# How Neurons Really Work?

This lesson explains the working of a Neuron in detail.

Let's look at how a neuron works. It takes an electric input and pops out another electrical signal. This looks exactly like the classifying or predicting machines we looked at earlier, which took an input, did some processing, and popped out an output.

So could we represent neurons as linear functions, just like we did before? Good idea, but no. A biological neuron doesn't produce an output that is simply a simple linear function of the input. That is, its output does not take the form:

$$Output = (constant * input) + (maybe\ another\ constant)$$

Observations suggest that neurons don't react readily, but instead suppress the input until it has grown so large that it triggers an output. You can think of this as a threshold that must be reached before any output is produced. It's like water in a cup - the water doesn't spill over until it has first filled the cup. Intuitively this makes sense - the neurons don't want to be passing on tiny noise signals, only emphatically strong intentional signals. The following illustrates this idea of only producing an output signal if the input is sufficiently dialed up to pass a threshold.

no output

dial

threshold

output on
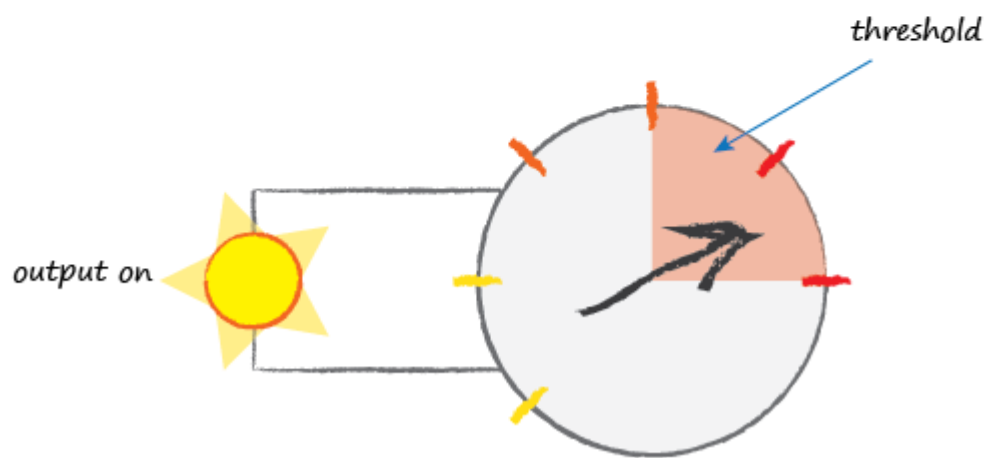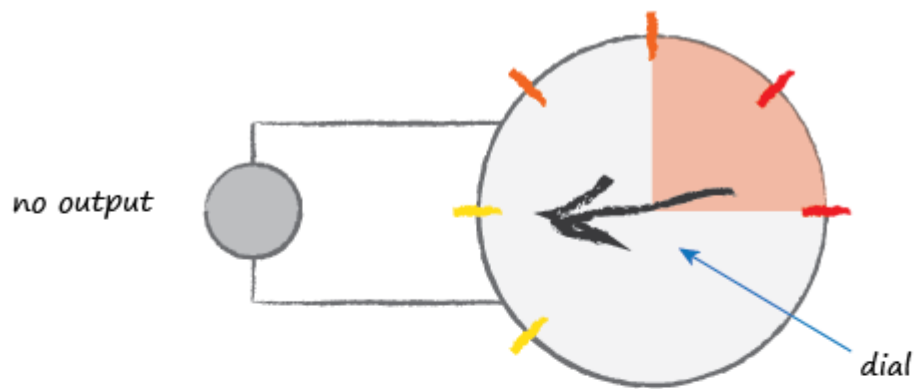
Now based on the knowledge that we have covered so far about the working of Neurons, we can easily build an activation function for our Neural Network. This part will be covered in the next lesson.