Optimization Techniques

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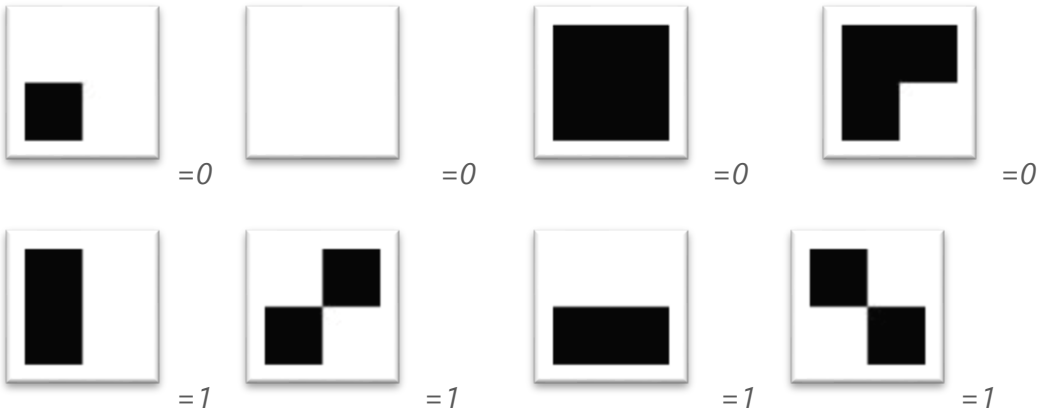
Handwriting recognition approximation

After a little study of image processing we can understand easily that 0 is black , 255 is white and grey scale changes between 0-255.

In this example I will train colors from 0 to 10 as 0 white and 10 is black.



How Does it work?

Lets take an image shown up as example.

=1 , but its expression as array is $\begin{pmatrix} x & 0 \\ 0 & x \end{pmatrix}$ although we can reshape it to one line array as $(\ x\ 0\ 0\ x)$. And now what we need is a lot of data to train.

Good to know: x = 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10

Input

0	10	0	0	1
5	0	0	0	2
0	0	5	0	3
2	0	10	0	4
3	0	4	0	5
0	0	0	0	6
0	2	8	0	7
0	10	0	2	8
0	0	4	3	9
5	0	0	0	10
0	4	0	0	11
4	0	4	3	12
0	0	9	8	13
0	0	6	8	14
0	0	8	7	15
1	0	0	6	16
0	8	0	1	17
0	9	7	0	18
7	0	0	0	19
0	0	5	8	20
0	0	0	0	21
0	0	0	0	22
0	2	6	0	23
1	0	0	3	24
7	0	0	0	25
1	6	10	0	26
0	0	0	1	27
0	10	10	4	28
2	7	0	5	29
1	0	0	7	30
0	2	10	9	31
0	0	8	8	32

Output

-1	1
-1	2
-1	3
1	4
1	5
-1	6
1	7
1	8
1	9
-1	10
-1	11
-1	12
1	13
1	14
1	15
1	16
1	17
1	18
-1	19
1	20
-1	21
-1	22
1	23
1	24
-1	25
-1	26
-1	27
-1	28
-1	29
1	30
-1	31
1	32

Part of inputs and outputs

Result

```
TestImage=[0 8 0 2]; %% image for test  == [0 x
%                                         0 x] ==1
yhatBEST2 = MISOANNmodelGC(TestImage,xBEST,S,R);
yhatBEST2 = sign(yhatBEST2);
if(yhatBEST2)==-1
    Sonuc=0;
else
    Sonuc=1;
end
Sonuc
```

```
NumOfMisClass =

    10


Sonuc =

     1
```