

MATLAB 於工程最佳化的應用

期末報告

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```

clear;clc;close all
% Input and Target
P_2D = [1 1 1 1
        0 0 0 1
        0 0 0 1
        0 0 0 1
        1 1 1 1
        0 0 0 1
        0 0 0 1
        0 0 0 1
        1 1 1 1];
P = reshape(P_2D, 36, 1);
T = [0 0 1 1]';

% Initial W and b
W = randn(4, 36);
b = randn(4, 1);

% Call learn_p
[FW,Fb] = learn_p(P, T, W, b, 1, 0.001, 0)

% Check result
A = hardlim(FW*P+Fb)

===>Now running [Perceptron learning rule (learn_p)]. Please wait!

FW =

Columns 1 through 7

    -0.4566    -0.6162     0.9460    -0.9936    -2.0914    -0.4901     1.1189
     0.5898     0.8805    -0.2842     0.8351    -1.0837     0.3370     1.3408
     1.4047     2.5430     1.2069    -0.7516    -0.2723     1.8425     2.5221
     0.4366     2.1817     0.2277    -1.1585    -0.9716    -1.2651     1.3129

Columns 8 through 14

    -2.7440     1.5629     1.4182     0.4553    -0.0050     0.2123     0.6217
     0.4004    -0.7148     1.0770    -0.9131    -0.5766    -0.5279    -0.3543

```

-0.5590	-0.0939	0.3709	0.4953	1.0540	0.3508	0.9536
0.2408	-0.4161	-0.5535	-0.5244	0.6692	-1.1967	-0.1991

Columns 15 through 21

-0.6604	-0.3529	0.8011	-1.8192	1.6812	0.8484	1.2519
0.7166	0.3811	-1.2928	-1.6924	0.2278	0.3102	-0.8024
1.3312	-2.1975	-1.0246	0.6728	-0.5971	0.0629	1.0599
0.0117	-0.2673	-0.9171	0.3697	0.6441	1.1588	0.4000

Columns 22 through 28

1.6597	1.3261	-1.0568	-0.0830	0.4295	0.8829	-0.7202
-0.5036	0.7210	0.1021	-0.5644	-0.1232	-0.2684	0.5489
-0.1338	-0.3199	-1.4535	-1.2814	-0.9545	0.4832	1.2338
0.5907	0.7243	-1.2632	-0.2937	0.2311	0.0560	-0.3304

Columns 29 through 35

-0.1328	0.1133	-1.4621	-0.3482	0.1632	-0.1227	-0.3239
-0.4997	0.1579	1.9282	-0.1130	-1.0460	0.8753	0.4931
0.2876	0.7447	1.9097	-1.9595	0.4585	0.1304	0.6963
-0.6176	0.9361	-0.0706	0.5106	0.8660	0.6597	-0.1060

Column 36

-0.0747
-0.4760
-0.3609
-1.5387

Fb =

-0.2187
-0.3883
0.7452
-0.3869

```
A =
```

```
0
0
1
1
```

Check unlearned input patterns

```
P_2D = [1 1 1 0
        0 0 1 1
        0 0 0 1
        0 0 0 1
        1 1 1 1
        0 0 0 1
        0 0 0 1
        0 0 1 1
        1 1 1 0];
P = reshape(P_2D, 36, 1);
A = hardlim(FW*P+Fb)
```

```
A =
```

```
1
1
1
1
```