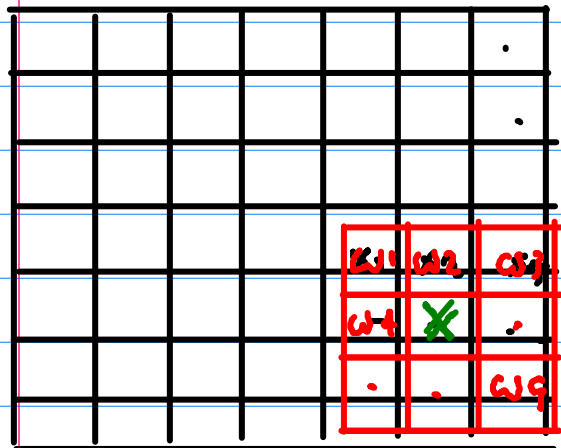


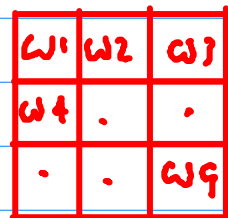
convolution of an image

gray

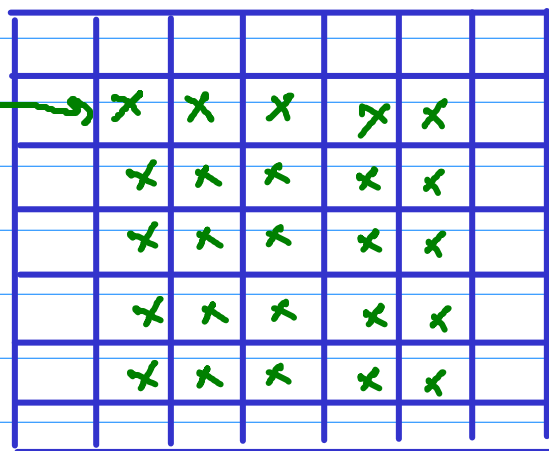


+

kernel



output

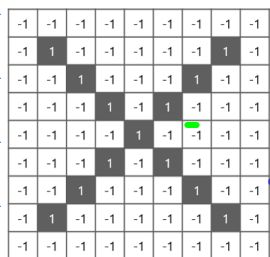


$$w_1 \cdot x_1 + w_2 \cdot x_2 + w_3 \cdot x_3$$

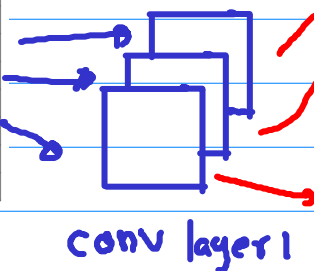
$$+ \dots + w_9 \cdot x_9 = \sum w_i x_i$$

convolutional Neural Network

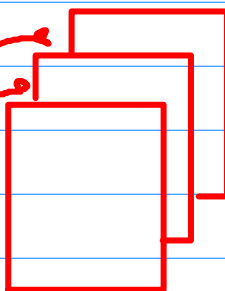
9x9



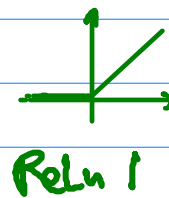
(3x3)x3



(9x9)x3

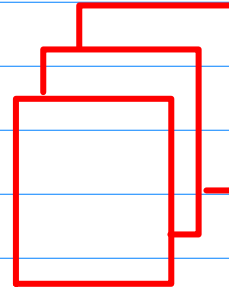


convolutions



ReLU

(9x9)x3

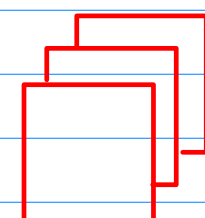


convolutions

max pooling



(5x5)x3

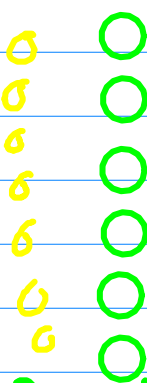


shrunk convolutions

classes



Soft max



Dense Layer

Flatten



60,000, 28, 28

60,000, 28, 28, 1

60,000 ↙
[[]²⁸₂₈
[]
[]
[]

↗

[[[]²⁸₂₈],
[[]²⁸₂₈],
⋮
]]

CNN for cats and dogs

dataset = [[]³⁰₃₀, [1, 0] images
[]³⁰₃₀, [0, 1] labels
29,000 []³⁰₃₀, [0, 1]
]