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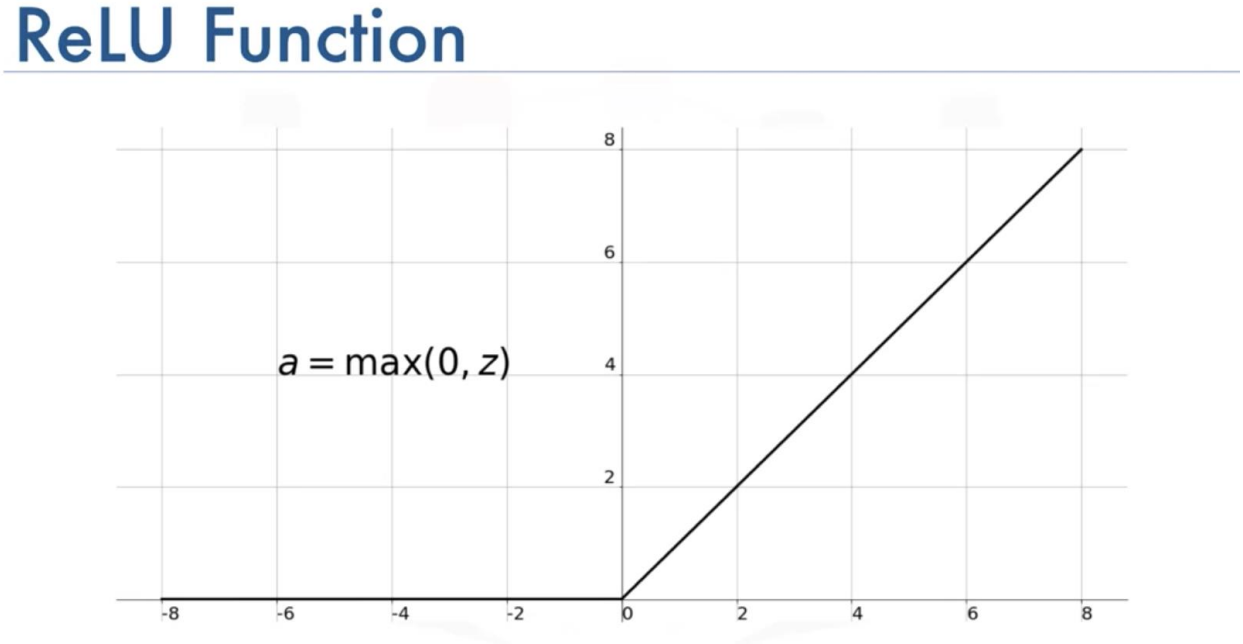
HW1 – Challenge Question

For the challenge question I decided to look more into activation functions for Neural Nets. I feel as though I could learn more about the topic regarding Neural Networks. We talked about the Heaviside activation function, but I wanted to investigate other activation functions and really increase my understanding of activation functions.

In general, in a Neural Network the activation function of a neuron defines the output of that neuron given a set of inputs. A video I watched explained that activation functions are biologically inspired by our brains, where different neurons fire, or are activated, by different stimuli. I found that comparison interesting and a more understandable way to think about the concept.

A common activation function that I don't believe we talked about in class is the ReLU Function. Any input with a negative value will get set to 0 but anything over 0 will get its value passed on. This is different from the Heaviside where will set the neuron output to only 0 or 1.



There are many other activation functions and they come in three categories, ridge, radial and fold functions. The choice of activation function can greatly impact the performance of your neural network. For example, switching from Heaviside to ReLU would give high input nodes even more impact on that node since the range of ReLU is [0,inf] instead of [0,1].