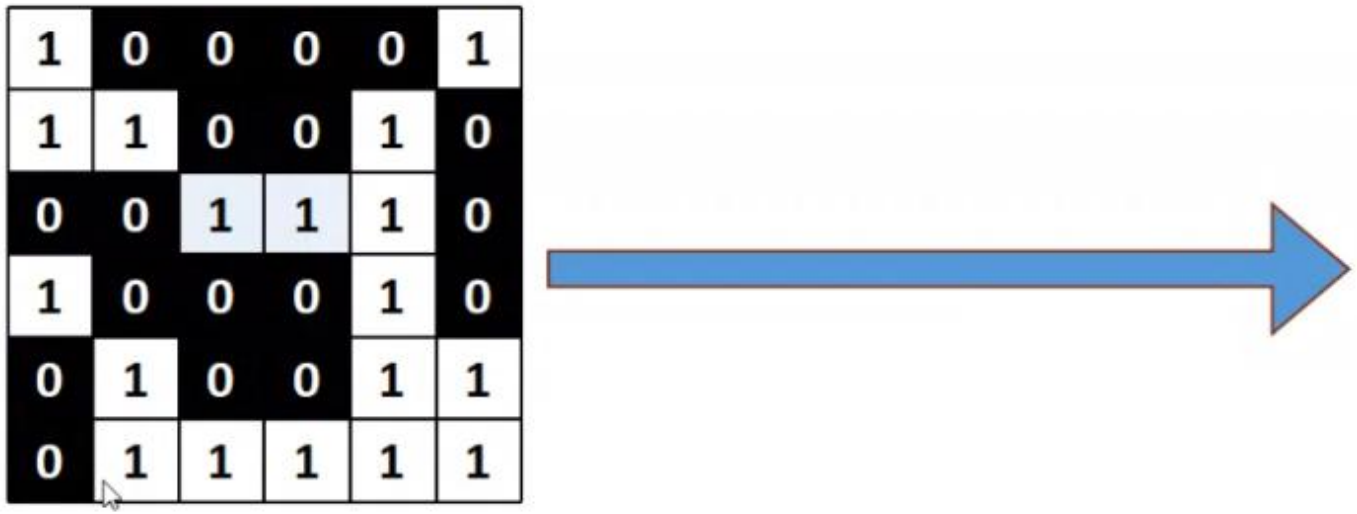
AILABS
artificial intelligence without borders

Convolution Operation

Convolution Operation



(6 x 6) image

Convolution Operation

Kernel / Filter
3 x 3

1	0	-1
0	1	0
-1	0	1

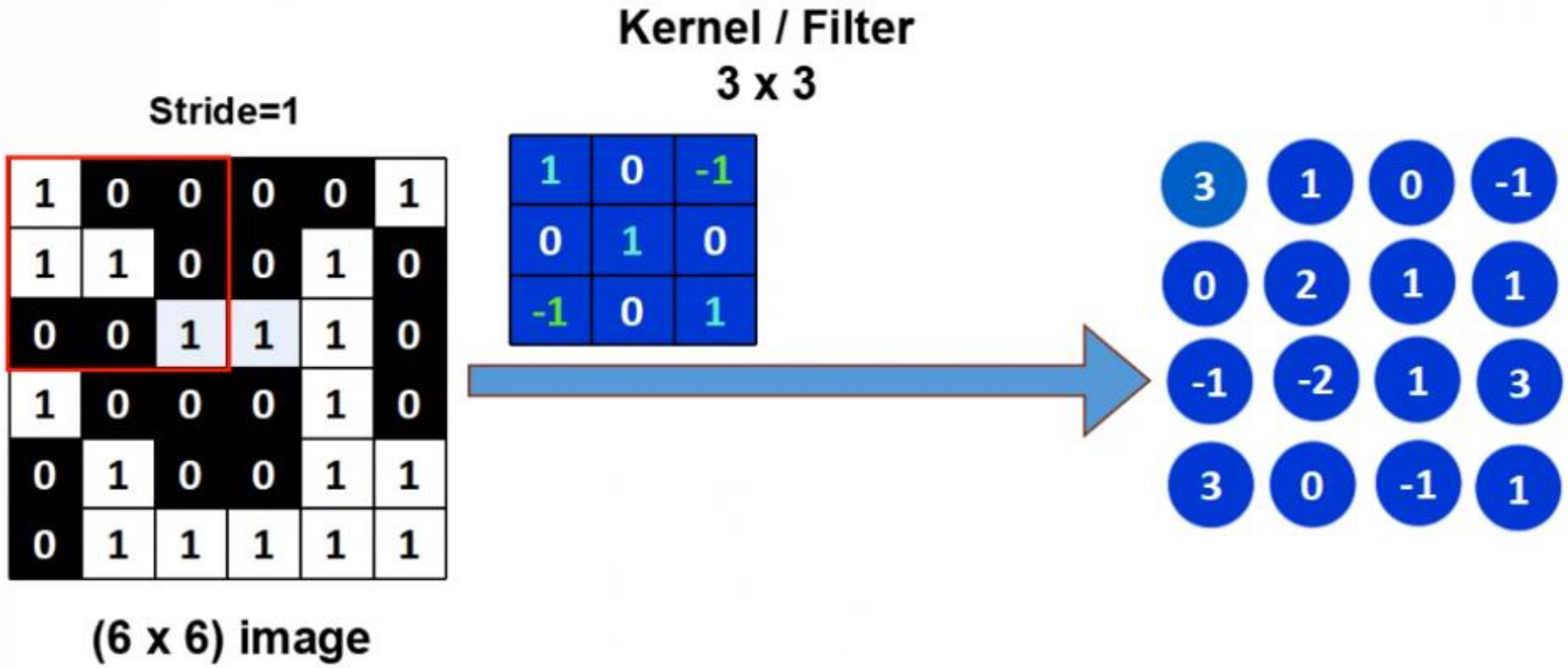
1	0	0	0	0	1
1	1	0	0	1	0
0	0	1	1	1	0
1	0	0	0	1	0
0	1	0	0	1	1
0	1	1	1	1	1

(6 x 6) image

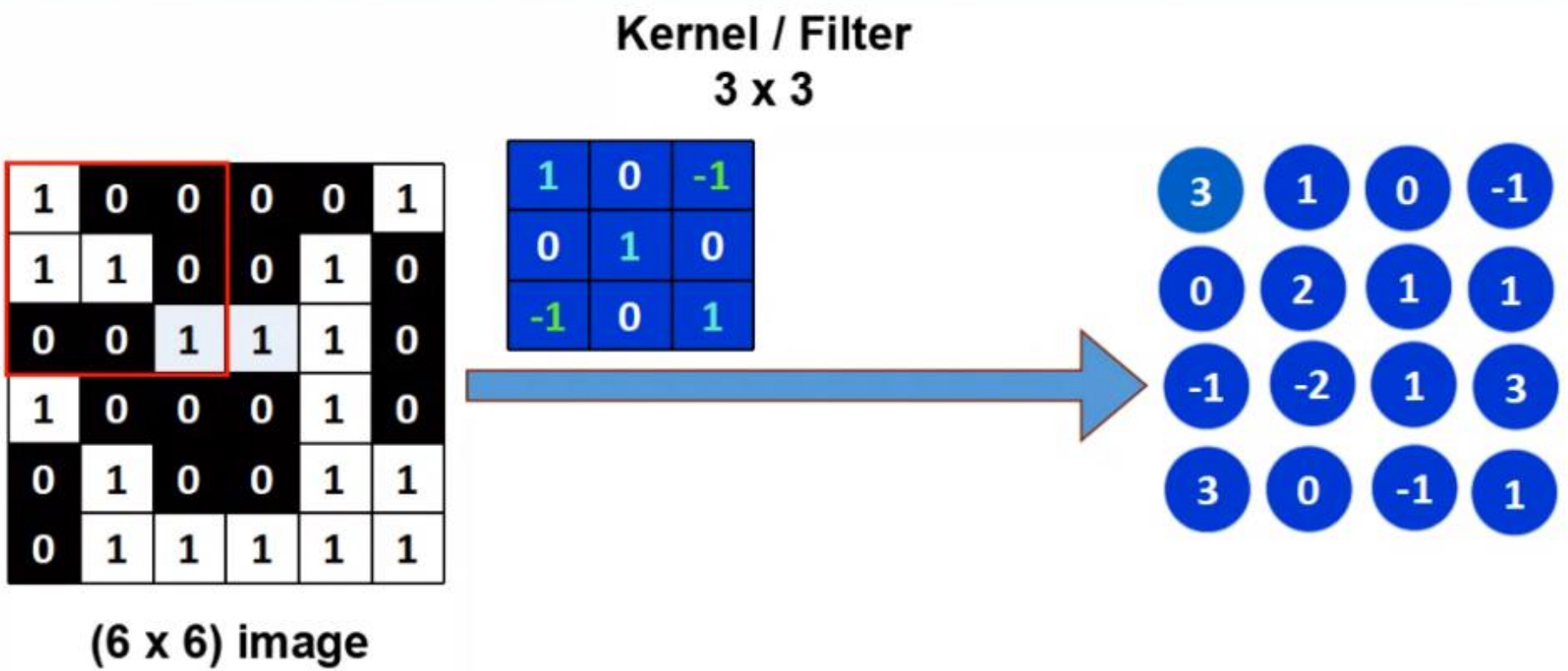
1	0	0
0	1	0
0	0	1

(1+0+0)+(0+1+0)+(0+0+1)=3

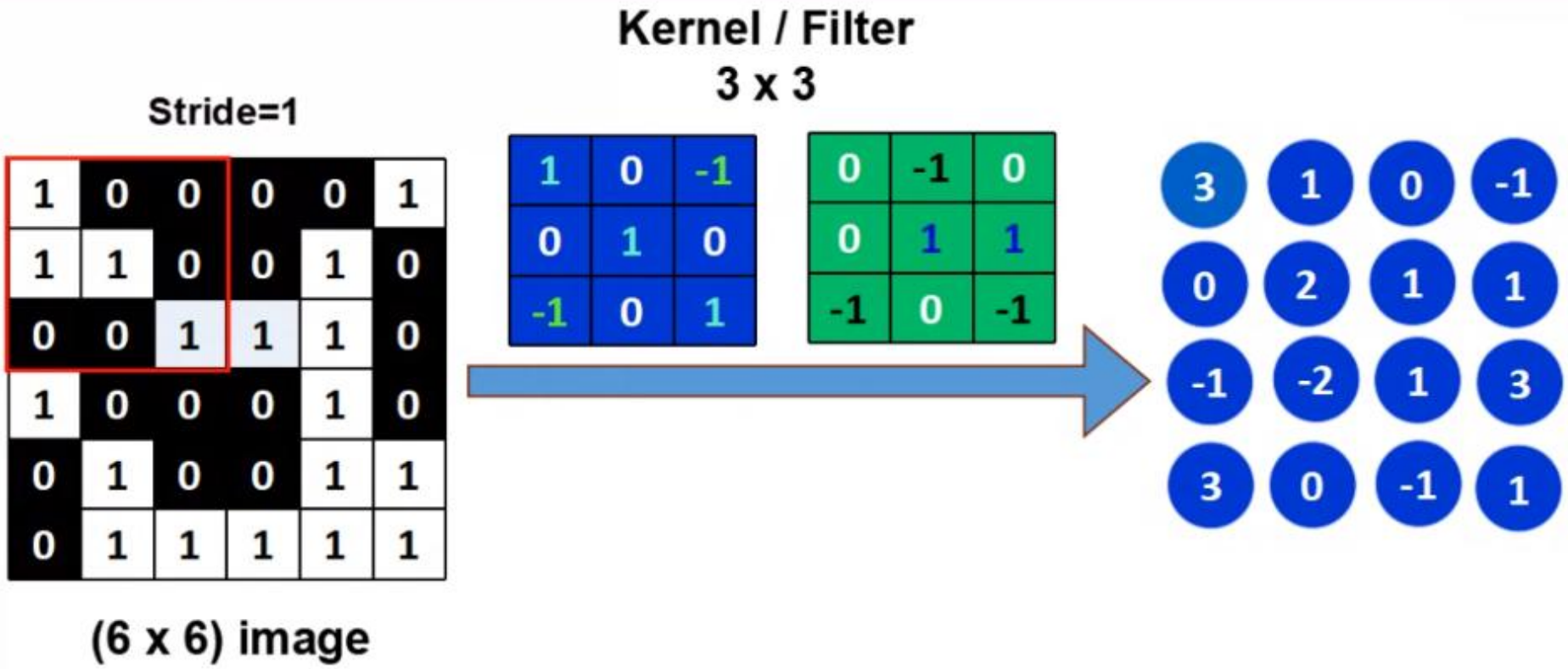
Convolution Operation



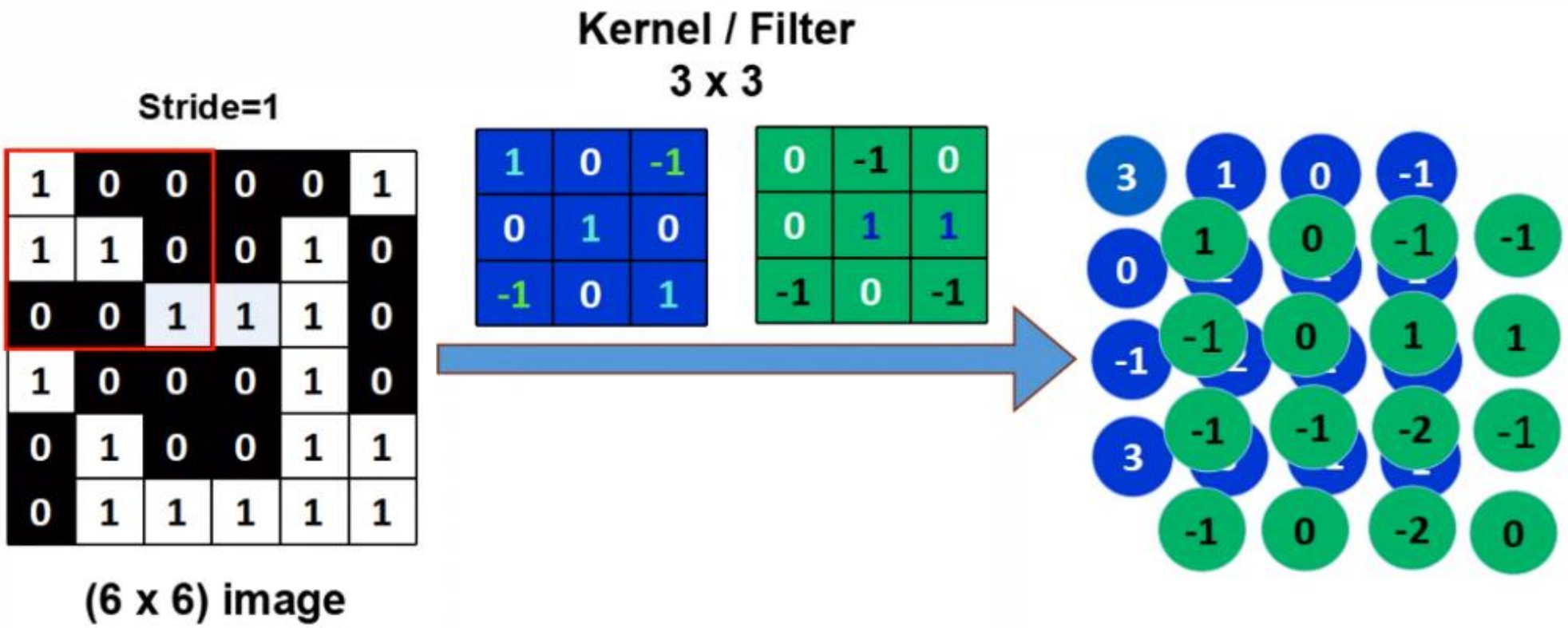
Convolution Operation



Convolution Operation

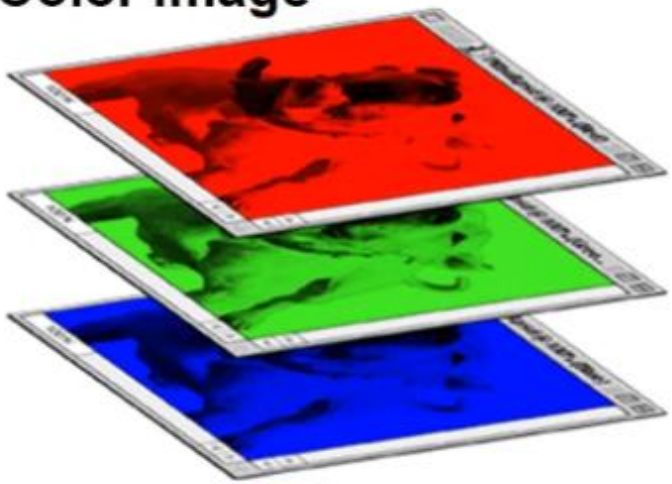


Convolution Operation



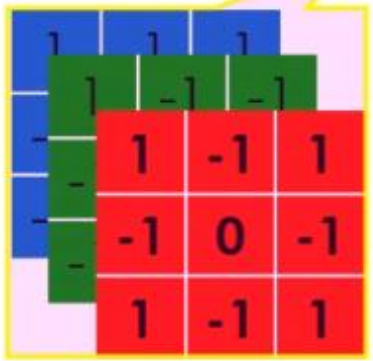
Convolution Operation: Color Image

Color Image

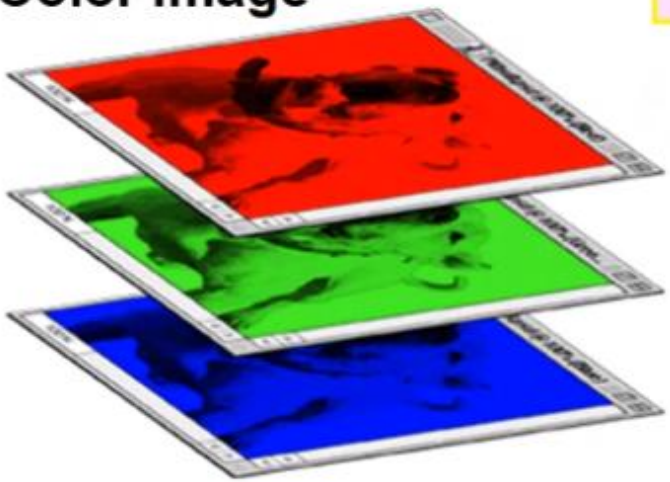


Convolution Operation: Color Image

Filter: 1

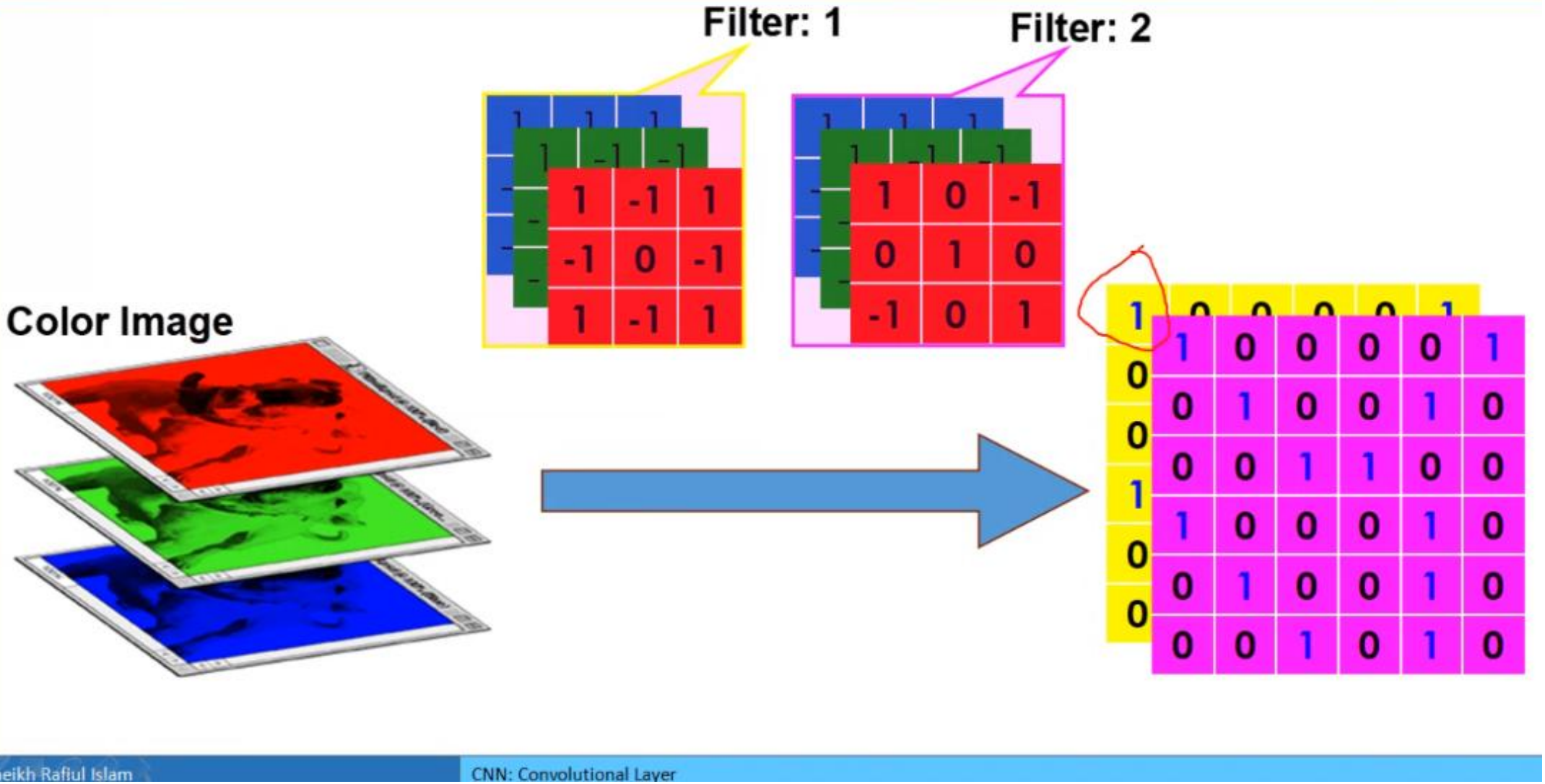


Color Image

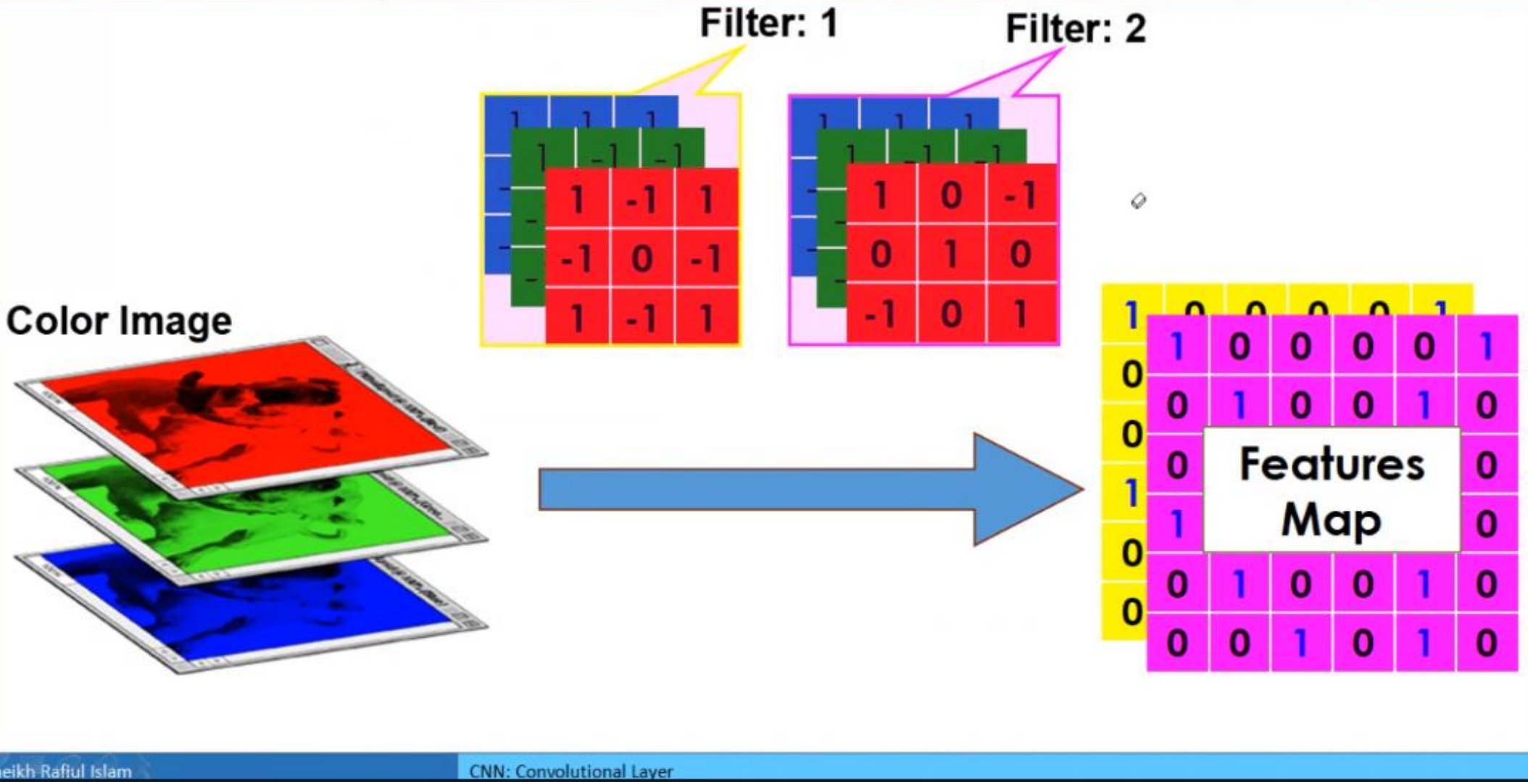


1	0	0	0	0	1
0	1	0	0	1	0
0	0	1	1	0	0
1	0	0	0	1	0
0	1	0	0	1	0
0	0	1	0	1	0

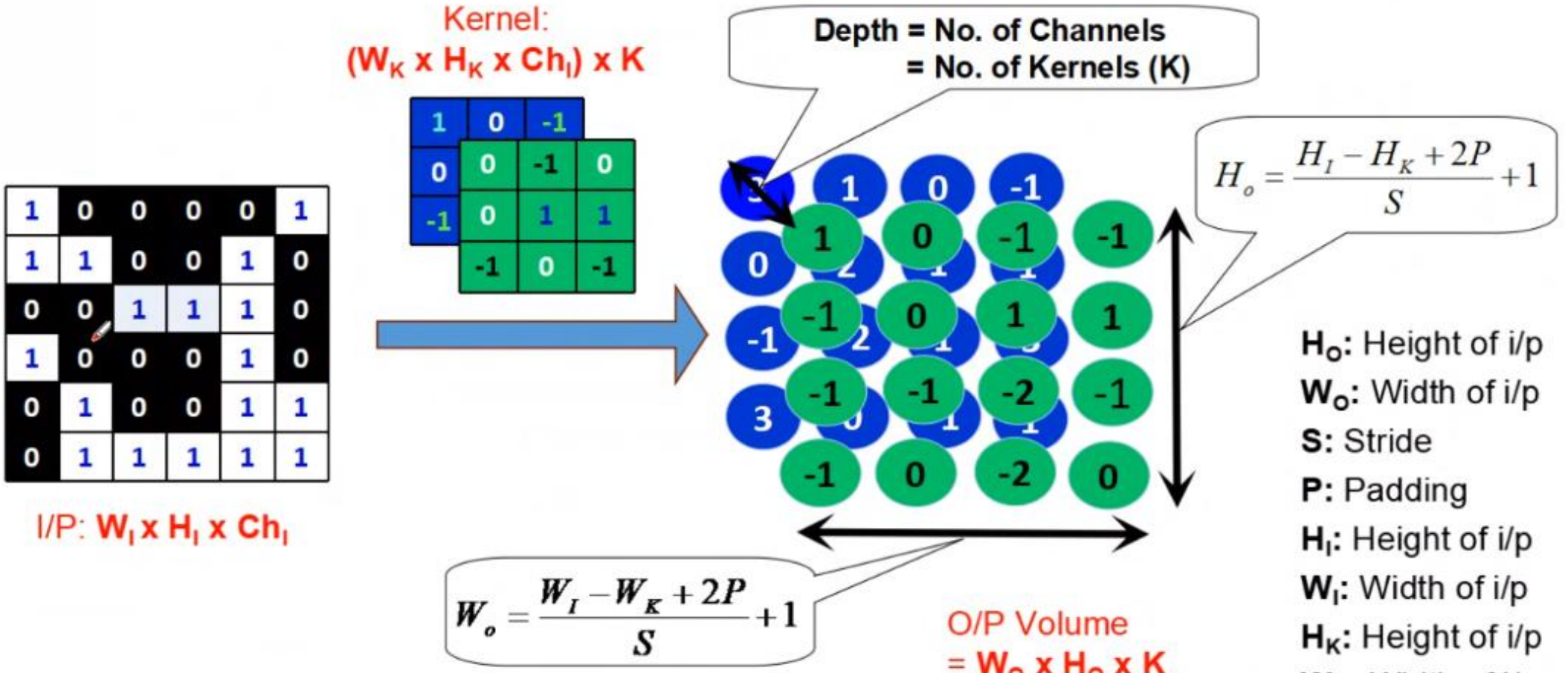
Convolution Operation: Color Image



Convolution Operation: Color Image



Convolutional Operation: Output Volume



Outout Volume: Examples

Input: **64x64x3**
Volume of the convolutional kernels: **(3x3x3)x16** (a four dimensional tensor)

Case: 01

Stride (**S**)= **1,** Padding (**P**)= **0**
Volume of the output/activations: **62x62x16**

Case: 02

Stride (**S**)= **2,** Padding (**P**)= **0**
Volume of the output/activations: **32x32x16**

Case: 03

Stride (**S**)= 1, Padding (**P**)= 1
Volume of the output/activations: **64x64x16**