Neural Networks (NN)

NON-LINEAR MODEL

Logistic regression is good if we have 2 features in our problem, for example:
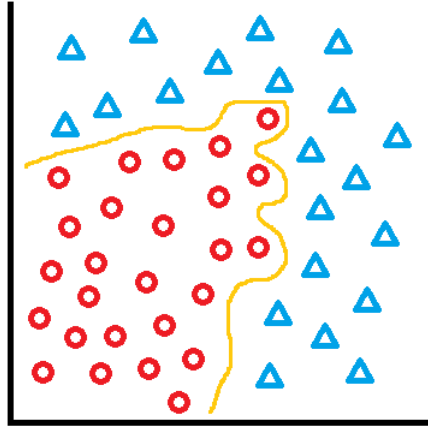

Figure 1. Example of Logistic Regression Problem with 2 Features

However, if we have lots of features, we'll need to come up with hypothesis that include all of these features.

With too many features, it might lead to overfitting problem and it can also be computationally expensive. Because of that, we'll need a new machine learning algorithm (Neural networks).

MODEL REPRESENTATION

Neural networks was developed to simulate the networks of neurons in the brain. Some components in neural network include:

- Input wiress
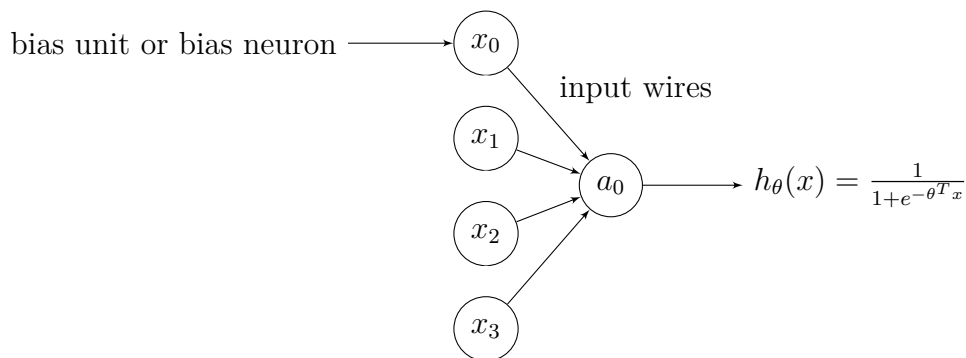
- Output wires

Neuron model: logistic unit:

Figure 2. An example of a neuron model

The neuron in figure 2 is called an artificial neuron with a sigmoid activation function.

$$\theta = \begin{bmatrix} \theta_0 \\ \theta_1 \\ \vdots \\ \theta_n \end{bmatrix}$$

The vector θ is called "parameters" or "weights"

Neural network: