Deep Neural Networks

deeplearning.ai

Building blocks of deep neural networks

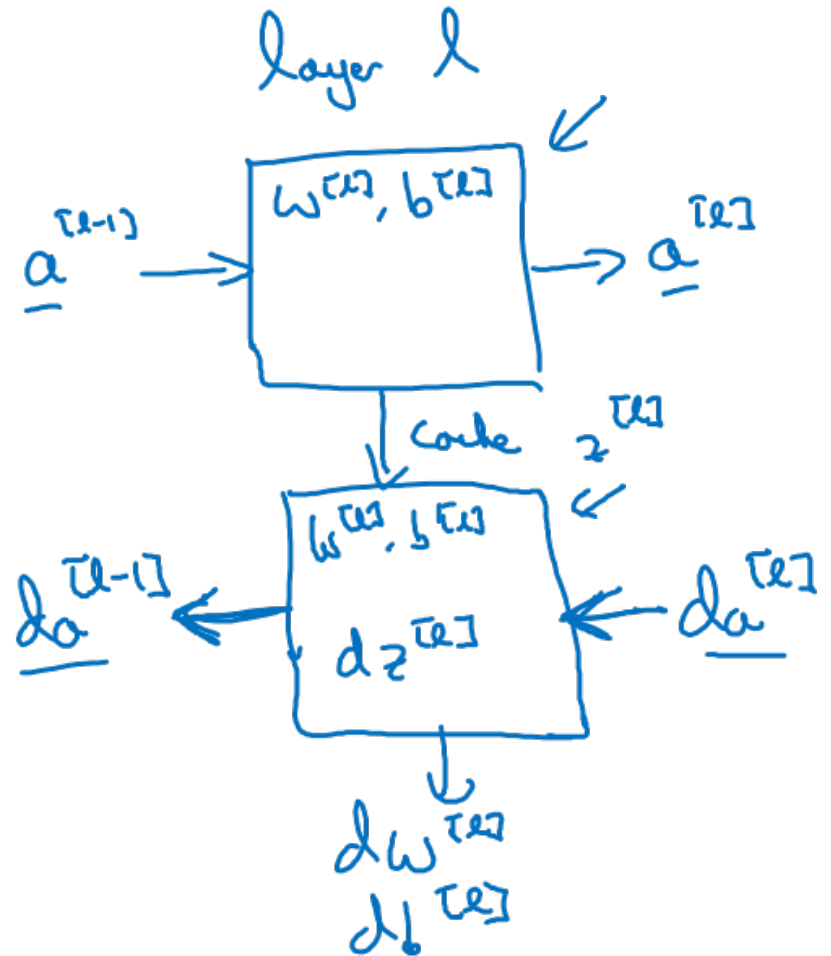# Forward and backward functions

x_1
x_2
x_3
x_4

$\hat{y}$
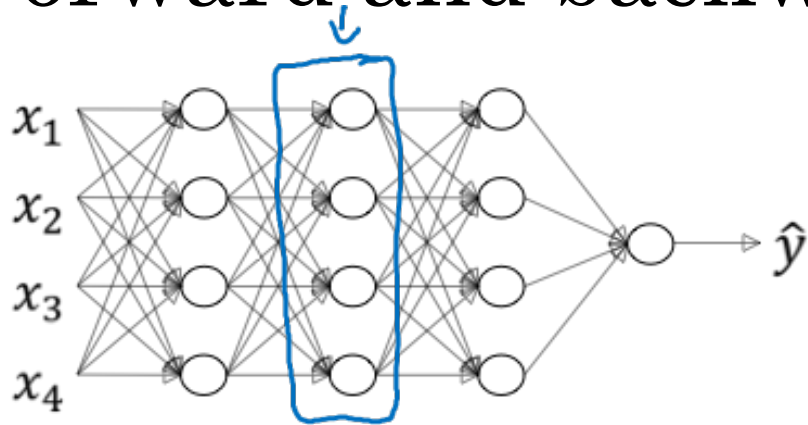
Layer l: $W^{[l]}, b^{[l]}$

→ Forward: Input $a^{[l-1]}$, output $a^{[l]}$

$z^{[l]} = W^{[l]} a^{[l-1]} + b^{[l]}$ cache $z^{[l]}$

$a^{[l]} = g^{[l]}(z^{[l]})$

→ Backward: Input $da^{[l]}$, output $da^{[l-1]}$
cache $(z^{[l]})$
$dW^{[l]}$
$db^{[l]}$

layer l

$a^{[l-1]}$ → $W^{[l]}, b^{[l]}$ → $a^{[l]}$

cache $z^{[l]}$

$da^{[l-1]}$ ← $W^{[l]}, b^{[l]}$ ← $da^{[l]}$
$dz^{[l]}$

$dW^{[l]}$
$db^{[l]}$

Forward and backward functions

$$W^{[l]} := W^{[l]} - \alpha \, dW^{[l]}$$
$$b^{[l]} := b^{[l]} - \alpha \, db^{[l]}$$

Andrew
N