Neural Networks Intuition - I

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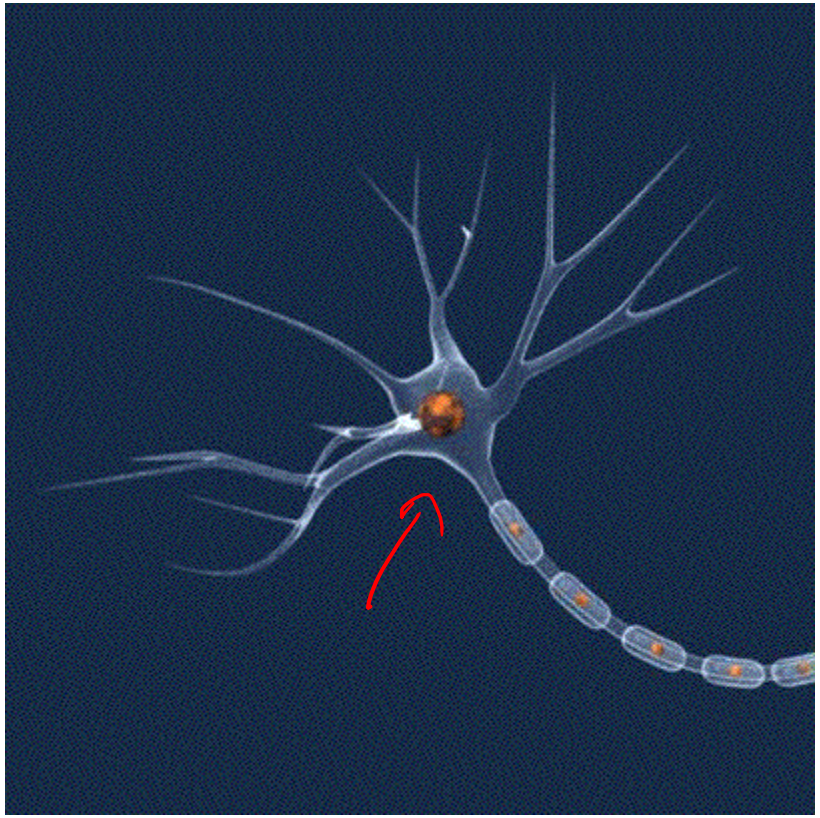
Inspired by Human Brain

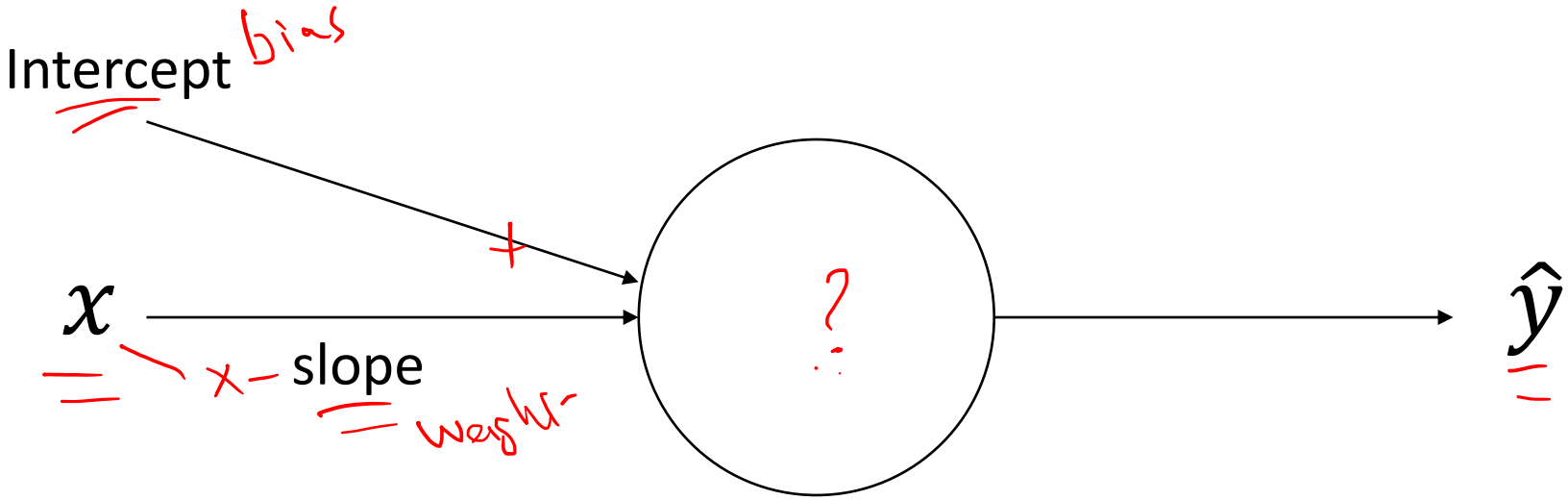


A Single Neuron

A Neuronal Network

86000000000

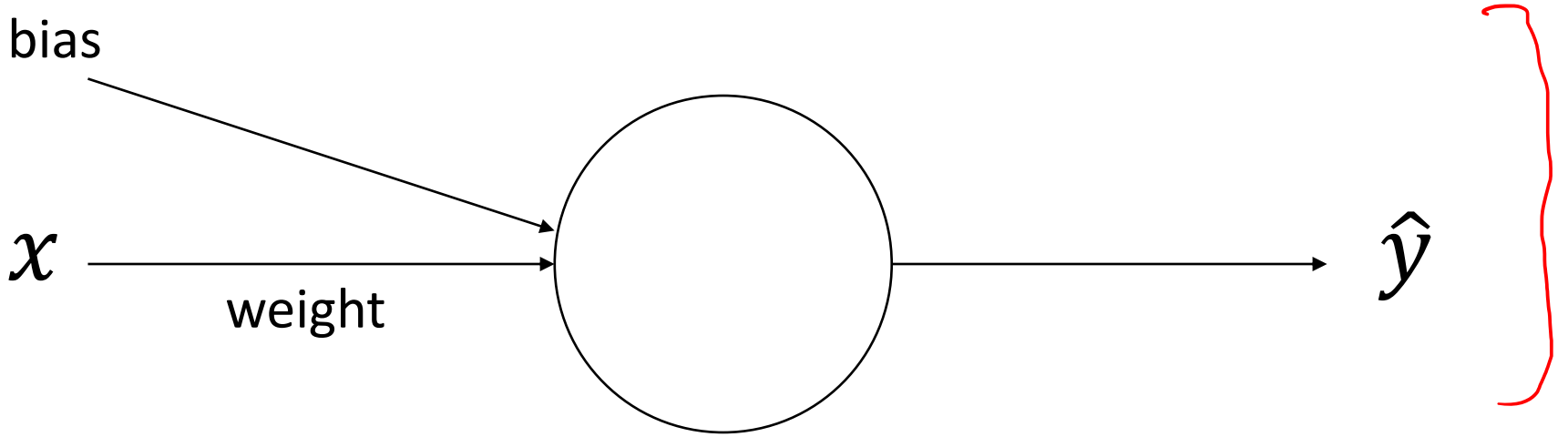
Modeling a Neuron Mathematically for Regression



$$\hat{y} = slope \times x + intercept$$

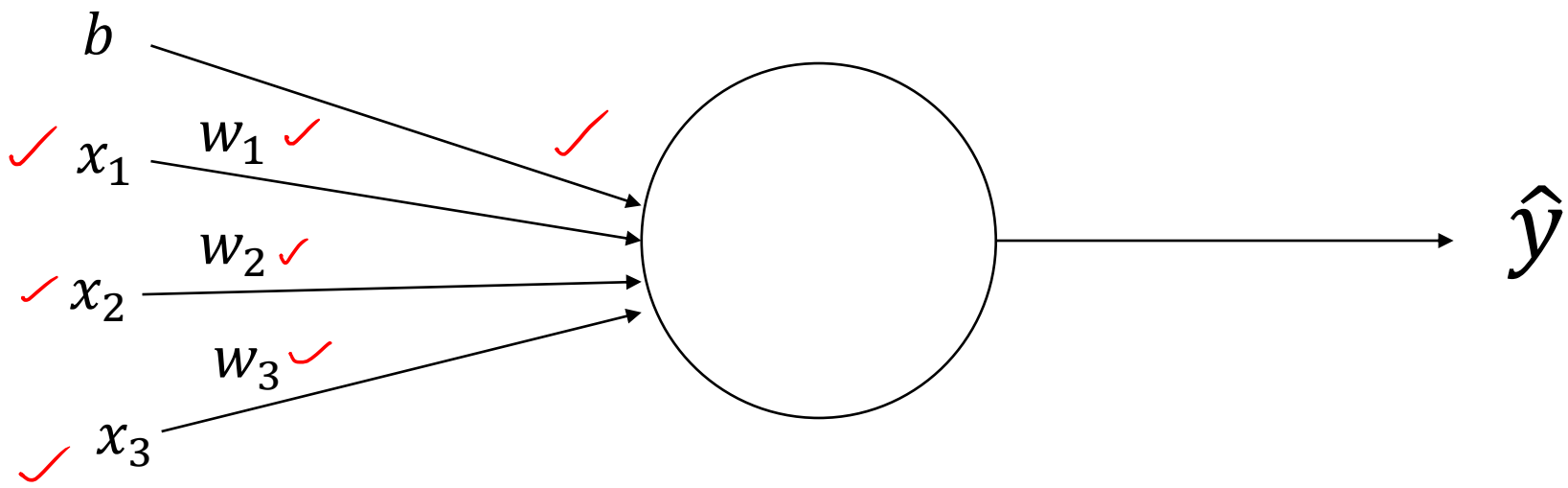
$mx + c$

Modeling a Neuron Mathematically for Regression



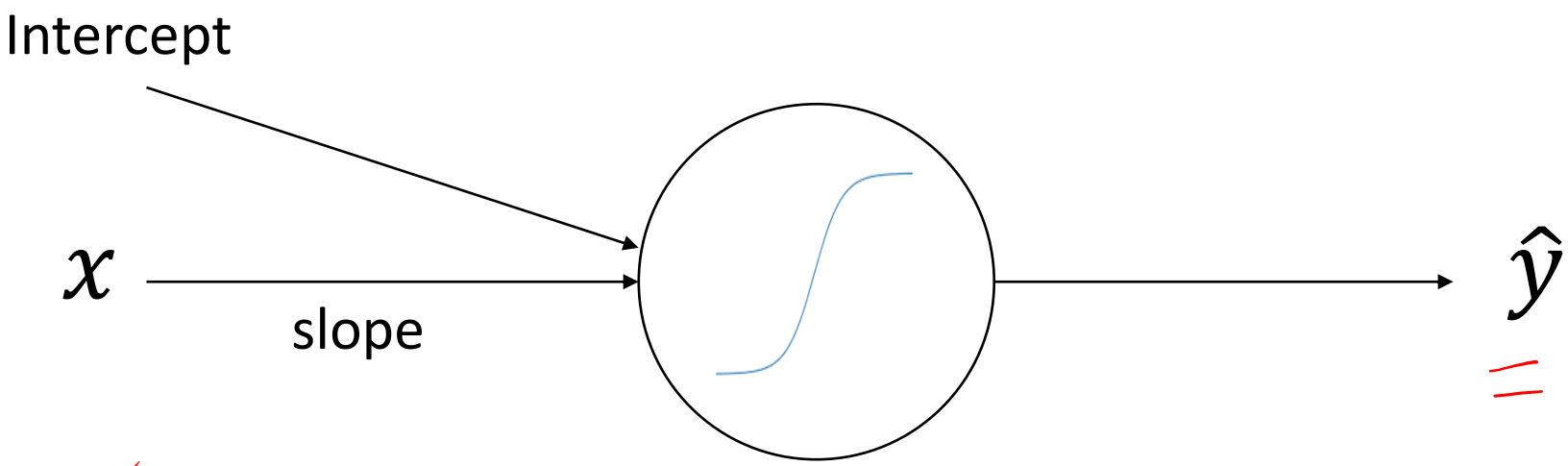
$$\hat{y} = weight \times x + bias$$

Modeling a Neuron Mathematically for Regression



$$\hat{y} = x_1 w_1 + x_2 w_2 + x_3 w_3 + b$$

Modeling a Neuron Mathematically for Classification

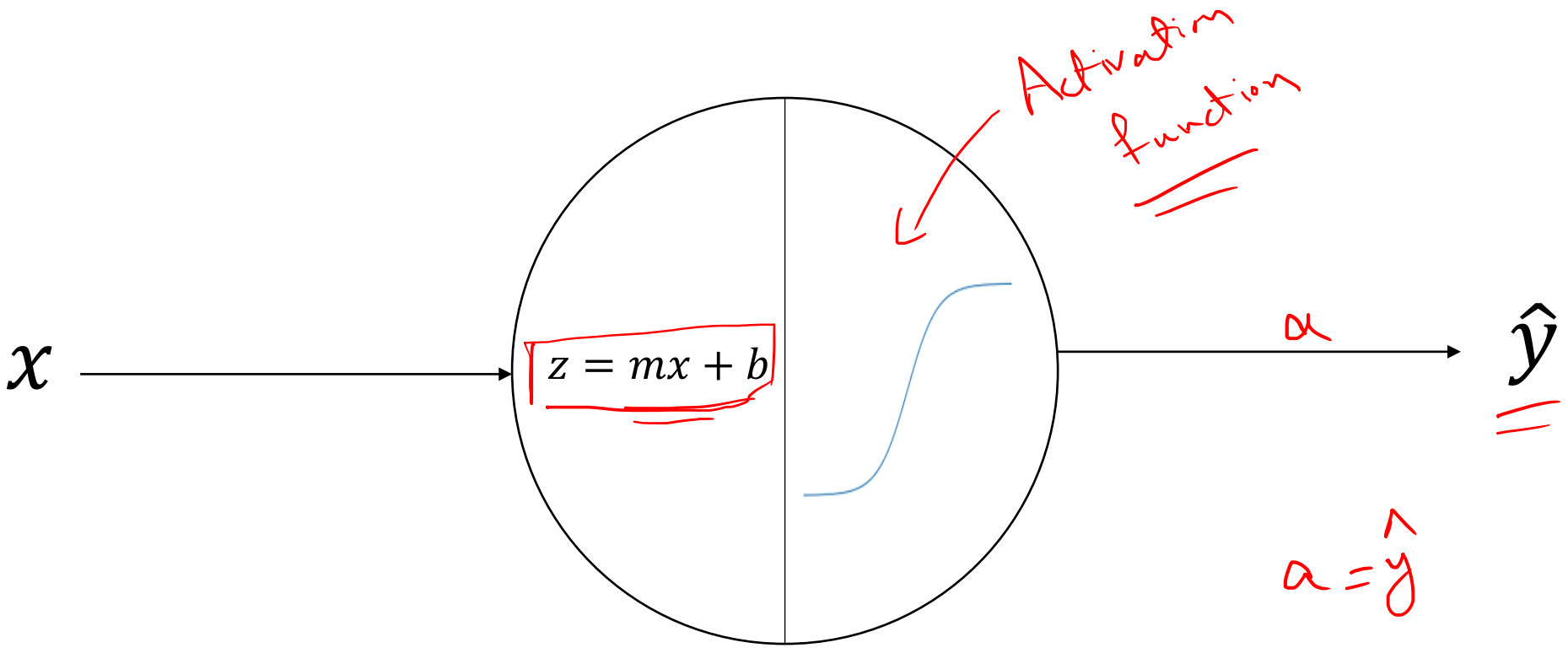


$$z = slope \times x + intercept$$

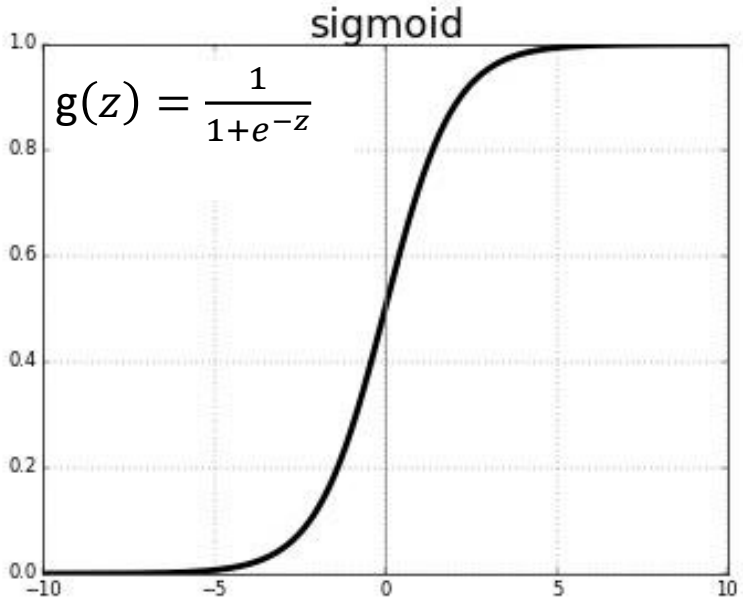
$$\hat{y} = g(z)$$

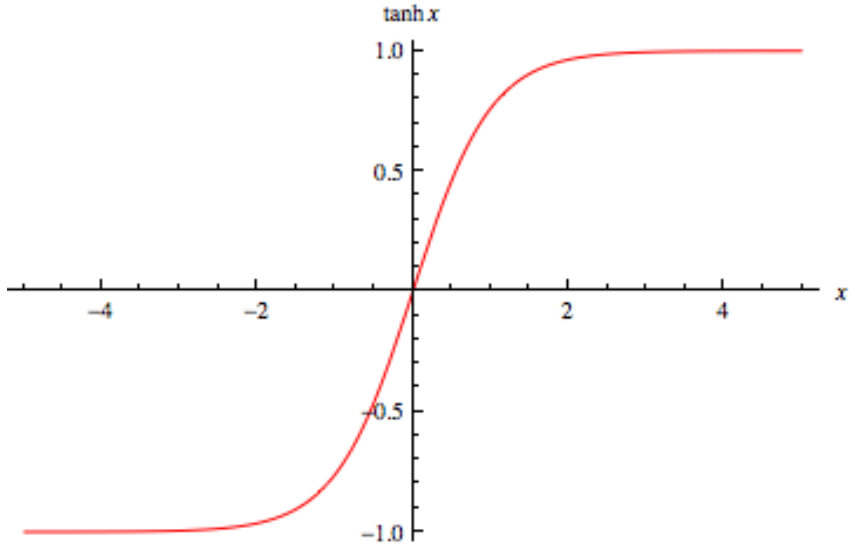
where $$g(z) = \frac{1}{1 + e^{-z}}$$

Modeling a Neuron Mathematically for classification



Activation Functions





$$g(z) = \frac{e^z - e^{-z}}{e^z + e^{-z}}$$

ReLU

$$g(z) = \max(0, z)$$

$$g(z) = \max(0.001z, z)$$