

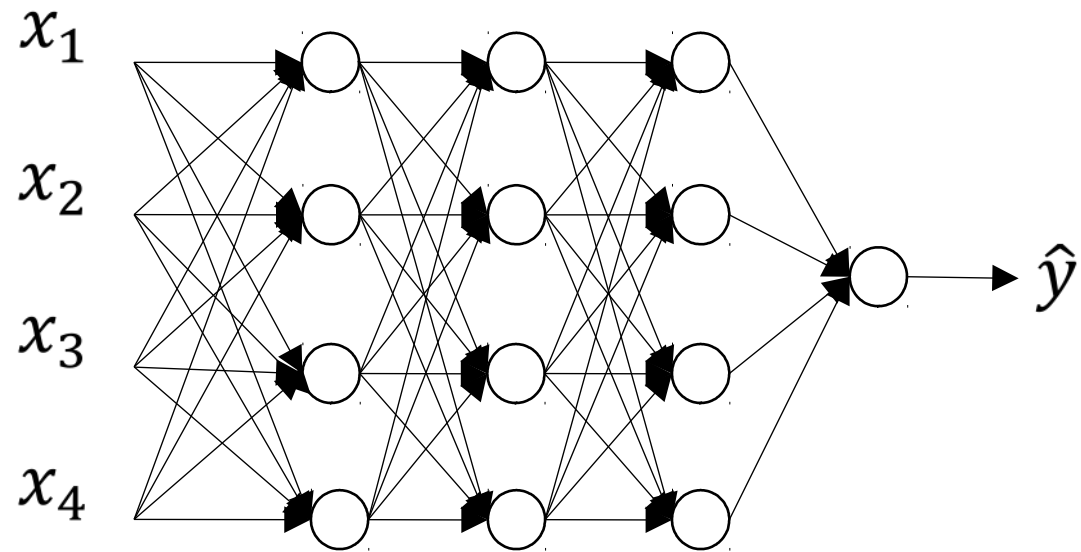


deeplearning.ai

Regularizing your neural network

Dropout regularization

Dropout regularization



↑
0.5 ↑
0.5 ↑
0.5

Implementing dropout ("Inverted dropout")

Illustrate with layer $l=3$. $\text{keep-prob} = \frac{0.8}{x}$ 0.2

→ $d3 = \text{np.random.rand}(a3.\text{shape}[0], a3.\text{shape}[1]) < \text{keep-prob}$

$a3$ = $\text{np.multiply}(a3, d3)$ # $a3 \neq d3$.

→ $a3 /= \text{keep-prob}$ ←

50 units. \rightsquigarrow 10 units shut off

$$z^{[4]} = w^{[4]} \cdot \underbrace{a^{[3]}}_{\text{reduced by } 20\%} + b^{[4]}$$

$\text{/= } \underline{0.8}$

Test

Making predictions at test time

$$a^{(0)} = X$$

No drop out.

$$z^{(1)} = W^{(1)} \underline{a^{(0)}} + b^{(1)}$$

$$a^{(1)} = g^{(1)}(z^{(1)})$$

$$z^{(2)} = W^{(2)} \underline{a^{(1)}} + b^{(2)}$$

$$a^{(2)} = \dots$$



$\neq \text{keep-prob}$



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Understanding dropout

Why does drop-out work?

Intuition: Can't rely on any one feature, so have to spread out weights. \leadsto Shrink weights.

