

Advanced Machine Learning

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Translational Equivariance



Translational Equivariance



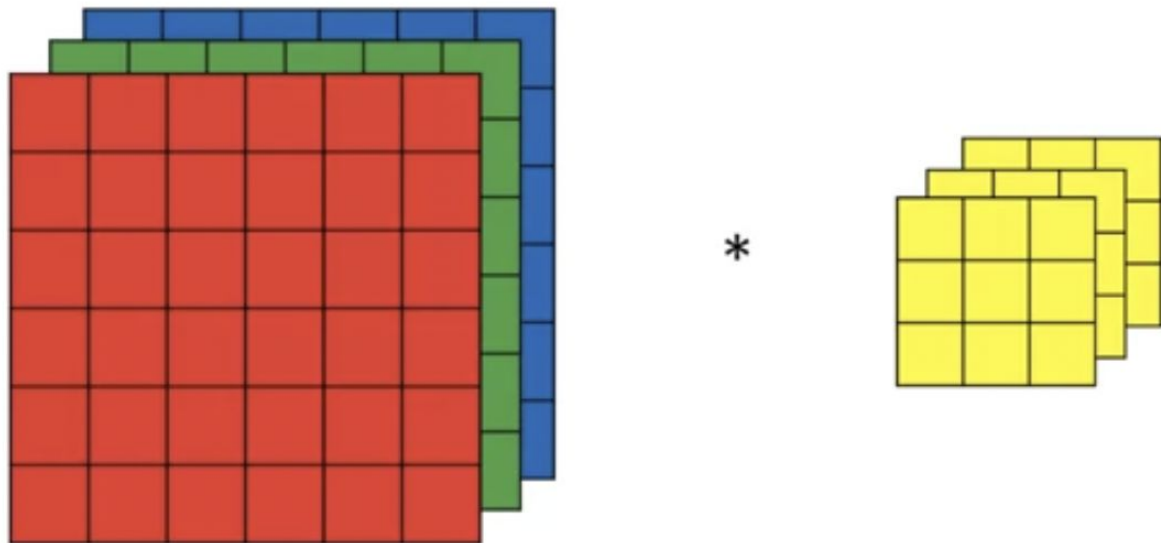
Padding

6x6 image

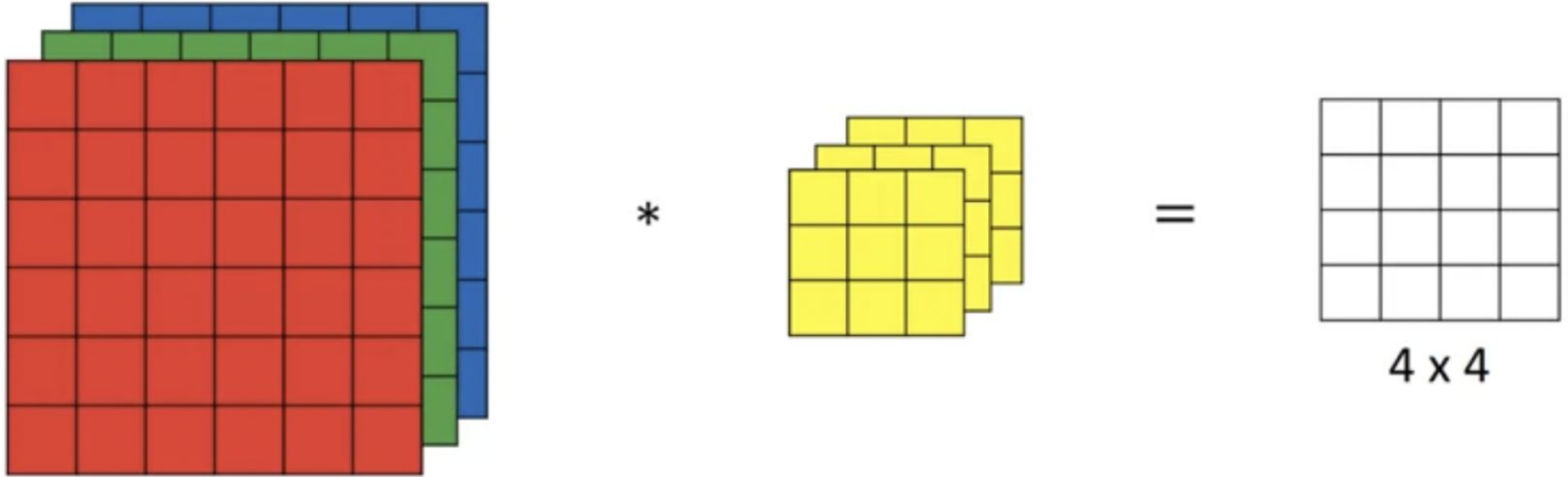
0	0	0	0	0	0	0	0
0							0
0							0
0							0
0							0
0							0
0							0
0	0	0	0	0	0	0	0

6x6 image with 1 layer of zero padding

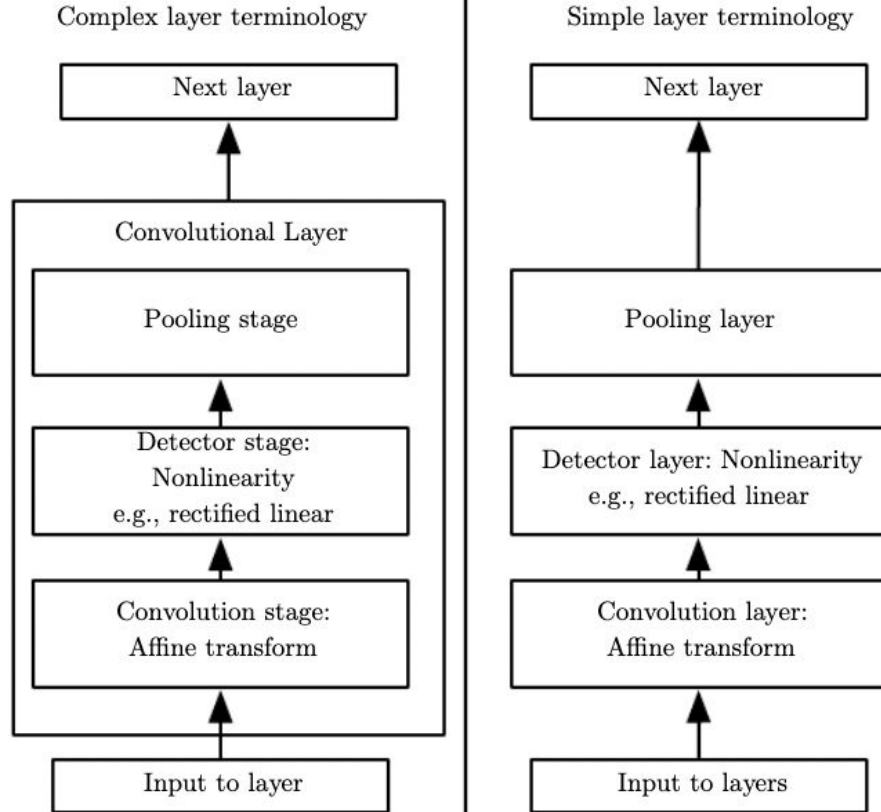
Convolution for RGB images



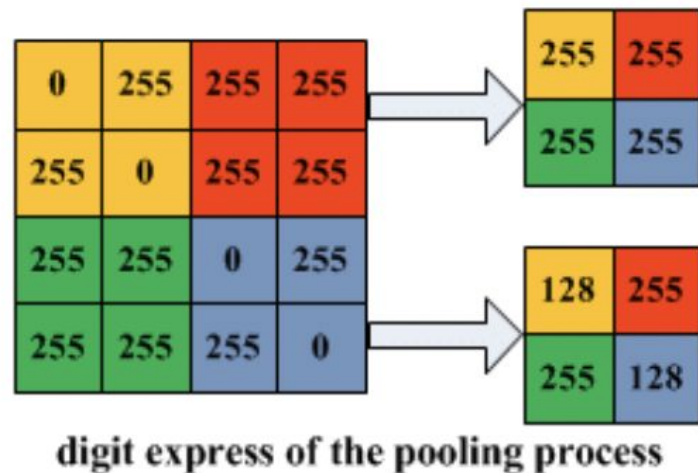
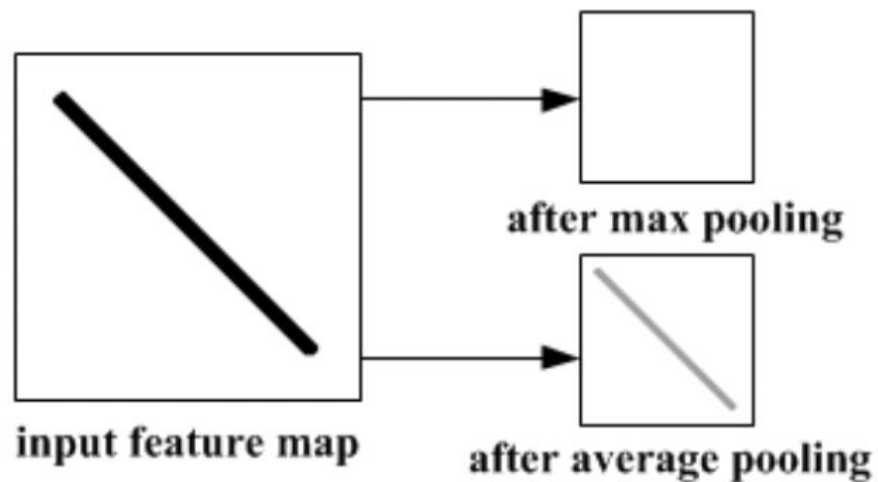
Convolution for RGB images



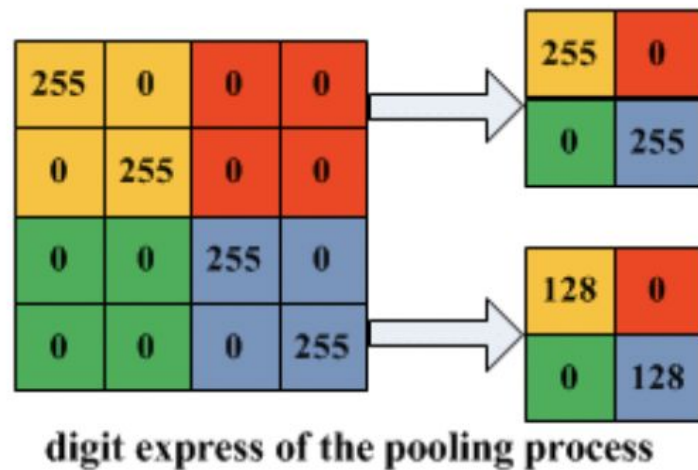
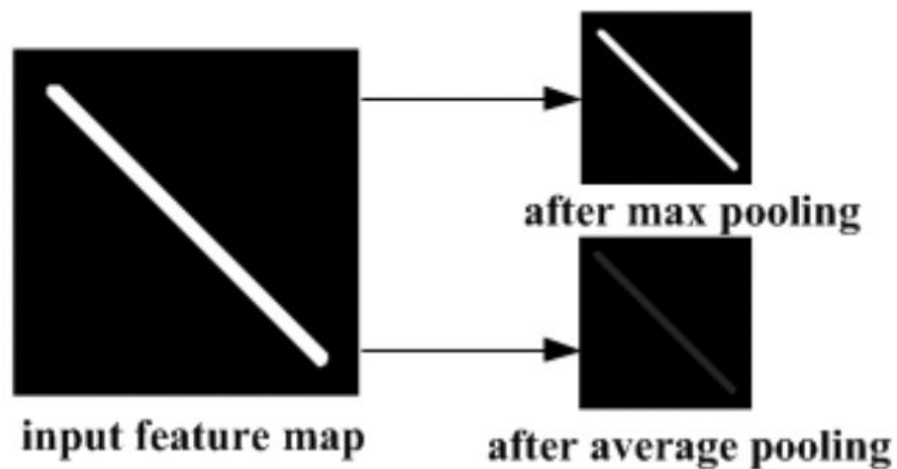
Single convolutional layer



Pooling



Pooling



Max pooling

(446, 450)



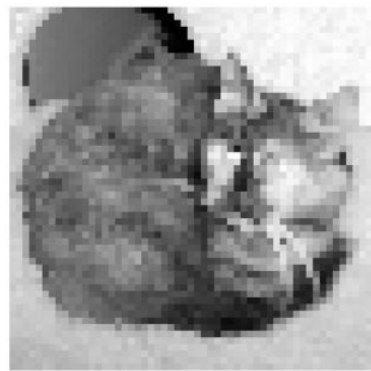
(223, 225)



(111, 112)

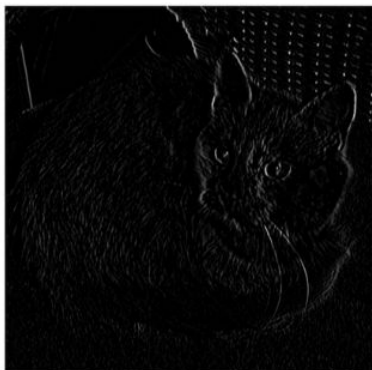


(55, 56)

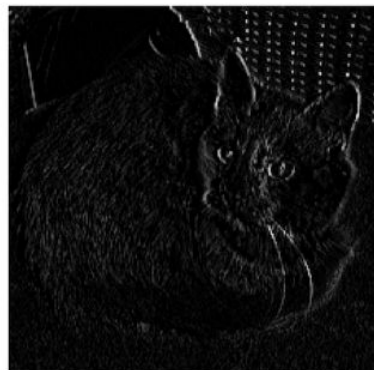


Max pooling

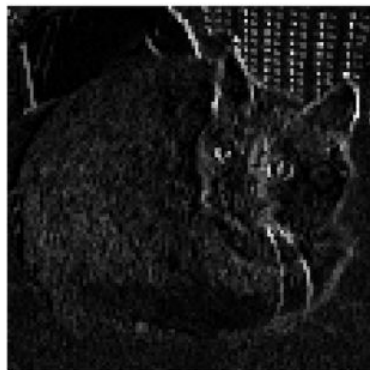
(444, 448)



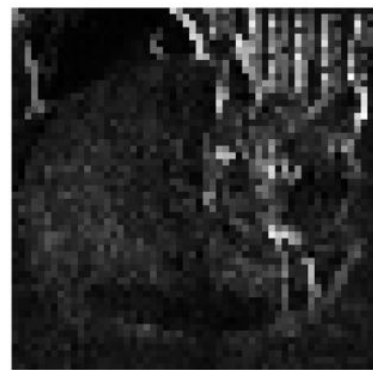
(222, 224)



(111, 112)

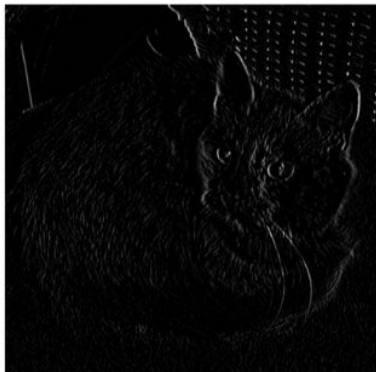


(55, 56)

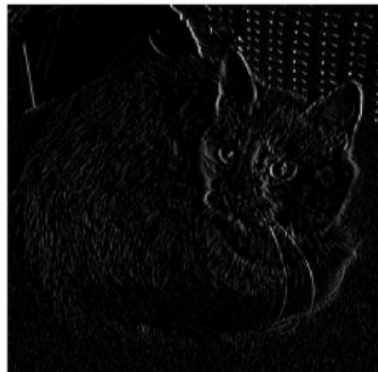


Average pooling

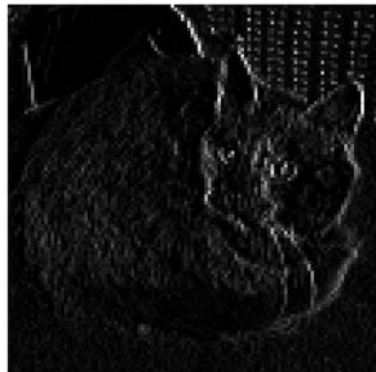
(444, 448)



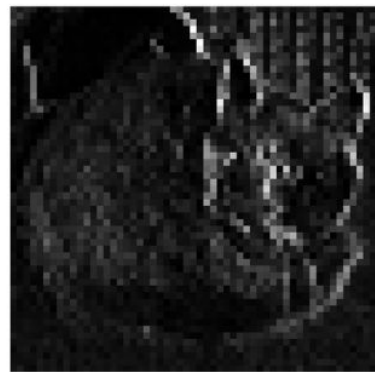
(222, 224)



(111, 112)



(55, 56)



Translation Invariance

