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// most learned functions data for InAttackDistance model  
in 5-fold cross validation version.
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// For these cross validations which have at most one same  
loss model, we will take the median model (ranked by loss  
in the cross validation testing datasets) as the most  
learned functions model.
```

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// InAll in the Precision, recall and F1-score of the  
actions are calculated using Weighted-average method
```

Aggressive model:

1st cross validation:

Most learned same loss functions(3 times in 100,loss=1422.41):

101000110101110000010101000110100000010100011011010001011
010100111010100000001

Testing

395 loss, 1674 testing data

action	Loss=0	Loss=1
Action0	424/61.4%	268/38.8%
Action1	855/87.1%	127/12.9%
In all	1279/76.4%	395/23.6%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	77.0%	61.3%	0.68
Punch	76.1%	87.1%	0.81

Aggressive model:

2nd cross validation:

Most learned same loss functions(3 times in 100,loss=1367.37):

000011100100000001010101100101010000001000000111010110000
110100111011100000001

Testing

364 loss, 1673 testing data

action	Loss=0	Loss=1
Action0	479/69.4%	212/30.7%
Action1	830/84.5%	152/15.5%
In all	1309/78.2%	364/21.8%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	75.9%	69.3%	0.72
Punch	79.7%	84.5%	0.82

Aggressive model:

3rd cross validation:

Most learned same loss functions(2 times in 100,loss=1451.32):

0100000000010000010000000000000001000010110011011011100111
000011111100100000010

Testing

349 loss, 1672 testing data

action	Loss=0	Loss=1
Action0	457/66.2%	234/33.9%
Action1	866/88.3%	115/11.7%
In all	1323/79.1%	349/20.9%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	79.9%	66.1%	0.72
Punch	78.7%	88.3%	0.83

Aggressive model:

4th cross validation:

Most learned same loss functions(2 times in 100,loss=1420.35):

011100100101000010010010110100100000100010010010000100100
001010011011100000100

Testing

341 loss, 1672 testing data

action	Loss=0	Loss=1
Action0	478/69.3%	213/30.9%
Action1	853/87.0%	128/13.0%
In all	1331/79.6%	341/20.4%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	78.9%	69.2%	0.74
Punch	80.0%	87.0%	0.83

Aggressive model:

5th cross validation:

Most learned same loss functions(2 times in 100,loss=1430.38):

010000100100010011110000100111010000001010100111011110010
000100110010010000010

Testing
348 loss, 1672 testing data

action	Loss=0	Loss=1
Action0	440/63.8%	251/36.4%
Action1	884/90.1%	97/9.9%
In all	1324/79.2%	348/20.8%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	81.9%	63.7%	0.72
Punch	77.9%	90.1%	0.84

Aggressive model(Average) :

Average Testing
359.4 loss, 1672.6 testing data

action	Loss=0	Loss=1
Action0	455.6/65.9%	235.6/34.1%
Action1	857.6/87.4%	123.8/12.6%
In all	1313.2/78.5%	359.4/21.5%

Weighted-average Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	78.7%	65.9%	0.72
Punch	78.5%	87.4%	0.83
In all	78.6%	78.5%	0.79

Defensive model:

1st cross validation:

Most learned same loss functions(2 times in 100,loss=1268.44):

000111101011100110100100111101010000001010011100000010100
001110110101010000001

Testing

325 loss, 1929 testing data

action	Loss=0	Loss=1
Action0	837/91.3%	81/8.8%
Action1	767/75.9%	244/24.1%
In all	1604/83.2%	325/16.8%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	77.4%	91.2%	0.84
Guard	90.4%	75.9%	0.83

Defensive model:

2nd cross validation:

Most learned same loss functions(3 times in 100,loss=1311.41):

000101101001100100100100010000100000001000101111111011101
101100010101100000001

Testing

329 loss, 1928 testing data

action	Loss=0	Loss=1
Action0	835/91.2%	82/9.0%
Action1	764/75.6%	247/24.4%
In all	1599/82.9%	329/17.1%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	77.2%	91.1%	0.84
Guard	90.3%	75.6%	0.82

Defensive model:

3rd cross validation:

Most learned same loss functions(2 times in 100,loss=1131.36):

100100011000000101100111001010100010000110000010011100011
101010001000001001000

Testing

290 loss, 1928 testing data

action	Loss=0	Loss=1
Action0	827/90.3%	90/9.8%
Action1	811/80.2%	200/19.8%
In all	1638/85.0%	290/15.0%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	80.5%	90.2%	0.85
Guard	90.0%	80.2%	0.85

Defensive model:

4th cross validation:

Most learned same loss functions(2 times in 100,loss=1307.35):

000000010010000010000010000001100010000100101101100011100
111110110101100000100

Testing

332 loss, 1927 testing data

action	Loss=0	Loss=1
Action0	833/90.9%	84/9.2%
Action1	762/75.4%	248/24.6%
In all	1595/82.8%	332/17.2%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	77.1%	90.8%	0.83
Guard	90.1%	75.4%	0.82

Defensive model:

5th cross validation:

Most learned same loss functions(2 times in 100,loss=1231.28):

000000000010000010000000000000000110000011111000110101011
100010010101010000100

Testing

330 loss, 1927 testing data

action	Loss=0	Loss=1
Action0	770/84.1%	147/16.0%
Action1	827/81.9%	183/18.1%
In all	1597/82.9%	330/17.1%

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	80.8%	84.0%	0.82
Guard	84.9%	81.9%	0.83

Defensive model(Average) :

Average Testing
321.2 loss, 1927.8 testing data

action	Loss=0	Loss=1
Action0	820.4/89.4%	96.8/10.6%
Action1	786.2/77.8%	224.4/22.2%
In all	1606.6/83.3%	321.2/16.7%

Average Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move back	78.6%	89.5%	0.84
Guard	89.1%	77.8%	0.83
In all	84.1%	83.4%	0.84

Hybrid(Aggressive -> Defensive) model 1:

1st cross validation:

Most learned same loss functions(2 times in 100,loss=3821.42):

```
011011100111010010010110000101100000010010011001011011100
01100000111000010010000110111010000101011111100010000100
001000100001100100100101100110110100000001
```

Testing

993 loss, 1804 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	279/60.7%	166/36.1%	12/2.6%	4/0.9%
Punch	546/83.7%	102/15.6%	4/0.6%	0
Move back	0	0	8/5.3%	143/94.7%
Guard	416/77.0%	22/4.1%	92/17.0%	10/1.9%
In all	1241/68.8%	290/16.1%	116/6.4%	157/8.7%

Outputs of Hybrid(Aggressive ->Defensive) model in testing data

Data \ predict	Move forward	Punch	Move back	Guard
Move forward	279	163	0	19
Punch	74	546	0	32
Move back	110	18	0	23
Guard	47	77	0	416

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	54.7%	60.5%	0.57
Punch	67.9%	83.7%	0.75
Move back	0	0	0
Guard	84.9%	77.0%	0.81

Hybrid(Aggressive -> Defensive) model 1:

2nd cross validation:

Most learned same loss functions(1 time in 100,loss=3912.46):

(median loss model)

```
0010001101110110111000111111010100010001011110001110110011
001010110011010010000101000110000100100100101101101000110
000011011000010001001110001111110100010000
```

Testing

1008 loss, 1803 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	286/62.2%	161/35.0%	14/3.0%	0
Punch	539/82.8%	112/17.2%	0	0
Move back	0	0	93/61.6%	58/38.4%
Guard	395/73.1%	5/0.9%	78/14.4%	62/11.5%
In all	1220/67.7%	278/15.4%	185/10.3%	120/6.7%

Outputs of Hybrid(Aggressive ->Defensive) model in testing data

Data \ predict	Move forward	Punch	Move back	Guard
Move forward	286	161	0	14
Punch	79	539	0	33
Move back	114	22	0	15
Guard	49	96	0	395

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	54.2%	62.0%	0.58
Punch	65.9%	82.8%	0.73
Move back	0	0	0
Guard	86.4%	73.1%	0.79

Hybrid(Aggressive -> Defensive) model 1:

3rd cross validation:

Most learned same loss functions(2 time in 100,loss=3995.41):

010010010100010000001110000101100001000000001110101110011
001011011101010000001101000100000100111010110111100100001
000010111101001101100001100110110100010000

Testing

1001 loss, 1802 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	274/59.7%	153/33.3%	15/3.3%	18/3.9%
Punch	557/85.6%	94/14.4%	0	0
Move back	0	1/0.7%	7/4.6%	143/94.7%
Guard	408/75.6%	38/7.0%	94/17.4%	0
In all	1239/68.8%	286/15.9%	116/6.4%	161/8.9%

Outputs of Hybrid(Aggressive ->Defensive) model in testing data

Data \ predict	Move forward	Punch	Move back	Guard
Move forward	274	165	0	21
Punch	61	557	0	33
Move back	115	21	0	15
Guard	56	76	0	408

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	54.2%	59.6%	0.57
Punch	68.0%	85.6%	0.76
Move back	0	0	0
Guard	85.5%	75.6%	0.80

Hybrid(Aggressive -> Defensive) model 1:

4th cross validation:

Most learned same loss functions(1 time in 100,loss=3910.49):

(median loss model)

```
1111101001010110011111111111001000000100001001010111101011
010111001100010000010111010011011100011111000110100100000
01001001000110001100111111110010100000001
```

Testing

977 loss, 1801 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	279/60.8%	161/35.1%	20/4.4%	0
Punch	539/82.8%	106/16.3%	6/0.9%	0
Move back	0	0	2/1.3%	149/98.7%
Guard	432/80.1%	7/1.3%	100/18.6%	0
In all	1250/69.4%	274/15.2%	128/7.1%	149/8.3%

Outputs of Hybrid(Aggressive ->Defensive) model in testing data

Data \ predict	Move forward	Punch	Move back	Guard
Move forward	279	157	0	24
Punch	86	539	0	26
Move back	104	14	0	33
Guard	41	66	0	432

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	54.7%	60.7%	0.58
Punch	69.5%	82.8%	0.76
Move back	0	0	0
Guard	83.9%	80.1%	0.82

Hybrid(Aggressive -> Defensive) model 1:

5th cross validation:

Most learned same loss functions(1 time in 100,loss=4162.4):

(median loss model)

```
001001110111000111011000000111100000010110100011101101011
101000001000010000001100000110110000000010011110101000101
000110001111001000010111001000110100000001
```

Testing

994 loss, 1801 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	277/60.3%	168/36.6%	15/3.3%	0
Punch	572/87.9%	73/11.2%	6/0.9%	0
Move back	0	1/0.7%	43/28.5%	107/70.9%
Guard	425/78.8%	19/3.5%	1/0.2%	94/17.4%
In all	1274/70.7%	261/14.5%	65/3.6%	201/11.7%

Outputs of Hybrid(Aggressive ->Defensive) model in testing data

Data \ predict	Move forward	Punch	Move back	Guard
Move forward	277	170	0	13
Punch	51	572	0	28
Move back	114	13	0	24
Guard	40	74	0	425

Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	57.5%	60.2%	0.59
Punch	69.0%	87.9%	0.77
Move back	0	0	0
Guard	86.7%	78.8%	0.83

Hybrid model1 (Average):

Average Testing

994.6 loss, 1802.2 Testing data:

Action	Loss=0	Loss=1	Loss=2	Loss=3
Move forward	279/60.6%	161.8/35.1%	15.2/3.3%	4.4/1.0%
Punch	550.6/84.6%	97.4/15.0%	3.2/0.5%	0
Move back	0	0.4/0.3%	30.6/20.3%	120/79.5%
Guard	415.2/76.9%	18.2/3.4%	73/13.5%	33.2/6.2%
In all	1244.8/69.1%	277.8/15.4%	122/6.8%	157.6/8.7%

Average Precision, recall and F1-score of the actions

Action	Precision	Recall	F1-score
Move forward	55.1%	60.6%	0.58
Punch	68.1%	84.6%	0.75
Move back	0	0	0
Guard	85.5%	76.9%	0.81
In all	64.3%	69.1%	0.67