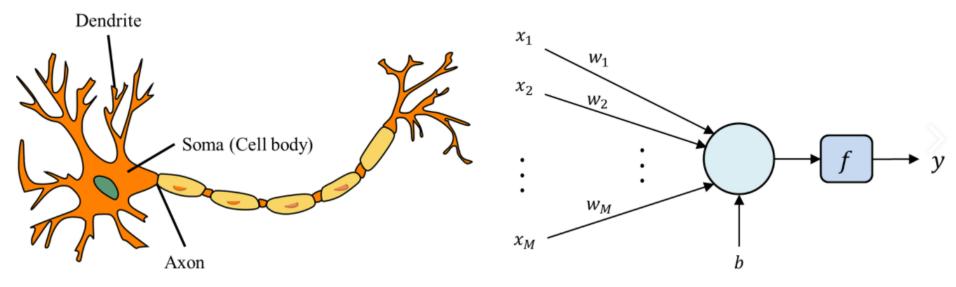
모두의 딥러닝 (Deep learning)

Nambeom Kim (nbumkim@gmail.com)

퍼셉트론 (Perceptron)

Neuron

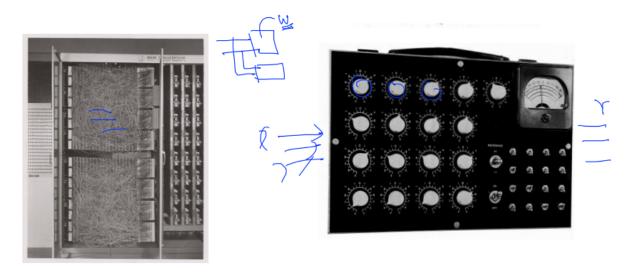


https://bradleyboehmke.github.io/HOML

Hardware implementations

· https://hunkim.github.io/ml (모두를 위한 머신러닝과 딥러닝)

Hardware implementations



Frank Rosenblatt, ~1957: Perceptron

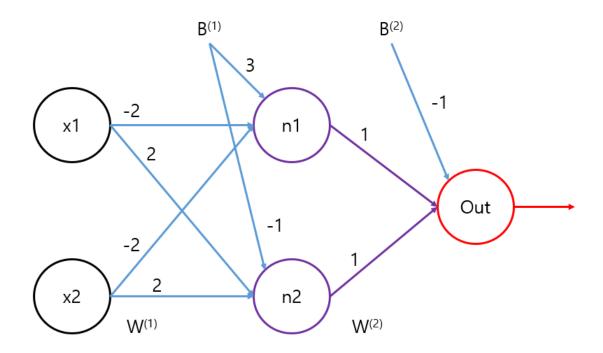
Widrow and Hoff, ~1960: Adaline/Madaline

https://hunkim.github.io/ml/lec8.pdf

How promising perceptron networks initially

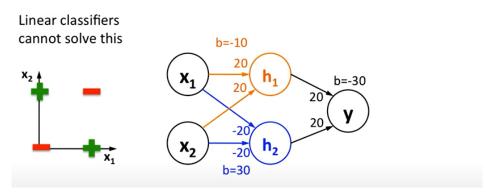
- The New York Times has reported in 1958 that "the Navy [has] revealed the embryo of an electronic computer today that it expects will be able to walk, talk, see, write, reproduce itself and be conscious of its existence."
- · However, its shortcomings were quickly realized, as a single layer of perceptrons alone is unable to solve non-linear classification problems (such as learning a simple XOR function)

XOR problem



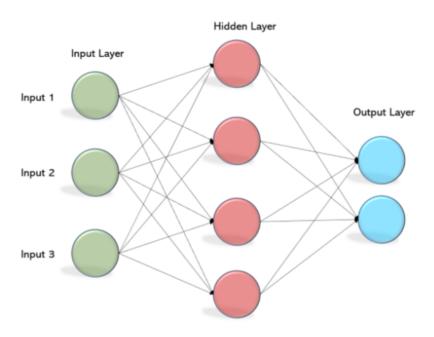
Multi-layer neuronal network (perceptron)

Solving XOR with a Neural Net



http://www.cs.stir.ac.uk/courses/ITNP4B/lectures/kms/2-Perceptrons.pdf

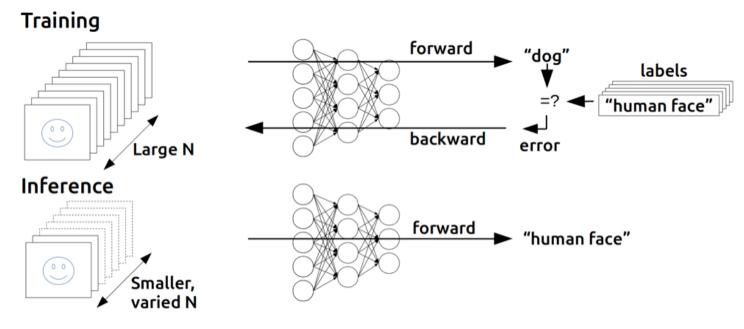
Learning problem of multi-layer NN



http://www.cs.stir.ac.uk/courses/ITNP4B/lectures/kms/2-Perceptrons.pdf

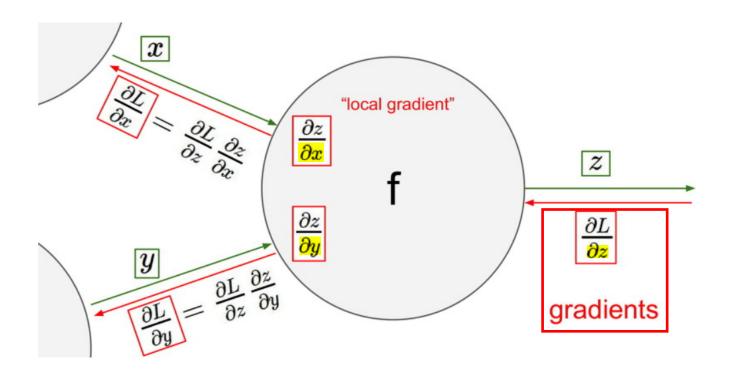
Solving the problem by Backpropagation

· 1974, 1982 by Paul Werbos, 1986 by Hinton



https://developer.nvidia.com/blog/inference-next-step-gpu-accelerated-deep-learning/

Backpropagation algorithm



Backpropagation algorithm 실습