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I. Can you calculate this by hand? I am sharing five of my hand-on exercises to teach the basics of deep learning.

[Exercise 1: Single Neuron + ReLU]

At the University of Colorado Boulder, I teach two graduate courses about AI---Computer Vision and Generative AI. I am a big believer of hand-on exercises that students can work on using pen and paper. Unable to find a good collection of hand-on exercises, I decided to create my own.

After several semesters, I have amassed a large number of original hand-on exercises to cover a range of topics, from the basics of deep learning such as Perceptrons, Convolutions...etc. to advanced architectures such as U-Net, Transformer, CLIP...etc.

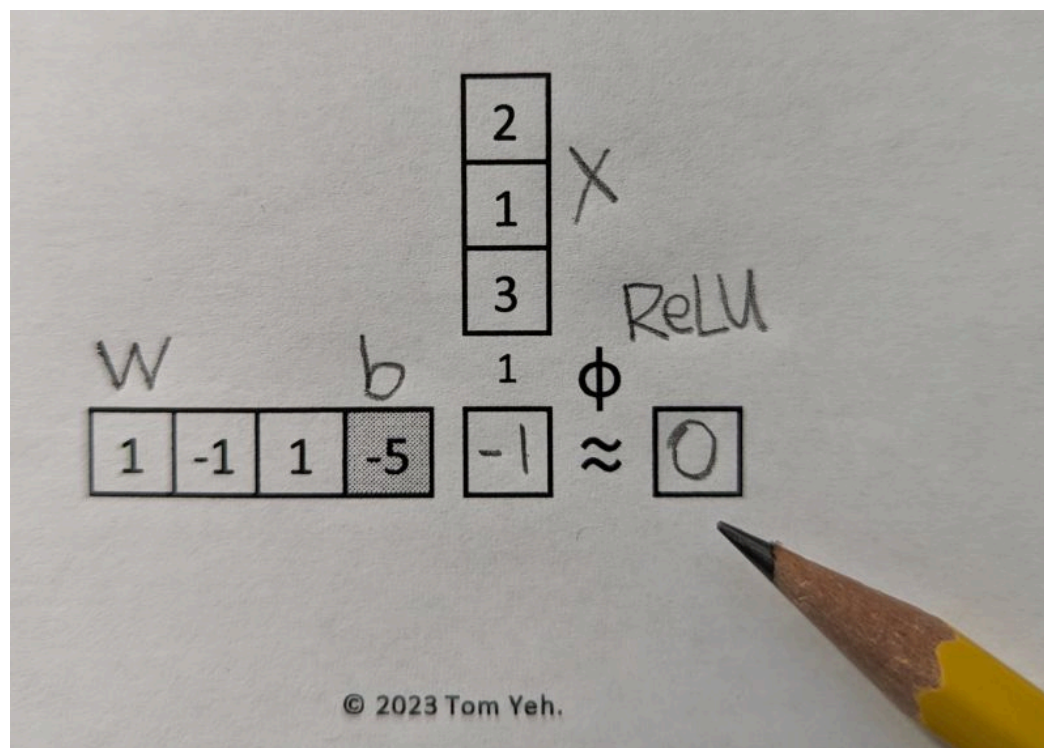
Exercise 1 of 5: Single Neuron + ReLU

This exercise allows students to practice the following:

1. $w \cdot x + b = (1) \cdot (2) + (-1) \cdot (1) + (1) \cdot (3) + (-5) = -1$
2. ReLU: $-1 \rightarrow 0$ because -1 is negative.

The next exercise I share will extend from single neuron to multiple neurons.

I hope you find this exercise useful. Let me know what you think!



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