ZLog import ZCommonUtil import pandas as pd pd.options.display.max_columns = 100 %matplotlib inline`

`python fn = './data/cache/orders_pd_ump_hit_predict_abu' key = 'orders_pd_ump_hit_predict_abu' orders_pd_ump = ZCommonUtil.load_hdf5(fn, key)`

这里的orders_pd_ump数据由 Factor中的各个裁决组成pipeline具体请查询代码

```
        g_pp_dict = {
        UmpMainClass(None, MlFiterMainPdClass, predict=True): {'w_col': MlFiterMainPd.g_w_col, 'need_ind_cnt': 1},
        UmpMainClass(None, MlFiterWavePdClass, predict=True): {'w_col': MlFiterWavePd.g_w_col, 'need_ind_cnt': 1},
        UmpMainClass(None, MlFiterDegPdClass, predict=True): {'w_col': MlFiterDegPd.g_w_col, 'need_ind_cnt': 1},

        UmpJumpClass(None, MlFiterJumpPdClass, predict=True): {'w_col': MlFiterJumpPd.g_w_col, 'need_ind_cnt': 1,
                                                               'cons': lambda order: order['diff_days'] < 21},

        UmpEdgeClass(None, predict=True): {}
        }

        g_pipe_line = UmpPipeLineClass(g_pp_dict)
```

UmpEdge 边裁

`python import UmpEdge`

`python ump_edge = UmpEdge.UmpEdgeClass(orders_pd_ump)`

边裁使用profit， profit_cg作为gmm分类数据生成ss分类序列，之后根据profit_cg进行rank数据生成p_rk_cg，在找到top winN，top loss N N现在的设置是25%且对外不暴露，分别给于1， -1, 其它的都是0生成rk列，将atr，deg，wave所有数据的mumpy矩阵保存起来，对输入的数据进行标准化后实行距离对比，找到最匹配的 rk标签

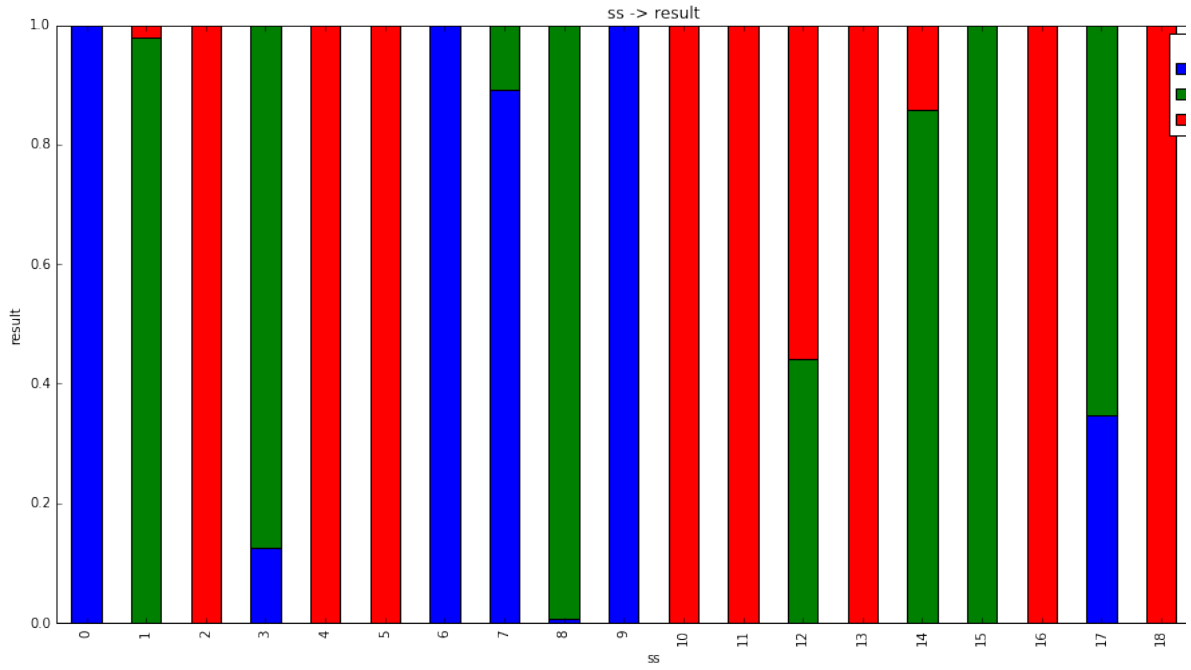
1. 优化距离对比方法现在是pairwise_distances，相似度，协整等方式
2. 类似knn，找k个相思点投票，不止先只有一个

`python ump_edge.fiter.df.head()`

	profit	profit_cg	atr_std	deg_hisWindowPd	deg_windowPd	deg_60WindowPd	wave_score1	wave_score2
2015-07-28	21051.90	0.105290	0.045208	-1.256691	3.895622	5.363046	0.116619	-0.122372
2015-07-28	-8411.46	-0.043313	0.234763	15.908454	4.108007	4.199374	0.646118	0.731843
2015-07-28	-19158.06	-0.095806	-0.408504	21.175689	3.394158	7.384808	0.050669	-0.131306
2015-07-28	-5845.79	-0.074492	0.687850	-7.023154	-0.075254	5.413456	0.671606	0.799534
2015-07-28	12345.00	0.061728	0.011969	11.519025	3.621430	5.765467	-0.149591	-0.227755

`python xt, xt_pct = ump_edge.gmm_component_filter()`

```
rk        -1         0    1
ss
0   1.000000  0.000000  0.0
6   1.000000  0.000000  0.0
7   0.892651  0.107349  0.0
9   1.000000  0.000000  0.0
19  1.000000  0.000000  0.0
rk   -1    0    1
ss
2   0.0  0.0  1.0
4   0.0  0.0  1.0
5   0.0  0.0  1.0
10  0.0  0.0  1.0
11  0.0  0.0  1.0
13  0.0  0.0  1.0
16  0.0  0.0  1.0
18  0.0  0.0  1.0
```



`python xt`

rk	-1	0	1
ss			
0	2465	0	0
1	0	4475	92
2	0	0	4
3	639	4472	0
4	0	0	3053
5	0	0	33
6	47	0	0
7	3243	390	0
8	37	4865	0
9	886	0	0
10	0	0	20
11	0	0	978
12	0	1775	2239
13	0	0	2
14	0	3679	606
15	0	4347	0
16	0	0	213
17	1541	2887	0
18	0	0	1723
19	104	0	0

`python xt_pct`

rk	-1	0	1
ss			
0	1.000000	0.000000	0.000000
1	0.000000	0.979855	0.020145
2	0.000000	0.000000	1.000000
3	0.125024	0.874976	0.000000
4	0.000000	0.000000	1.000000
5	0.000000	0.000000	1.000000
6	1.000000	0.000000	0.000000
7	0.892651	0.107349	0.000000
8	0.007548	0.992452	0.000000
9	1.000000	0.000000	0.000000
10	0.000000	0.000000	1.000000
11	0.000000	0.000000	1.000000
12	0.000000	0.442202	0.557798
13	0.000000	0.000000	1.000000
14	0.000000	0.858576	0.141424
15	0.000000	1.000000	0.000000
16	0.000000	0.000000	1.000000
17	0.348013	0.651987	0.000000
18	0.000000	0.000000	1.000000
19	1.000000	0.000000	0.000000

`python ump_edge.dump_clf()`

利用测试裁决数据，寻找最优裁决参数

```python import ast def map_str_dict(extra_info, key): try: map_ast = ast.literal_eval(extra_info)[key] except Exception, e: import pdb pdb.set_trace() raise e return map_ast

def extra_info_to_pd(orders_pd): orders_pd['ump_main_mlfitermainpdclass_predict'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=('./data/cache/ump_main_mlfitermainpdclass_predict',)) orders_pd['ump_main_mlfiterdegpdclass_predict'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=('./data/cache/ump_main_mlfiterdegpdclass_predict',)) orders_pd['ump_main_mlfiterwavepdclass_predict'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=('./data/cache/ump_main_mlfiterwavepdclass_predict',)) orders_pd['ump_jump_mlfiterjumppdclass_predict'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=('./data/cache/ump_jump_mlfiterjumppdclass_predict',))
```

```
orders_pd['ump_main_mlfitermainpdclass_hit'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=
('./data/cache/ump_main_mlfitermainpdclass_hit',))
orders_pd['ump_main_mlfiterdegpdclass_hit'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=
('./data/cache/ump_main_mlfiterdegpdclass_hit',))
orders_pd['ump_main_mlfiterwavepdclass_hit'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=
('./data/cache/ump_main_mlfiterwavepdclass_hit',))
orders_pd['ump_jump_mlfiterjumppdclass_hit'] = orders_pd['ExtraInfo'].apply(map_str_dict, args=
('./data/cache/ump_jump_mlfiterjumppdclass_hit',))
```

extra_info_to_pd(orders_pd_ump)

```
```python
ZLog.info(orders_pd_ump.shape)
orders_pd_ump.tail(2)
```
```

```
(47374, 40)
```

	buy Date	buy Price	buy Cnt	buyFactor	Sell Date	Sell Price	Sell Type	Symbol	MaxLoss	
2012-07-12	20120712	22.465	8902	BuyGoldenFactorClass:42	20120720	23.75	win	usPFE	20.90	{'./data/cache/ump_
2012-07-16	20120716	3.155	63391	BuyGoldenFactorClass:42	20120719	2.58	loss	usBAMM	2.25	{'./data/cache/ump_

`python from MlFiter import MlFiterClass import numpy as np`

寻找主裁最优参数

```python orders_pd_ump['ind_key'] = np.arange(0, len(orders_pd_ump)) orders_pd_tmp = orders_pd_ump.filter(regex='result|ump_main_mlfiter*|ind_key') order_has_ret = orders_pd_tmp[orders_pd_tmp['result'] <> 0] order_has_ret['result'] = np.where(order_has_ret['result'] == -1, 0, 1)

order_has_ret['ump_main_mlfitermainpdclass_predict'] = np.where(order_has_ret['ump_main_mlfitermainpdclass_predict'] == True, 1, 0) order_has_ret['ump_main_mlfiterdegpdclass_predict'] = np.where(order_has_ret['ump_main_mlfiterdegpdclass_predict'] == True, 1, 0) order_has_ret['ump_main_mlfiterwavepdclass_predict'] = np.where(order_has_ret['ump_main_mlfiterwavepdclass_predict'] == True, 1, 0)

# order_has_ret['ump_main_mlfiterjumppdclass_predict'] = np.where(order_has_ret['ump_main_mlfiterjumppdclass_predi == True, 1, 0)

order_has_ret = order_has_ret[(order_has_ret['ump_main_mlfitermainpdclass_predict'] == 0) | (order_has_ret['ump_main_mlfiterdegpdclass_predict'] == 0) | (order_has_ret['ump_main_mlfiterwavepdclass_predict'] == 0)]

order_has_ret['predict_sum'] = order_has_ret['ump_main_mlfitermainpdclass_predict'] + order_has_ret['ump_main_mlfiterdegpdclass_predict'] + \ order_has_ret['ump_main_mlfiterwavepdclass_predict']

order_has_ret['hit_sum'] = order_has_ret['ump_main_mlfiterdegpdclass_hit'] + order_has_ret['ump_main_mlfitermainpdclass_hit'] + \ order_has_ret['ump_main_mlfiterdegpdclass_hit']

matrix = order_has_ret.as_matrix() y = matrix[:, 0] x = matrix[:, 1:] fiter = MlFiterClass(x, y, order_has_ret) fiter.df.head() order_has_ret.head() ```
```

	result	ump_main_mlfitermainpdclass_predict	ump_main_mlfiterdegpdclass_predict	ump_main_mlfiterwavepdclass_predict
2015-07-28	0	0	1	1
2015-07-28	0	1	0	1
2015-07-28	0	1	1	0
2015-07-28	0	0	1	1
2015-07-28	0	0	1	1

```python fiter.estimator.svc()

# fiter.estimator.random_forest_classifier()

# fiter.estimator.bagging_classifier()

fiter.cross_val_accuracy_score() ```

```
accuracy mean: 0.636323529412

array([0.6375   , 0.6375   , 0.63865546, 0.63865546, 0.62605042,
        0.63445378, 0.63445378, 0.63865546, 0.63865546, 0.63865546])
```

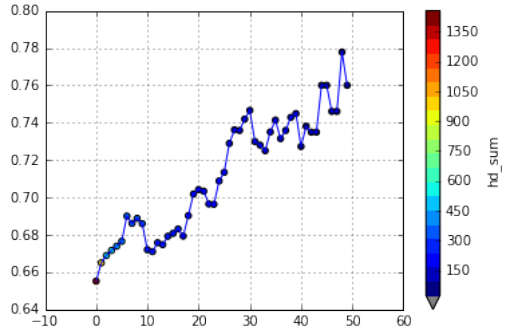
**1个hit以上就上0.65 20个hit 0.70以上，> 20个就可以直接使用裁决了，小于的等待，辅助裁判，边裁**

```python from sklearn import metrics import matplotlib.pyplot as plt

hd_range = np.arange(0, 50) hd_result = [] hd_sum = [] for hd in hd_range: # xt = order_has_ret[(order_has_ret['hit_sum'] > hd) & (order_has_ret['predict_sum'] > 1)]['result'].value_counts() xt = order_has_ret[(order_has_ret['hit_sum'] > hd)]['result'].value_counts() hs = xt.sum() hd_sum.append(hs) hd_result.append(float(xt[0])/hs)

cmap = plt.get_cmap('jet', 20) cmap.set_under('gray') fig, ax = plt.subplots() ax.plot(hd_range, hd_result) cax = ax.scatter(hd_range, hd_result, c=hd_sum, cmap=cmap, vmin=np.min(hd_sum), vmax=np.max(hd_sum)) ax.grid(True) fig.colorbar(cax, label='hd_sum', extend='min') ```

```
<matplotlib.colorbar.Colorbar at 0x10c910350>
```



本身数据就少，辅助裁判尽量裁决 jump ump可以使用hit 5作为阀值，大于5个hit直接裁决，否则等待边裁

```python orders_pd_tmp = orders_pd_ump.filter(regex='result|ump_jump_mlfiter|ind_key*') order_has_ret = orders_pd_tmp[orders_pd_tmp['result'] <> 0] order_has_ret['result'] = np.where(order_has_ret['result'] == -1, 0, 1) order_has_ret['ump_jump_mlfiterjumppdclass_predict'] = np.where(order_has_ret['ump_jump_mlfiterjumppdclass_predict'] == True, 1, 0)

order_has_ret = order_has_ret[(order_has_ret['ump_jump_mlfiterjumppdclass_predict'] == 0)]

hd_range = np.unique(order_has_ret['ump_jump_mlfiterjumppdclass_hit'])[:-1]

# -1 要使用0开始的范围
```

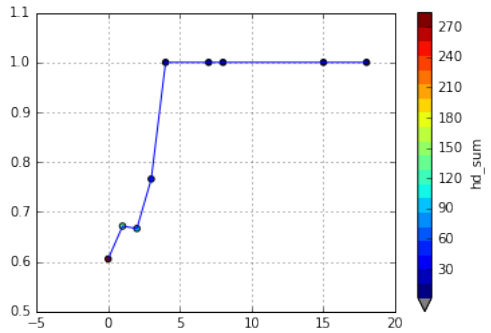
hd_range = np.array(hd_range) - 1 print hd_range hd_result = [] hd_sum = [] for hd in hd_range: xt = order_has_ret[order_has_ret['ump_jump_mlfiterjumppdclass_hit'] > hd]['result'].value_counts() hs = xt.sum() hd_sum.append(hs) hd_result.append(float(xt[0])/hs)

cmap = plt.get_cmap('jet', 20) cmap.set_under('gray') fig, ax = plt.subplots() ax.plot(hd_range, hd_result) cax = ax.scatter(hd_range, hd_result, c=hd_sum, cmap=cmap, vmin=np.min(hd_sum), vmax=np.max(hd_sum)) ax.grid(True) fig.colorbar(cax, label='hd_sum', extend='min') ```

```
[ 0  1  2  3  4  7  8 15 18]



<matplotlib.colorbar.Colorbar at 0x11bf25510>
```



`python jump_hit_pd = order_has_ret[order_has_ret['ump_jump_mlfiterjumppdclass_hit'] < 3] jump_hit_pd_org = orders_pd_ump.iloc[jump_hit_pd['ind_key']]`

`python def apply_judge(order): return ump_edge.predict(atr_std=order.atr_std, deg_hisWindowPd=order.deg_hisWindowPd, deg_windowPd=order.deg_windowPd, deg_60WindowPd=order.deg_60WindowPd, wave_score1=order.wave_score1, wave_score2=order.wave_score2, wave_score3=order.wave_score3) jump_hit_pd['edge'] = jump_hit_pd_org.apply(apply_judge, axis=1)`

`python jump_hit_pd['edge'].value_counts()`

```
 0    175
-1     12
 1      7
Name: edge, dtype: int64
```

这里边裁的裁决只是为了验证正确性，由于边裁predict使用的是输入于原始数据矩阵的度量判断， 如果对裁决范围数量不满意，可以修改 edge top loss，top win范围

```
    con_x = np.concatenate((x, dump_clf['fiter_x']), axis=0)
    x_scale_param = self.scaler.fit(con_x)
    con_x = self.scaler.fit_transform(con_x, x_scale_param)
    distance_min_ind = pairwise_distances(con_x[0].reshape(1, -1), con_x[1:],
                                          metric='euclidean').argmin()
```

`python from sklearn import metrics jump_hit_pd['result2'] = np.where(jump_hit_pd['result'] == 0, -1, 1) metrics.accuracy_score(jump_hit_pd[jump_hit_pd['edge'] == -1]['result2'], jump_hit_pd[jump_hit_pd['edge'] == -1]['edge'])`

```
1.0
```

`python metrics.accuracy_score(jump_hit_pd[jump_hit_pd['edge'] == 1]['result2'], jump_hit_pd[jump_hit_pd['edge'] == 1]['edge'])`

```
1.0
```

`python main_hit_pd = order_has_ret[order_has_ret['hit_sum'] < 20] main_hit_pd_org = orders_pd_ump.iloc[main_hit_pd['ind_key']] main_hit_pd_org.shape`

```
(2166, 40)
```

`python main_hit_pd['edge'] = main_hit_pd_org.apply(apply_judge, axis=1)`

`python main_hit_pd['edge'].value_counts()`

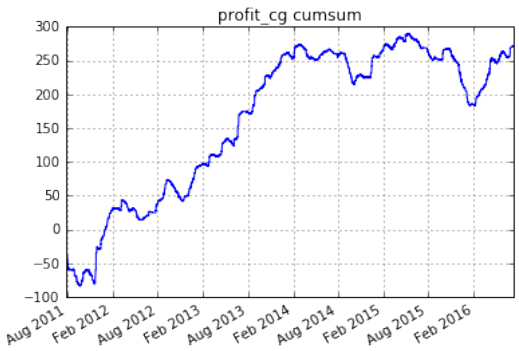
```
 0    1298
-1     557
 1     311
Name: edge, dtype: int64
```

`python main_hit_pd['result2'] = np.where(main_hit_pd['result'] == 0, -1, 1)`
`metrics.accuracy_score(main_hit_pd[main_hit_pd['edge'] == -1]['result2'], main_hit_pd[main_hit_pd['edge'] == -1]['edge'])`

```
1.0
```

`python from UmpMain import UmpMainClass from MlFiterGoldenPd import MlFiterGoldenPdClass UmpMainClass(orders_pd_ump, MlFiterGoldenPdClass).show_general()`

```
all fit order = (44906, 40)
win rate = 0.500757137131
profit_cg.sum() = 272.117613217
win mean = 0.0743788075658 loss_mean = -0.0626291433739
```




```python
```