



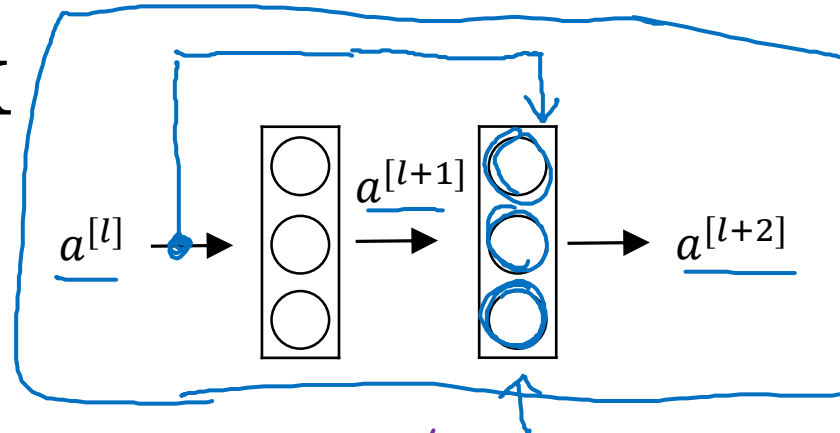
deeplearning.ai

Very, very deep neural deep networks are difficult to train because of vanishing and exploding gradients types of problem. In this video, you learn about skip connections which allows you to take the activation from one layer, and suddenly feed it to another layer, even much deeper in the neural network. And using that, you're going to build ResNets which enables you to train very very deep neural networks, sometimes even networks of over 100 layers.

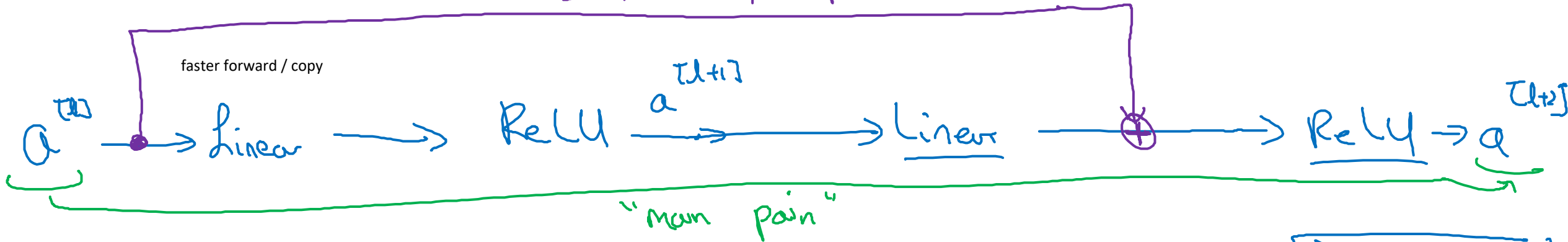
Case Studies

Residual Networks (ResNets)

Residual block



"short cut" / skip connection



$$\underline{z^{[l+1]}} = W^{[l+1]} \underline{a^{[l]}} + b^{[l+1]}$$

↑ ↑

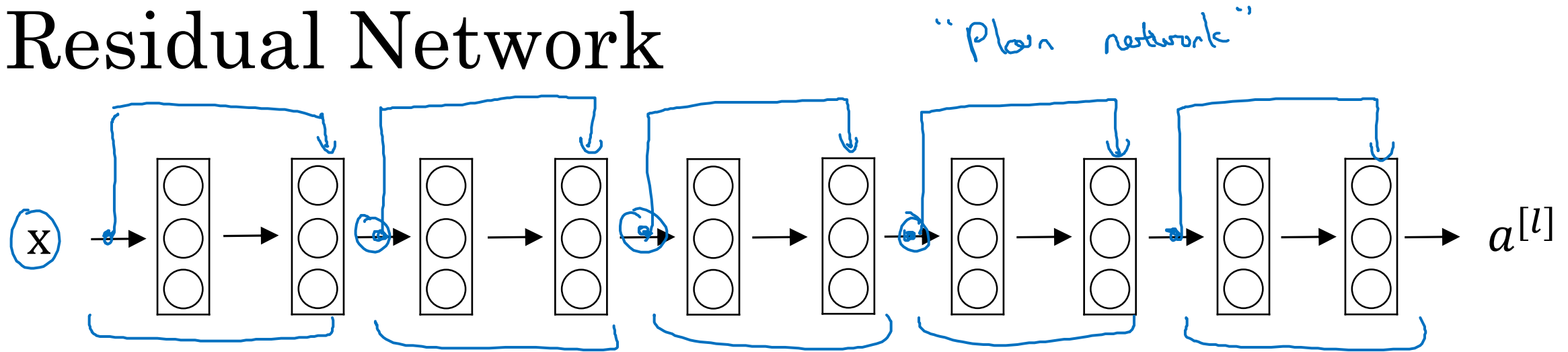
$$\underline{a^{[l+1]}} = g(\underline{z^{[l+1]}})$$

$$\underline{z^{[l+2]}} = W^{[l+2]} \underline{a^{[l+1]}} + b^{[l+2]}$$

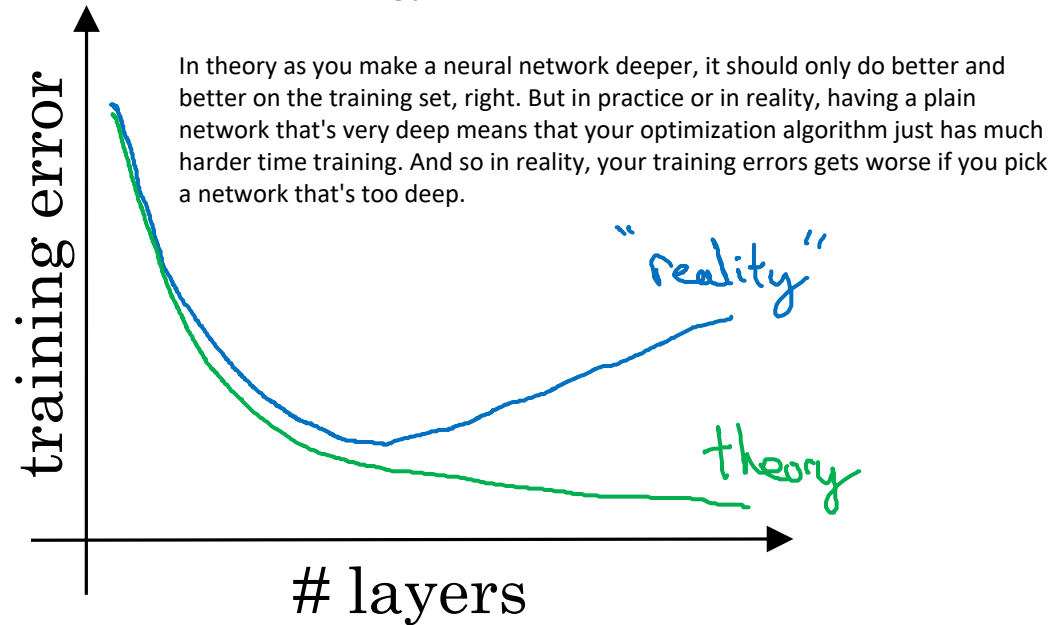
~~$$\underline{a^{[l+2]}} = g(\underline{z^{[l+2]}})$$~~

$$a^{[l+2]} = g(z^{[l+2]} + \underline{a^{[l]}})$$

Residual Network



Plain



ResNet

