

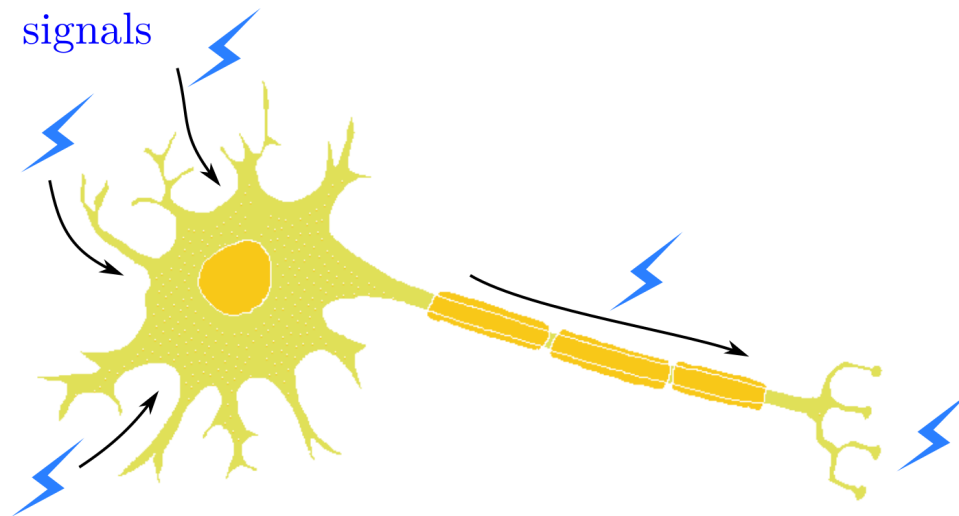
AGI for dummies: 1

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The biological neuron

Electrical signals are collected by dendrites where they are **summed up** around the cell body. If the sum total of electrical signals is greater than a certain fixed **threshold**, the neuron fires a new electric impulse at its output:



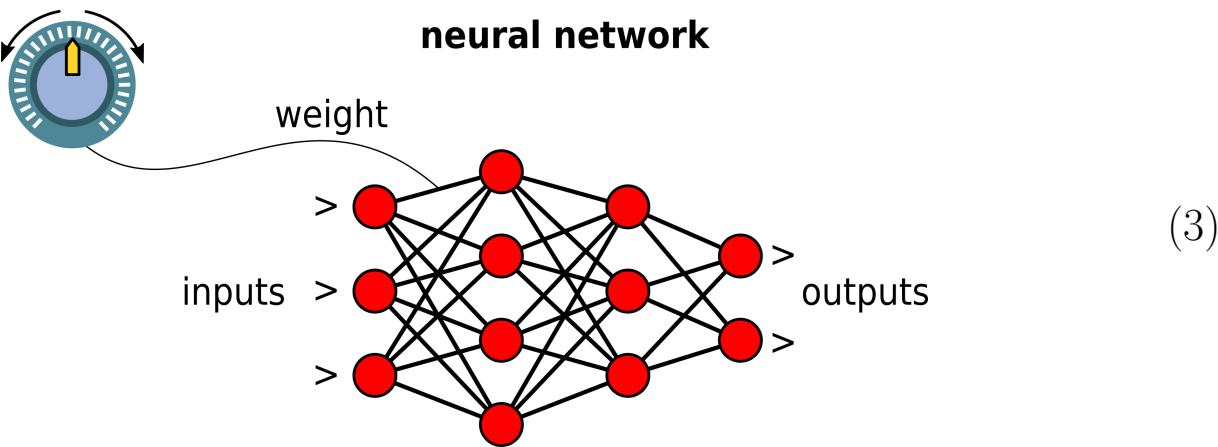
Human cells are very simple “machines”. They cannot perform highly complex computations. Each neuron performs only this simple operation, and together they achieve the powerful cognitive abilities of the brain.

The mathematical neuron

Mathematically, a neuron is represented by this formula:

$$\boxed{\text{output}} \quad y = \mathcal{O} \left(\sum_1 W \cdot x \right) \quad \boxed{\text{input}} \quad (2)$$

The neural network



Calculus

gradient

$$\left\{ \frac{\partial E}{\partial w_1} \right.$$

error

weight #1

(4)

Vector and matrix