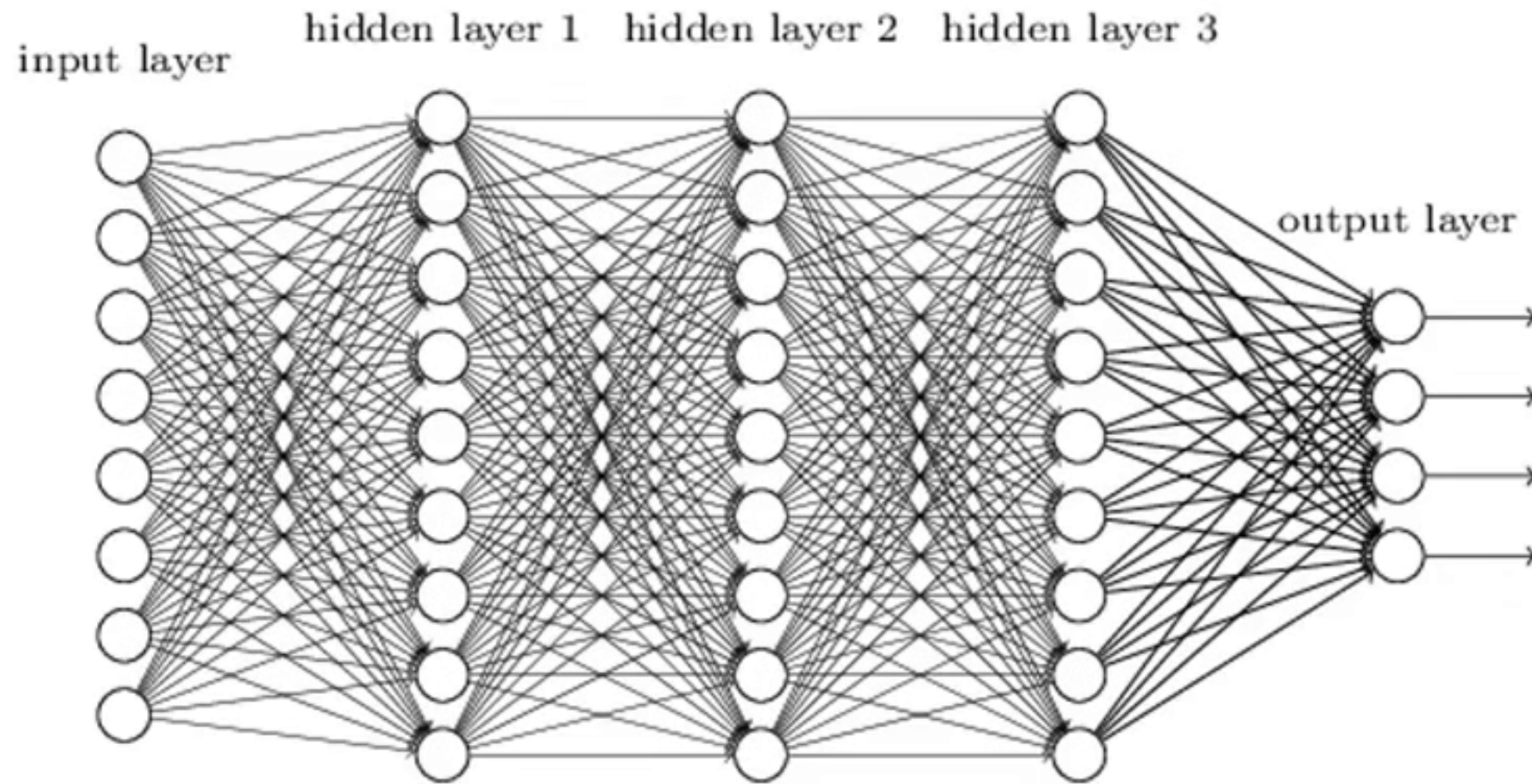
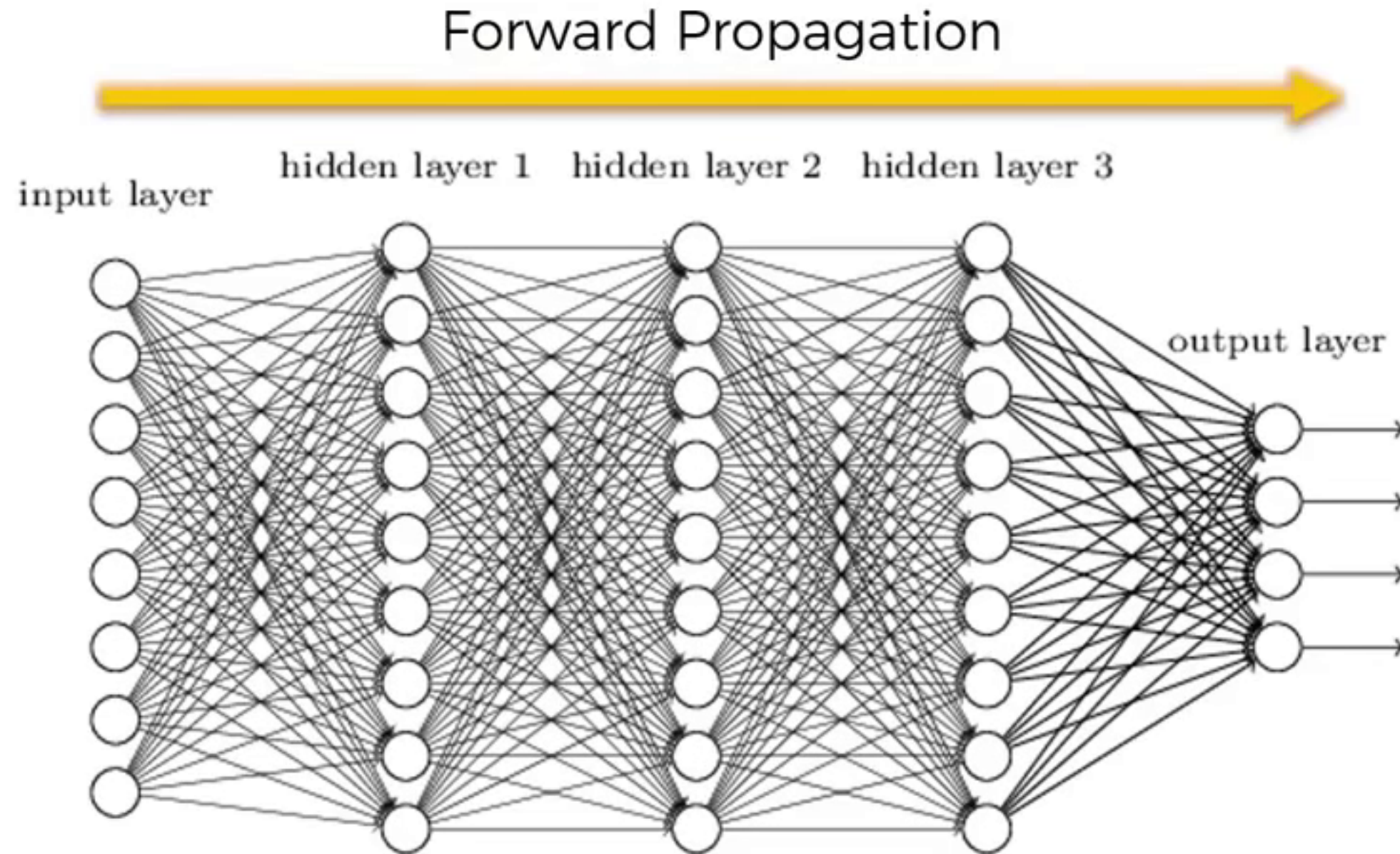


# Backpropagation

# Gradient Descent

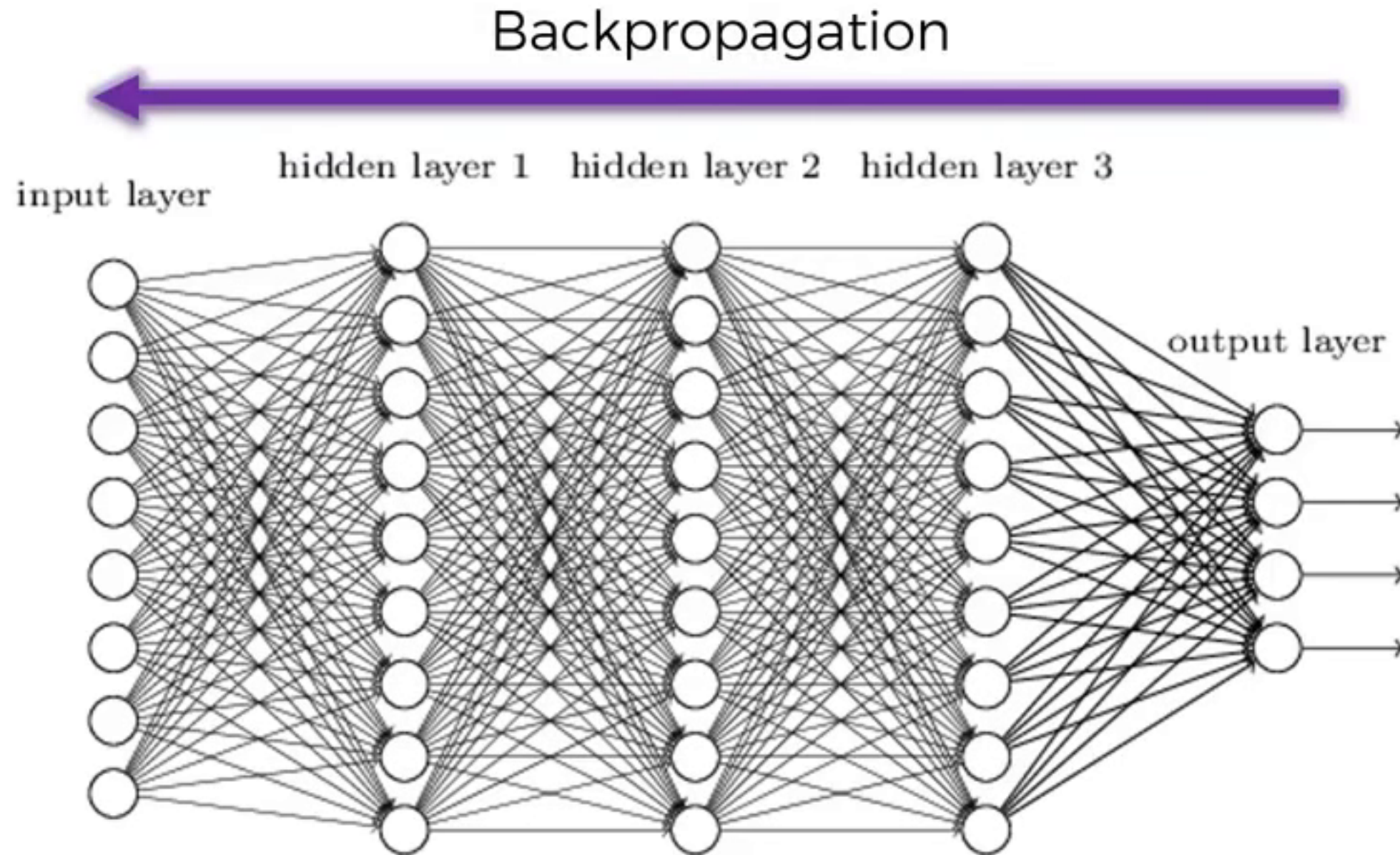


# Gradient Descent





# Gradient Descent



# Stochastic Gradient Descent

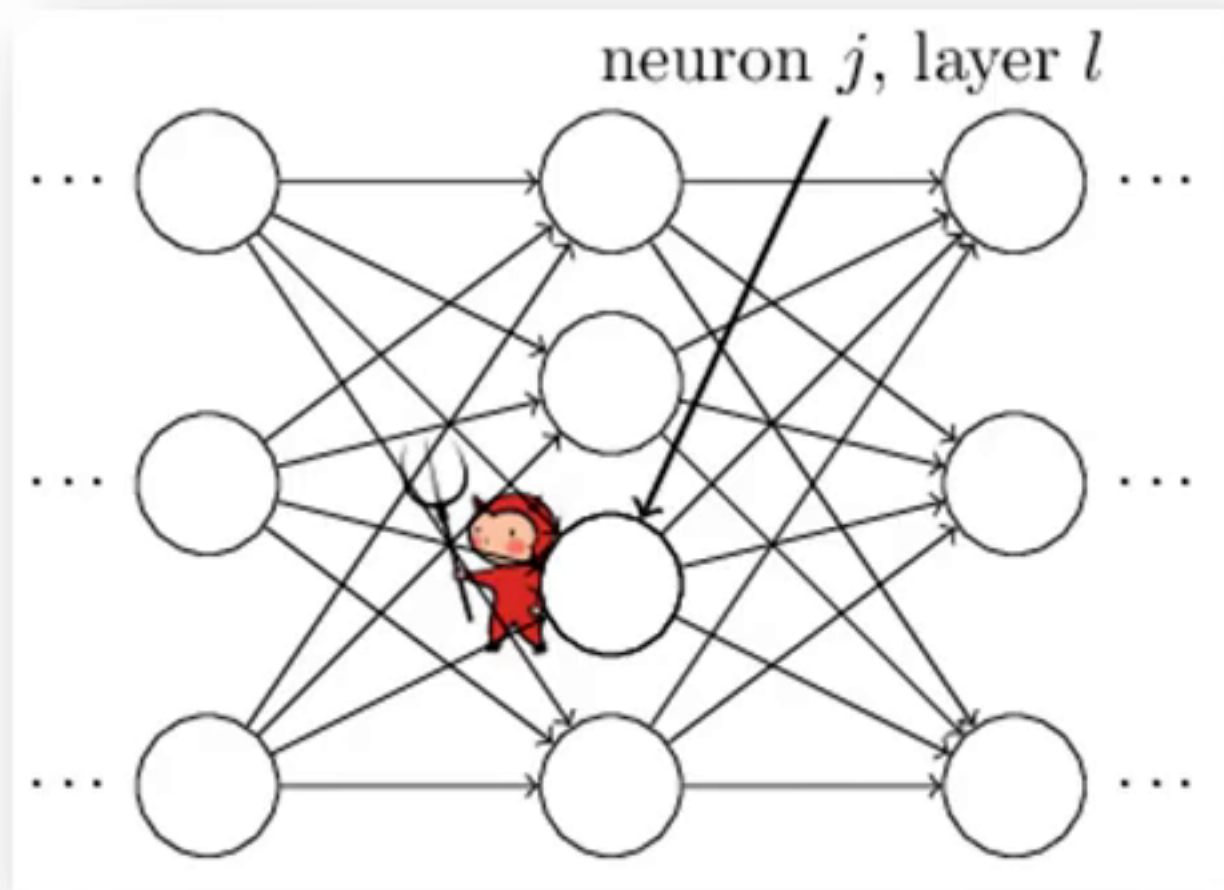
Additional Reading:

*Neural Networks and Deep Learning*

Michael Nielsen (2015)

Link:

<http://neuralnetworksanddeeplearning.com/chap2.html>



# Training the ANN with Stochastic Gradient Descent

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**STEP 1:** Randomly initialise the weights to small numbers close to 0 (but not 0).



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**STEP 7:** When the whole training set passed through the ANN, that makes an epoch. Redo more epochs.