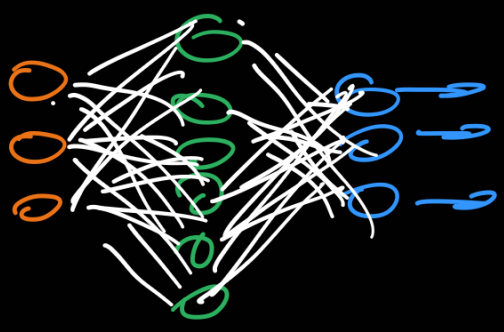
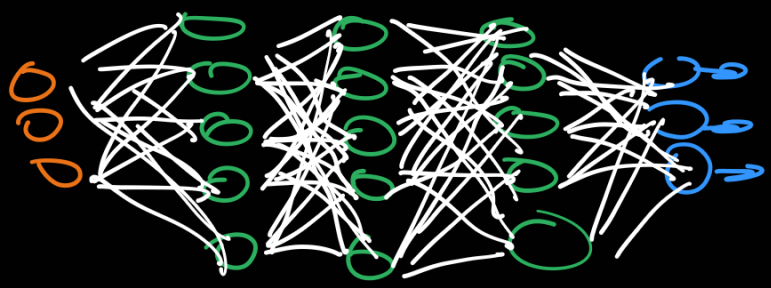
Simple Neural Network



input
hidden Layer
Output Layer

Deep Learning N.N



→ Daha çok veri gerekli:

→ Daha maliyetli:

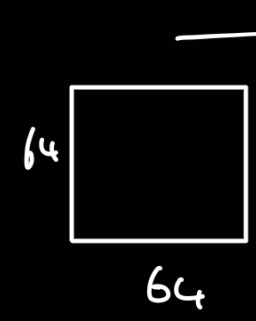
→ Daha uzun sürer

→ Daha güçlü donanım gerekli:

Histogram - Değer yoğunluğu grafiği:

CNN = Konvolüsyonel Sinir Ağları
(Convolution Neural Network)
(Evrişim)

Giriş Boyut Hesaplama



Havuzlama $\frac{w-f}{s}+1$

Konvolüsyon $\frac{w-f+2p}{s}+1$

→ 32 × 32 olan bir çıktı:

F → s = ?

$$32 = \frac{64-f}{s}+1$$

$$31s = 64-f$$

s = 2 F = 2

Eğer 2×2 filtre belirlersek ve stride 2 olursa Sonuçun 32 çıkar

$$64 = \frac{64-f+2p}{s}+1$$

$$63s = 64-f+2p$$

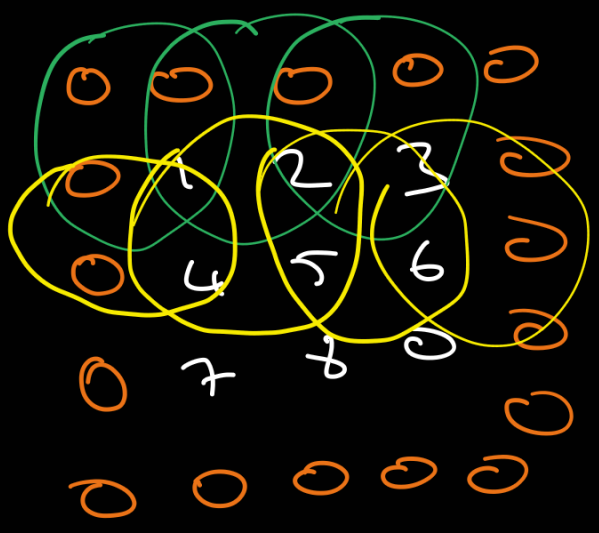
$$s = 1 \qquad 3 \qquad = 1$$

$$63 = 64-3+2$$

Stride = 1

padding 1 filtre 3×3

yaparsak 64×64 çıktı olur.



1 -1
0 1

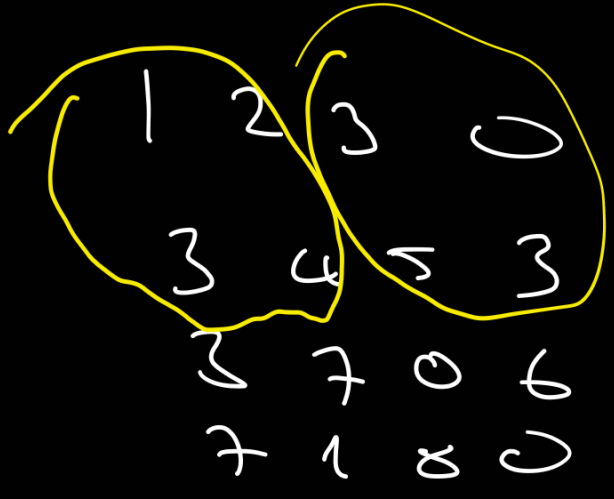
Konwolucja

s=1 p=1

$$\begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix}$$

1	2	3	0
3	4	5	3
3	7	-1	6
-7	-1	8	0

Relu

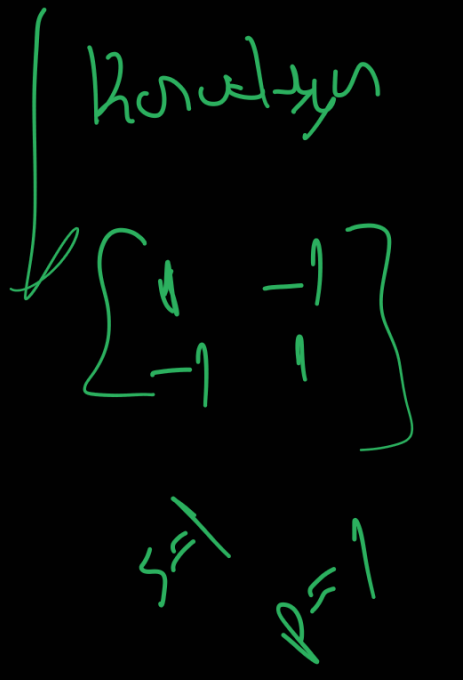


4 5

7 8

4 -5

-7 8



Çıkış Boyut Hesapları

$$\text{hacim} \rightarrow \frac{W-F}{S}+1$$

- giriş görüntü genişliği
- filtre görüntü genişliği
- stride adım atlama

conv → $\frac{w - f + 2p}{s} + 1$ pooling