About the McCulloch-Pitts Neuron

The first artificial neuron was the Threshold Logic Unit (TLU),
or Linear Threshold Unit,[7] first proposed by
Warren McCulloch and Walter Pitts in 1943.
(https://en.wikipedia.org/wiki/Artificial_neuron)

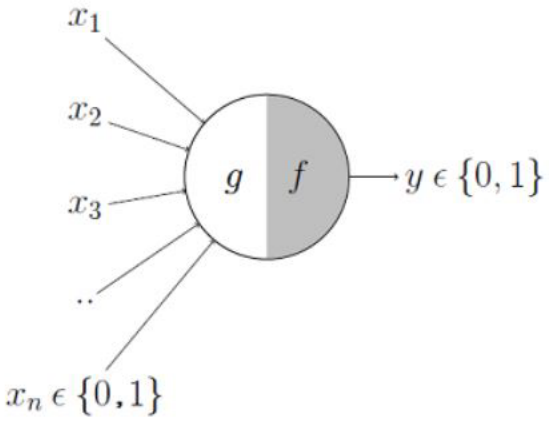
The paper was: "A Logical Calculus of Ideas Immanent in Nervous Activity"

Further explanation in the online article: “McCulloch-Pitts Neuron — Mankind’s First Mathematical Model Of A Biological Neuron”

https://towardsdatascience.com/mcculloch-pitts-model-5fdf65ac5dd1

McCulloch-Pitts Neuron

The first computational model of a neuron was proposed by Warren MuCulloch (neuroscientist) and Walter Pitts (logician) in 1943.



This is where it all began..

It may be divided into 2 parts. The first part, g takes an input (ahem dendrite ahem), performs an aggregation and based on the aggregated value the second part, f makes a decision.

$$g(x_1, x_2, x_3, ..., x_n) = g(\mathbf{x}) = \sum_{i=1}^{n} x_i$$

$$\begin{aligned} y = f(g(\mathbf{x})) &= 1 \quad if \quad g(\mathbf{x}) \geq \theta \\ &= 0 \quad if \quad g(\mathbf{x}) < \theta \end{aligned}$$

We can see that **g(x)** is just doing a sum of the inputs — a simple aggregation. And ***theta*** here is called thresholding parameter. For example, if I always watch the game when the sum turns out to be 2 or more, the ***theta*** is 2 here. This is called the Thresholding Logic.

Walter Pitts (Logician)

Warren McCulloch (Neurophysiologist)