

Perceptron: A Simple Classification MeThod

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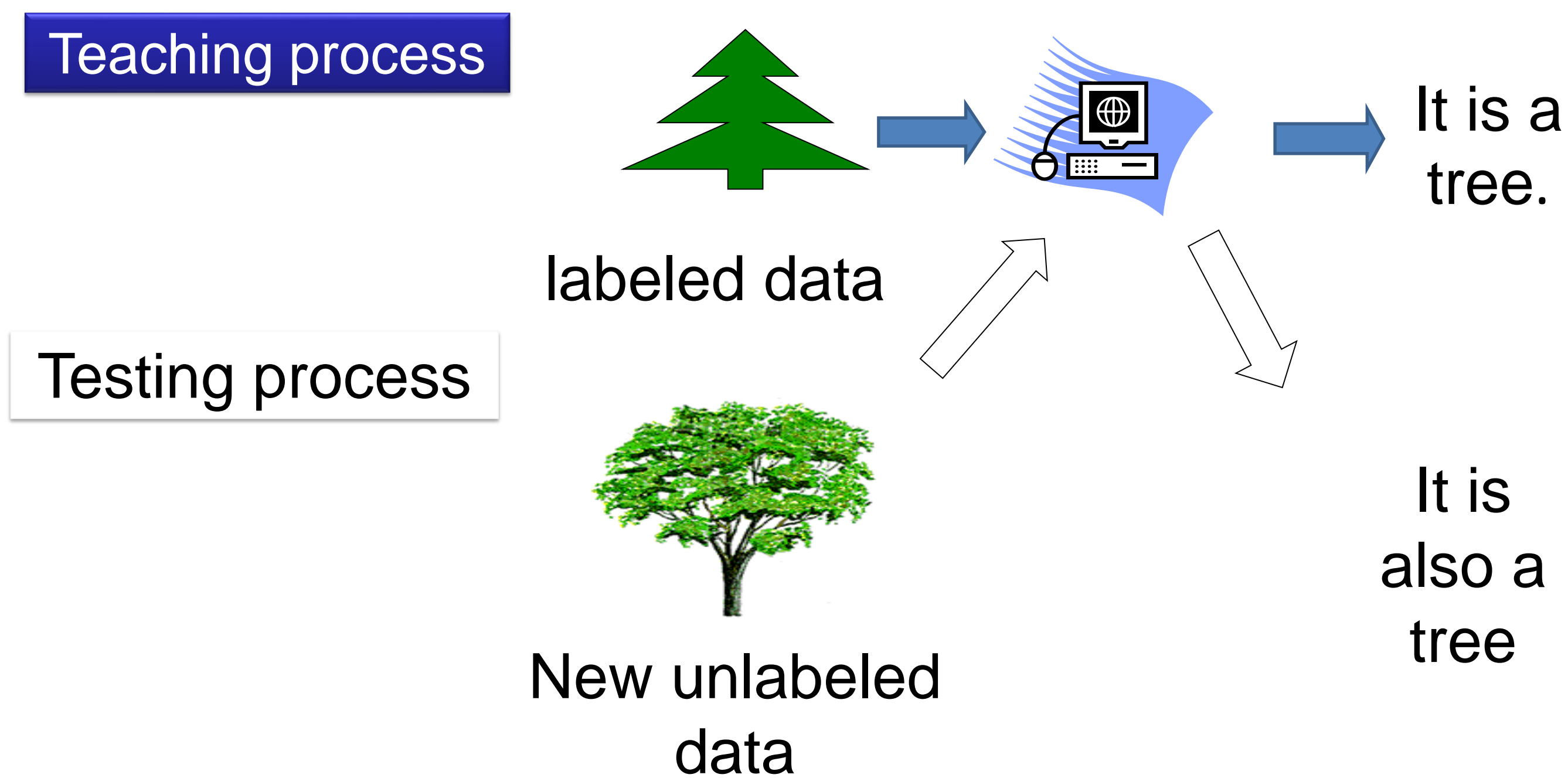


Introduction

In real life, high accuracy and quick access to information for certain topic or object is essential. In order to achieve those goals, things have to be organized or classified into classes. Moreover, it would be better if machine could work for human to deal with classification problems. The purpose of this study is to teach the perceptron how to perceive or classify some of the basic things in the real world similarly to human such as images recognition and document classification etc.

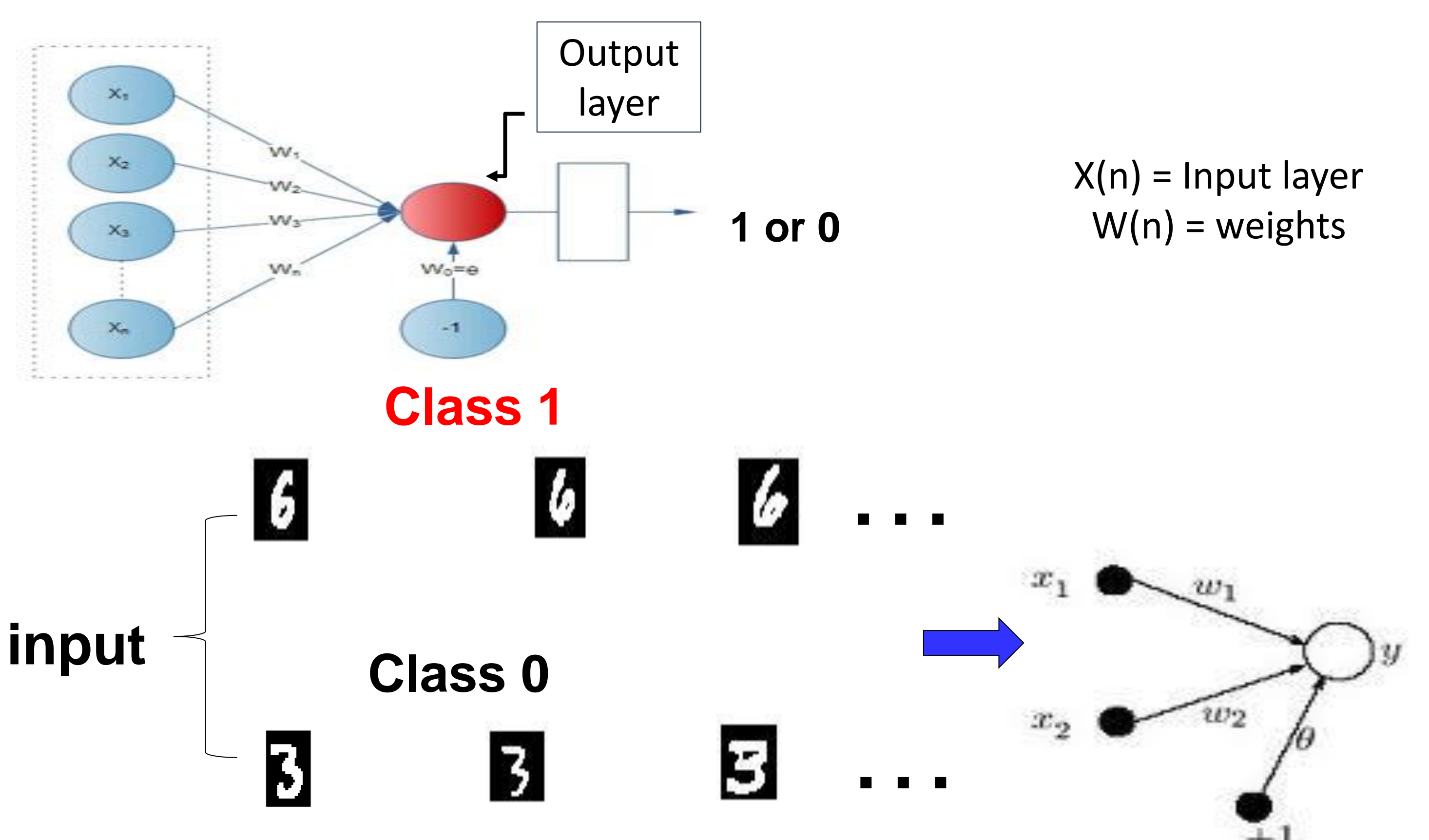
Goals

The goal is to train the perceptron program for classification using data with labels and then using the trained perceptron to classify the unlabeled data.



Method

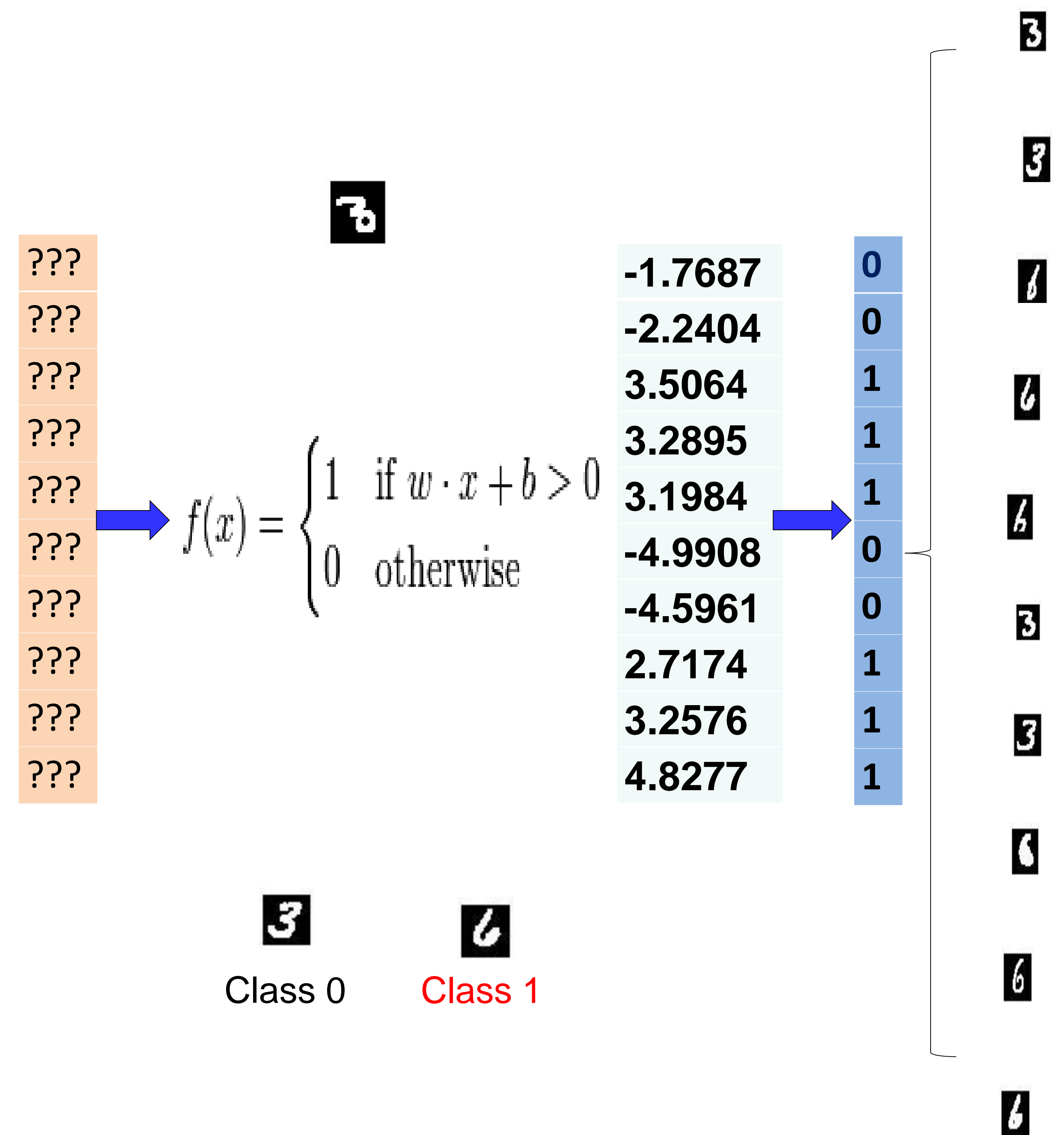
- Input (data with labels) for learning the weights in a perceptron:
- Data could be documents or images etc. In this project, digits images are gonna be used to train and test the perceptron.



- Each represented by 784x1 vector (784 rows and 1 column)
- One column = 1 image
- One row = 1 pixel
- The goal is to compute the values of weights after training the perceptron with labeled images in order to classify the unknown data

Program written using Matlab
↓
Weights (w1, w2) learnt

Results



Conclusions

- Perceptron is a binary classifier
- It is specifically designed to deal with linear classification problems.
- Binary classification problems
- trained and tested on image classification (2-digit recognition)

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