Perceptrons: An Overview

Harjas Monga and Vidhur Kumar

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"We expect the perceptron to be the embryo of an electronic computer that will be able to walk, talk, see, write, reproduce itself and be conscious of its existence." - The New York Times, 1958.

1 Introduction: What is a Perceptron?

The perceptron is an algorithm for learning a binary classifier: a function that maps its input x (a real-valued **vector**) to an output value $f(x)$ (a single binary value). Shown below is a mathematical definition:

$$f(x) = \begin{cases} 1 & wx + b > 0 \\ 0 & otherwise \end{cases}$$

2 Workings: What drives a Perceptron?

2.1 Mathmatical Model

A perceptron is nothing more than a function that takes in several inputs and produces an output of either 0 or 1.

The input of perceptron is usually modeled as a column vector. Let $A(n \times 1)$ represent this column vector. The perceptron applies weights to each values in the A and then sums them together. In other words, the perceptron finds a linear combination of the matrix A as show below.

3 Applications: Why are Perceptrons useful?

4 Evolution: What has the idea of a Perceptron led to?