

Name: Kaniz Farzana

ID: 19202103413

Course Code: CSE 477

Course Title: Neural Network and Fuzzy Systems.

Convolution operation

Input

0	1	1	0	1
0	1	1	0	1
0	1	1	0	1
0	1	1	0	1
0	1	1	0	1

Filter: 01

1	0	1
1	1	1
0	0	1

Filter: 02

0	0	1
1	0	0
0	1	1

Given,

Stride = 1 padding = 1 Max pooling = (2, 2)

Step: 1 Add padding into input matrix
(zero padding)

0	0	0	0	0	0	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	0	0	0	0	0

Step 2: Stride = 1, convolve with 3x3 filters filled with ones.

0	0	0	0	0	0	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	1	1	0	1	0
0	0	0	0	0	0	0

1	0	1
1	1	1
0	0	1

0	0	1
1	0	0
0	1	1

2	3	2	3	1
3	4	3	5	1
3	4	3	5	1
3	4	3	5	1
2	3	3	4	1

+

1	2	2	2	1
2	3	2	3	1
2	3	2	3	1
2	3	2	3	1
1	1	1	2	0

After filter: 01

After filter: 01

Step 3 Addition after filter 01 and after filter 02.

3	5	4	5	2
5	7	5	8	2
5	7	5	8	2
5	7	5	8	2
3	4	4	6	2 1

Step: 4: Max pooling takes the largest value element from the ~~rect~~ rectified feature map.

7	7	8	8
7	7	8	8
7	7	8	8
7	7	8	8