In [machine learning](https://en.wikipedia.org/wiki/Machine_learning), the **perceptron** (or **McCulloch–Pitts neuron**) is an algorithm for [supervised learning](https://en.wikipedia.org/wiki/Supervised_classification) of [binary classifiers](https://en.wikipedia.org/wiki/Binary_classification). A binary classifier is a function which can decide whether or not an input, represented by a vector of numbers, belongs to some specific class.[[1]](https://en.wikipedia.org/wiki/Perceptron#cite_note-largemargin-1) It is a type of [linear classifier](https://en.wikipedia.org/wiki/Linear_classifier), i.e. a classification algorithm that makes its predictions based on a [linear predictor function](https://en.wikipedia.org/wiki/Linear_predictor_function) combining a set of [weights](https://en.wikipedia.org/wiki/Weighting) with the [feature vector](https://en.wikipedia.org/wiki/Feature_vector).

**History**

[[edit](https://en.wikipedia.org/w/index.php?title=Perceptron&action=edit&section=1)]

[A close-up of a computer

Description automatically generated](https://en.wikipedia.org/wiki/File:Mark_I_perceptron.jpeg)Mark I Perceptron machine, the first implementation of the perceptron algorithm. It was connected to a camera with 20×20 [cadmium sulfide](https://en.wikipedia.org/wiki/Cadmium_sulfide) [photocells](https://en.wikipedia.org/wiki/Photocell) to make a 400-pixel image. The main visible feature is the sensory-to-association plugboard, which sets different combinations of input features. To the right are arrays of [potentiometers](https://en.wikipedia.org/wiki/Potentiometer) that implemented the adaptive weights.[[2]](https://en.wikipedia.org/wiki/Perceptron#cite_note-bishop-2): 213

*See also:*[*History of artificial intelligence § Perceptrons*](https://en.wikipedia.org/wiki/History_of_artificial_intelligence#Perceptrons)

[A person working on a machine

Description automatically generated](https://en.wikipedia.org/wiki/File:330-PSA-80-60_(USN_710739)_(20897323365).jpg)The Mark 1 Perceptron, being adjusted by Charles Wightman (Mark I Perceptron project engineer).[[3]](https://en.wikipedia.org/wiki/Perceptron#cite_note-3) Sensory units at left, association units in center, and control panel and response units at far right. The sensory-to-association plugboard is behind the closed panel to the right of the operator. The letter "C" on the front panel is a display of the current state of the sensory input.[[4]](https://en.wikipedia.org/wiki/Perceptron#cite_note-4)

The perceptron was invented in 1943 by [Warren McCulloch](https://en.wikipedia.org/wiki/Warren_McCulloch) and [Walter Pitts](https://en.wikipedia.org/wiki/Walter_Pitts).[[5]](https://en.wikipedia.org/wiki/Perceptron#cite_note-5) The first hardware implementation was Mark I Perceptron machine built in 1957 at the [Cornell Aeronautical Laboratory](https://en.wikipedia.org/wiki/Cornell_Aeronautical_Laboratory) by [Frank Rosenblatt](https://en.wikipedia.org/wiki/Frank_Rosenblatt),[[6]](https://en.wikipedia.org/wiki/Perceptron#cite_note-:5-6) funded by the Information Systems Branch of the United States [Office of Naval Research](https://en.wikipedia.org/wiki/Office_of_Naval_Research) and the [Rome Air Development Center](https://en.wikipedia.org/wiki/Rome_Air_Development_Center). It was first publicly demonstrated on 23 June 1960.[[7]](https://en.wikipedia.org/wiki/Perceptron#cite_note-:0-7) The machine was "part of a previously secret four-year NPIC [the US' [National Photographic Interpretation Center](https://en.wikipedia.org/wiki/National_Photographic_Interpretation_Center)] effort from 1963 through 1966 to develop this algorithm into a useful tool for photo-interpreters".[[8]](https://en.wikipedia.org/wiki/Perceptron#cite_note-:1-8)

Rosenblatt described the details of the perceptron in a 1958 paper.[[9]](https://en.wikipedia.org/wiki/Perceptron#cite_note-9) His organization of a perceptron is constructed of three kinds of cells ("units"): AI, AII, R, which stand for "[projection](https://en.wikipedia.org/wiki/Projection_areas)", "association" and "response".

Rosenblatt's project was funded under Contract Nonr-401(40) "Cognitive Systems Research Program", which lasted from 1959 to 1970,[[10]](https://en.wikipedia.org/wiki/Perceptron#cite_note-10) and Contract Nonr-2381(00) "Project PARA" ("PARA" means "Perceiving and Recognition Automata"), which lasted from 1957[[6]](https://en.wikipedia.org/wiki/Perceptron#cite_note-:5-6) to 1963.[[11]](https://en.wikipedia.org/wiki/Perceptron#cite_note-11)

