

A Visionary, a Giant

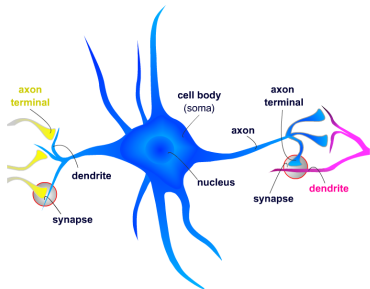
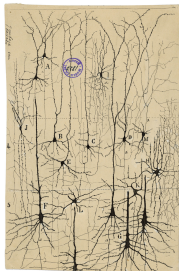
- Gottfried-Wilhelm Leibniz (1646-1716)
Among his many contributions, e.g. the invention of the Infinitesimal Calculus in parallel with Isaac Newton, he imagined and wrote about the possibility of mechanizing reasoning



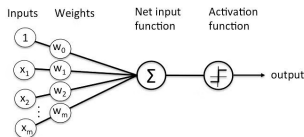
"It is unworthy of excellent men to lose hours like slaves in the labor of calculation which could safely be relegated to anyone else if machines were used ... For if praise is given to the men who have determined the number of regular solids ... how much better will it be to bring under mathematical laws human reasoning, which is the most excellent and useful thing we have."

- Here we find the seed of Computing and Artificial Intelligence!

- Some tried to prove theorems of Geometry by means of computer
Again, heuristics become crucial
- Symbolic approaches to machine intelligence were considered promising
- Parallel advances in understanding neuronal activity in the brain (unveiled by Santiago Ramon y Cajal around 1890)

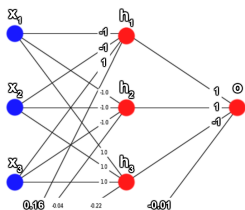


- McCulloch and Pitts propose a computational/algorithmic model for neural networks (1943)
- Late 40s, early 50s: Advances at MIT with network-like algorithms
- Frank Rosenblatt (1957) proposes the **perceptron**
One chooses the functions, and “learns” their weights (parameters)



Taken from: “What is Perceptron”

- A (very simple) modern **neural network** (NN)



Inputs on the LHS, one output gate on the RHS, with an intermediate layer of gates
The functions (their parameters) at gates h_1, \dots, o are learnt from data