Perceptron

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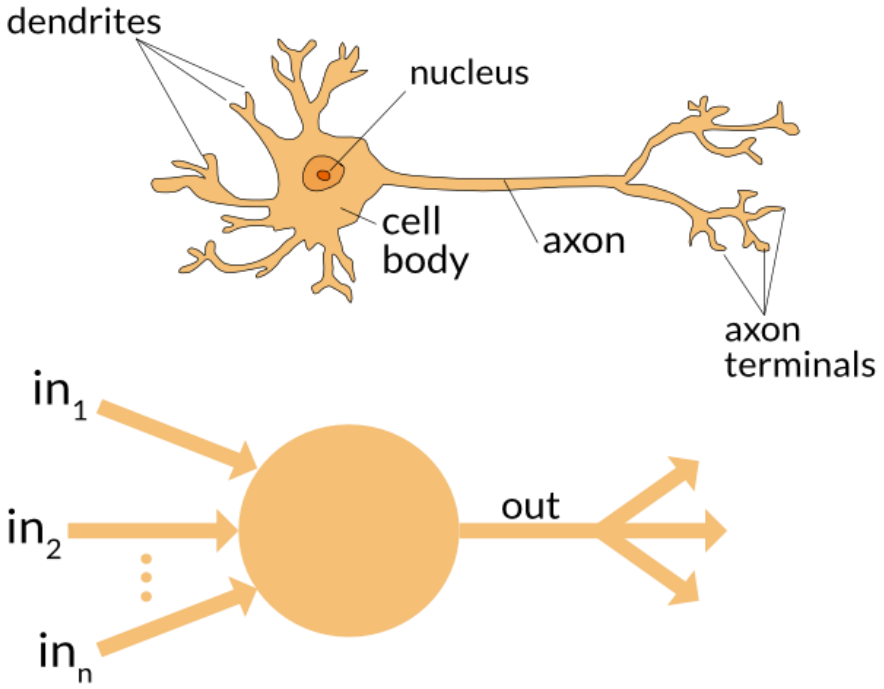
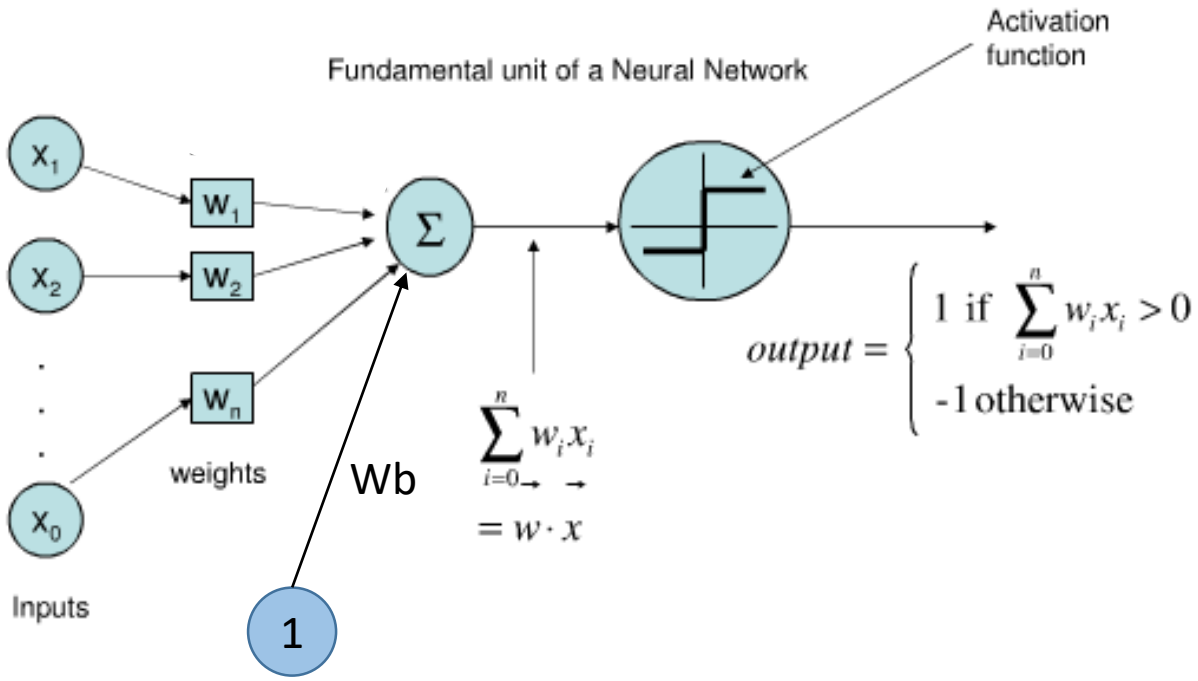
Actually Perceptron is



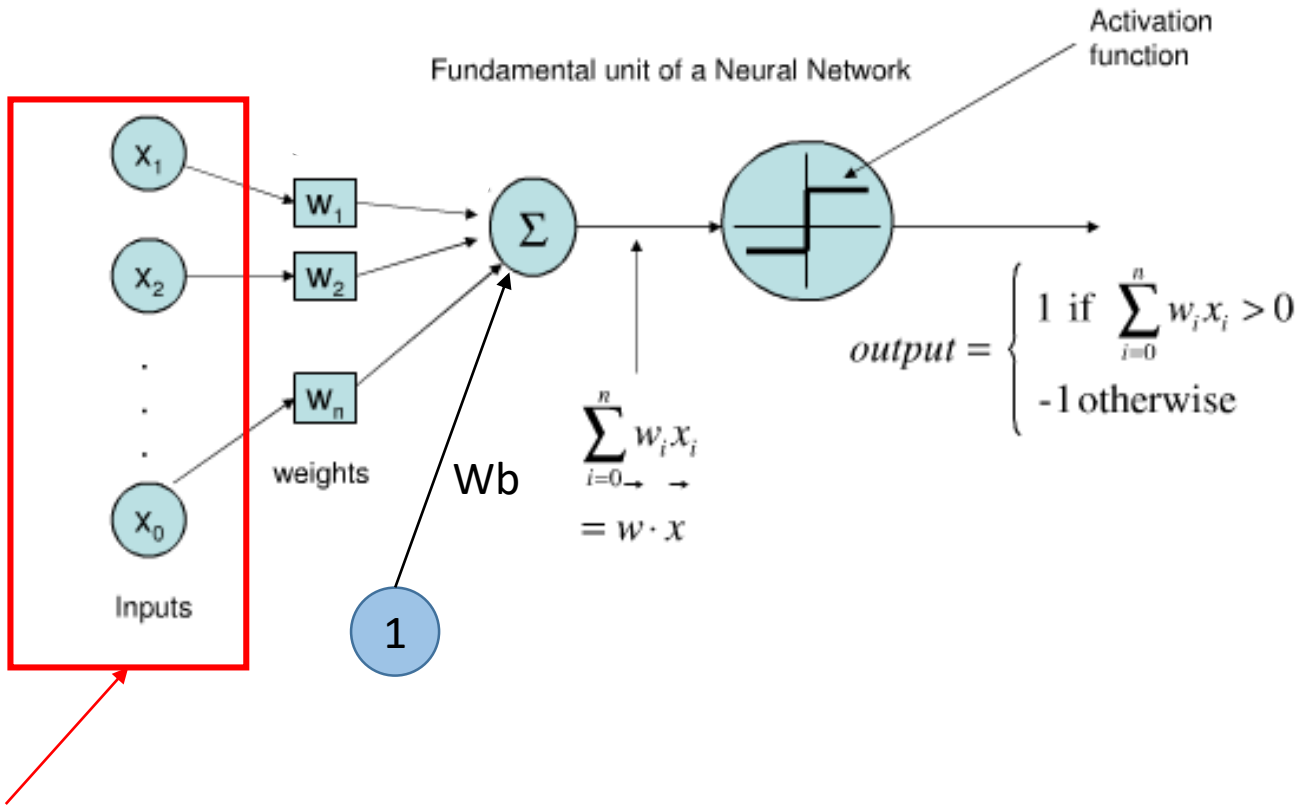
First neural network learning model in the 1960's
Simple and limited (single layer models)
Basic concepts are similar for multi-layer models so this is a good learning tool
Still used in many current applications (modems, etc.)

Perceptron to Math Model



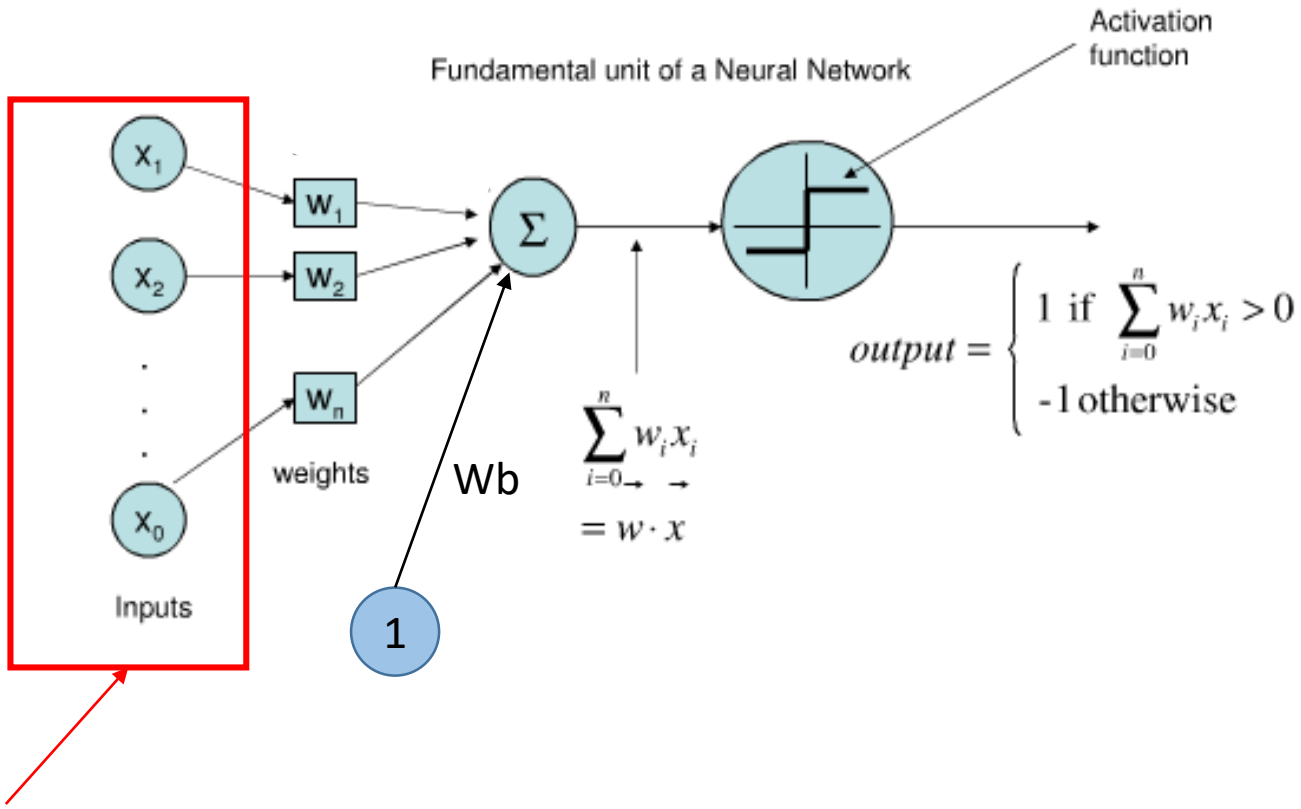
Clam down! and try to understand.

Perceptron to Math Model



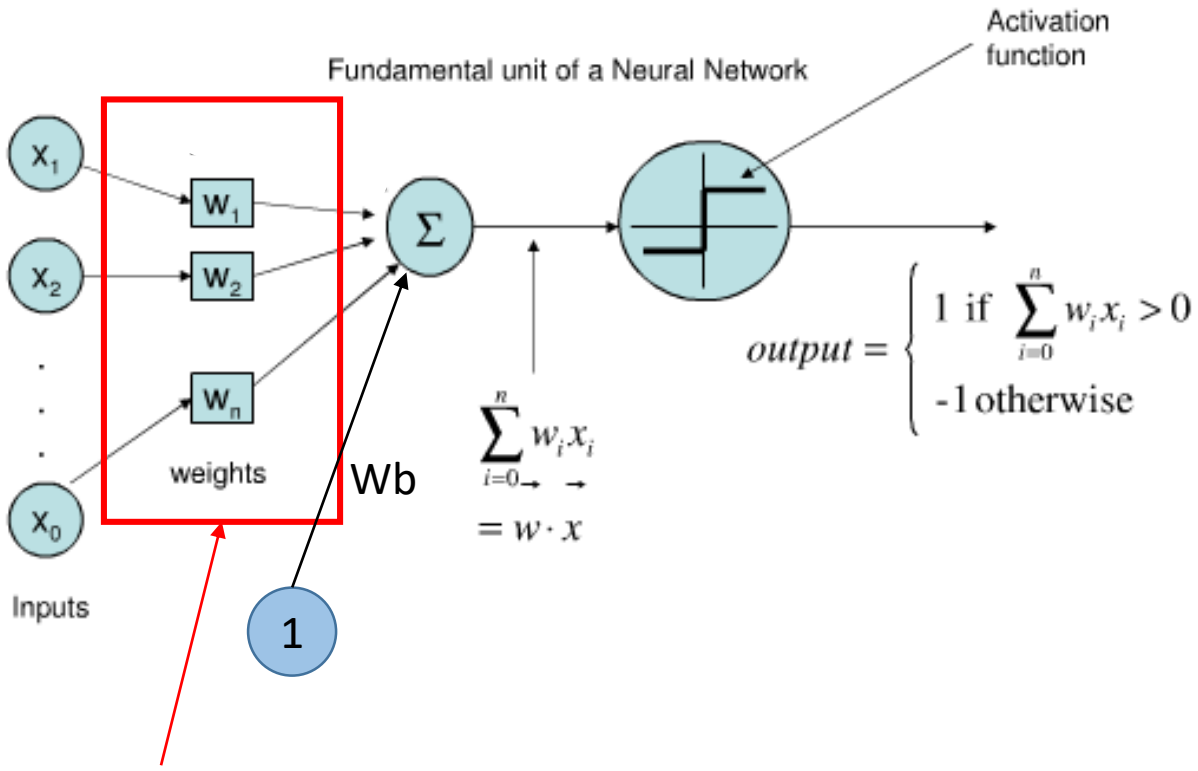
Input Layer (represent as vector)

Perceptron to Math Model



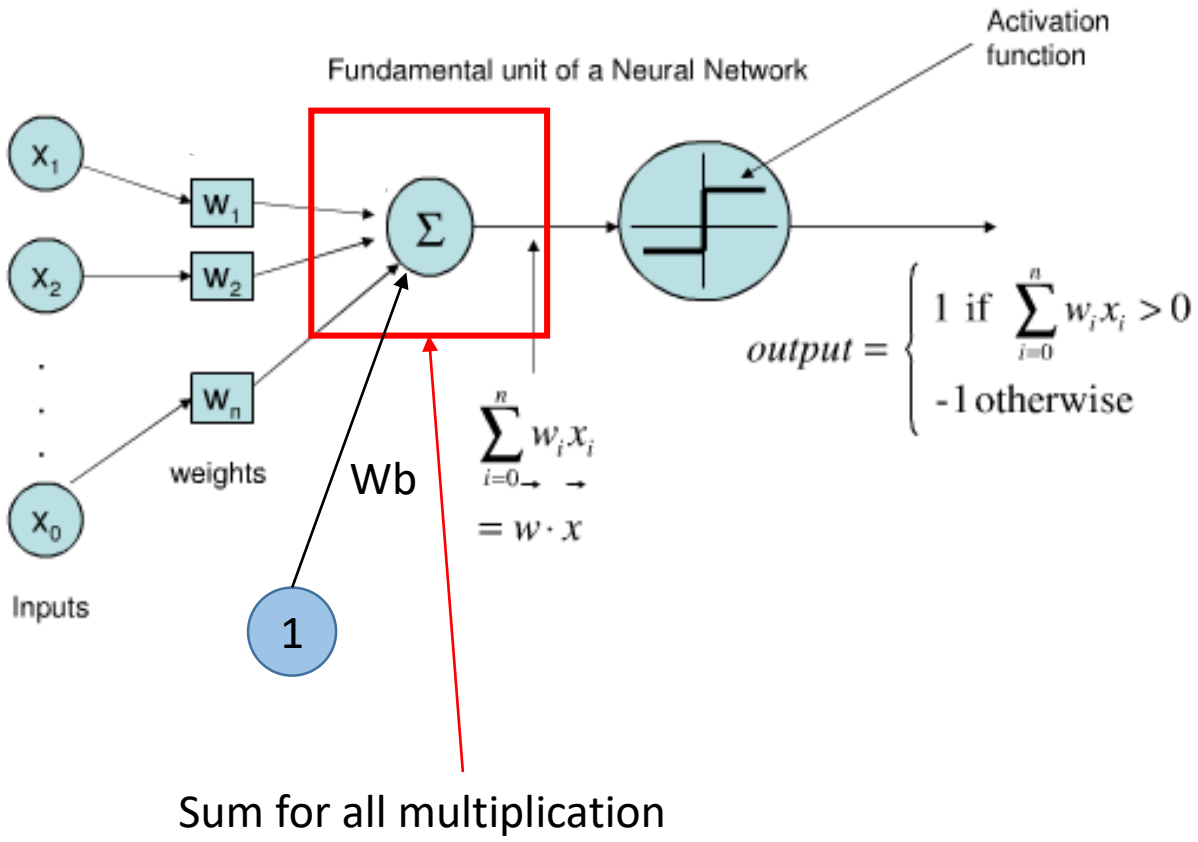
Input Layer (represent as vector)

Perceptron to Math Model

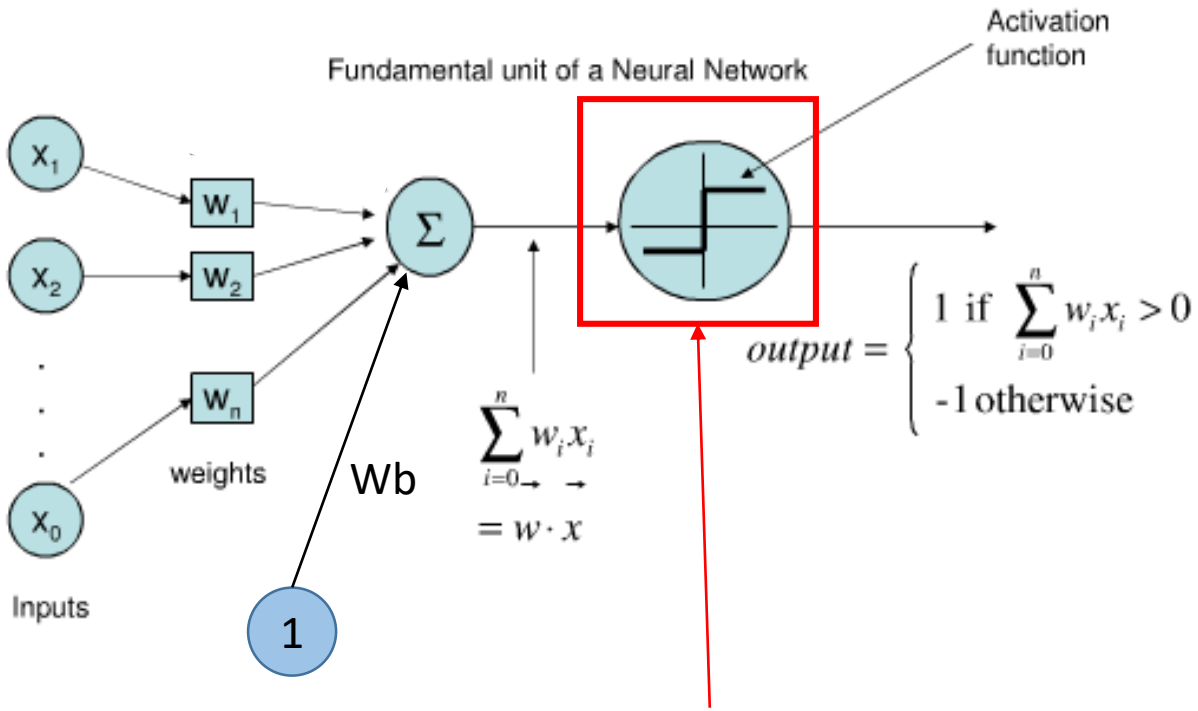


Weight for Input layer (represent as vector) size input x output

Perceptron to Math Model

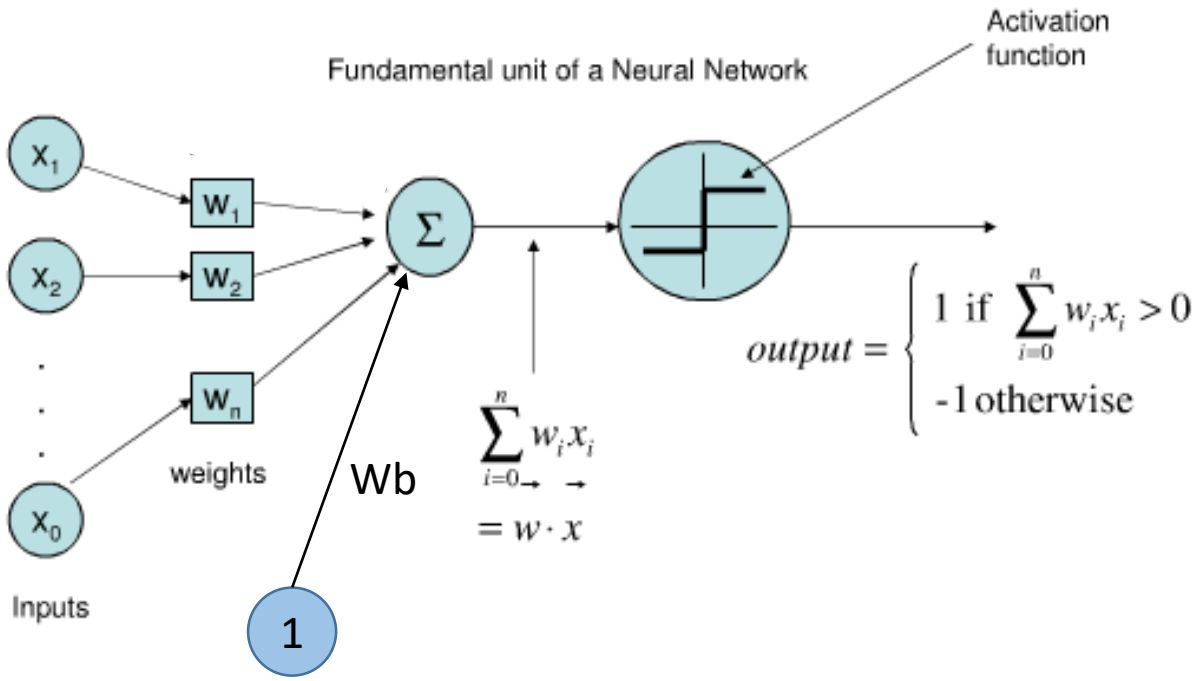


Perceptron to Math Model

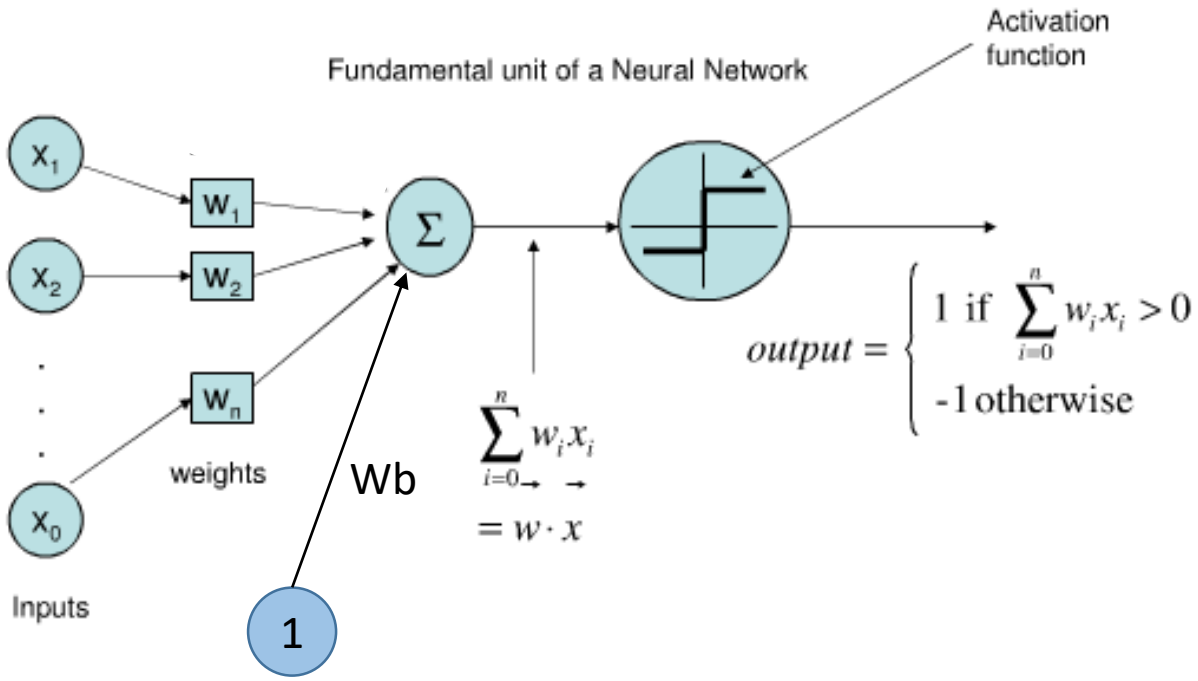


Just simple
sum > 0 output = 1
sum <= 0 output = -1

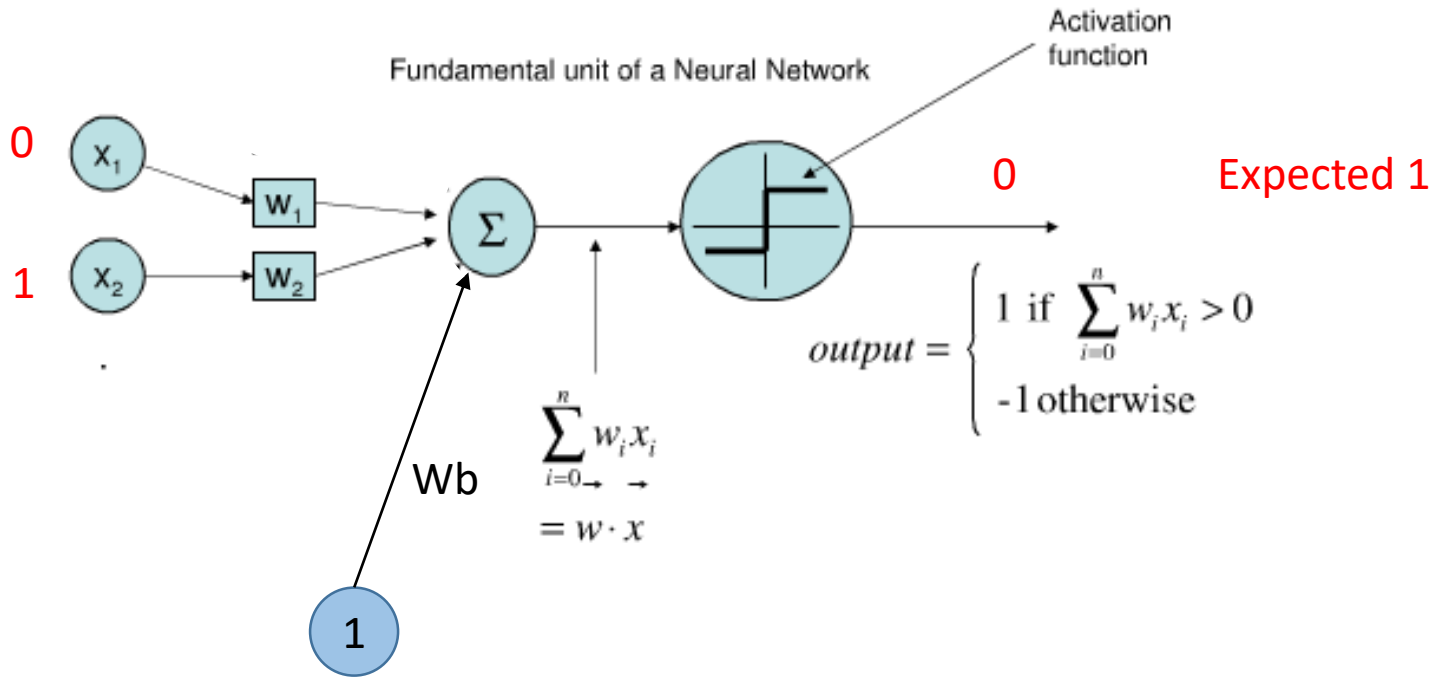
How model can Solve the Problem?



Back-Propagation!



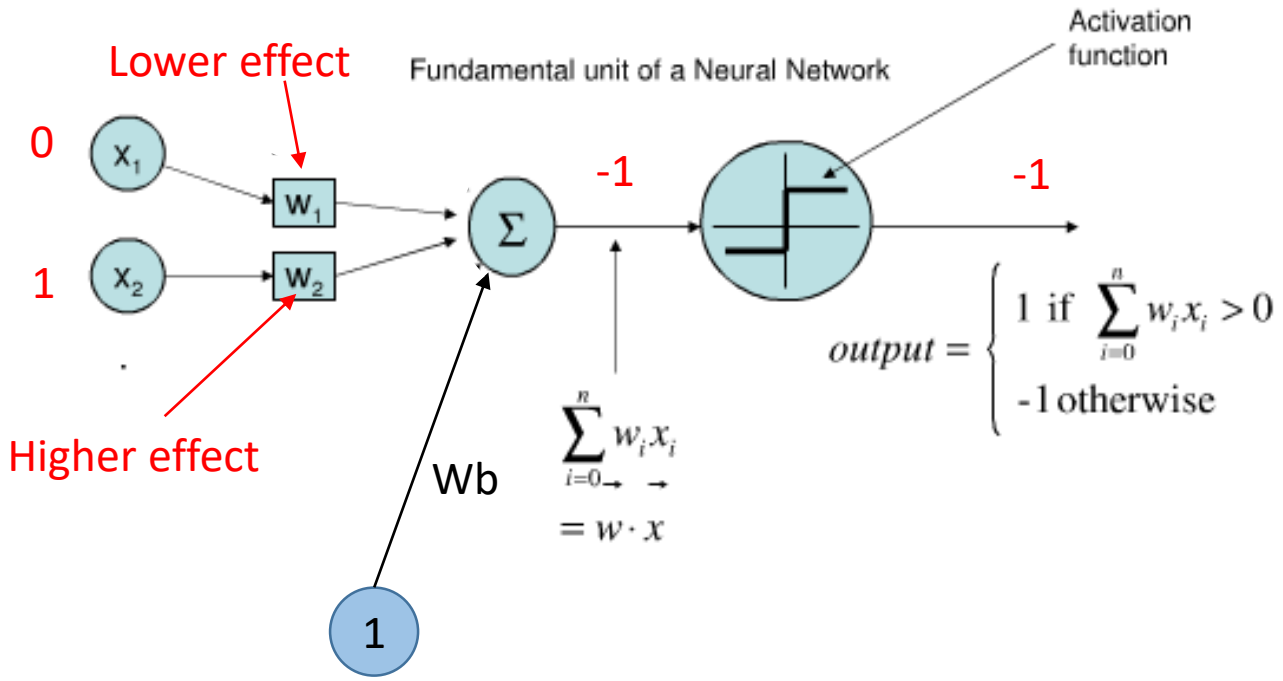
Back-Propagation!



(0,1) →

Result = 0
Expected = 1
Error = -1

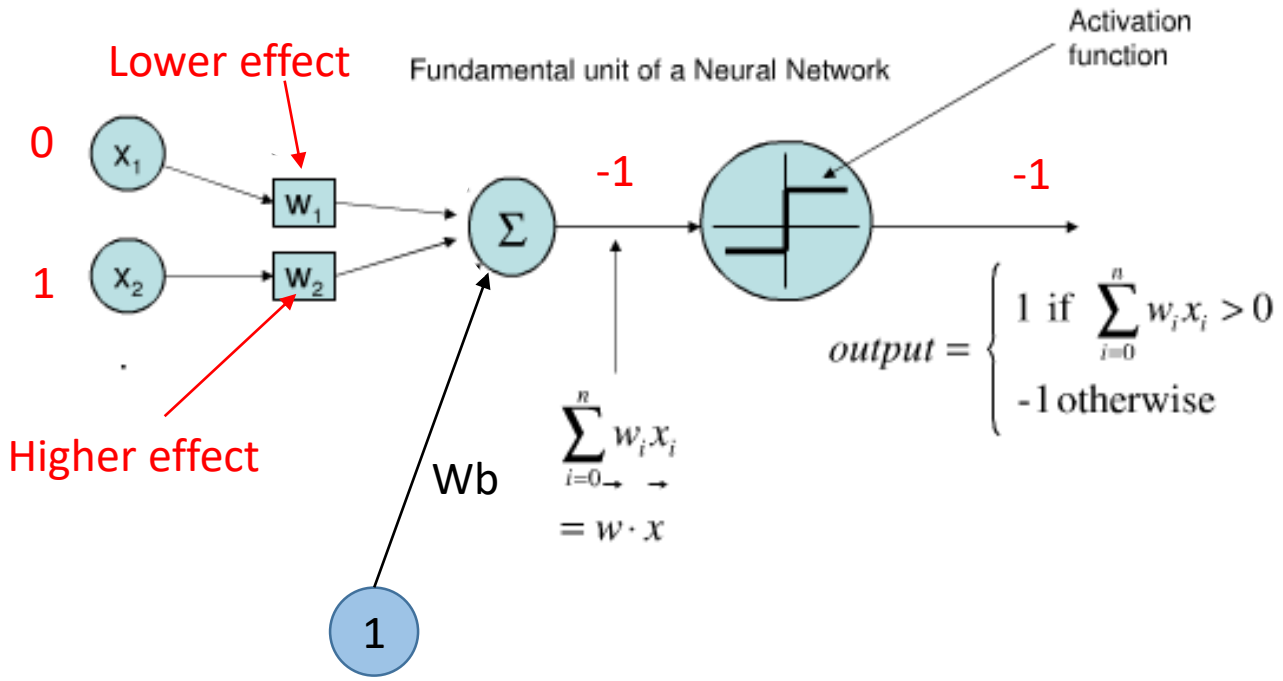
Back-Propagation!



(0,1) →

Result = 0
Expected = 1
Error = -1

Back-Propagation!



Update weight W by
W += error + learning rate

Go to our Jupyter and Run!