Big Data / ML / DL

machine learning regression techniques

(linear regression, logistic regression)

LINEAR REGRESSION

1) Concept of linear regression

A relationship model between independent variables and dependent variable

$$\hat{y} = w_0 . x_1 + w_1 ... (0)$$

Linear regression is a conpect that penetrates data with least error.

(ERROR is a substract value between ACTUAL VALUE and ESTIMATED VALUE)

It is plausible that the model which has the least sum of error most describes data well.

For instance in fomula…

$$(\hat{y}^{(1)} - y^{(1)}) + (\hat{y}^{(2)} - y^{(2)}) + (\hat{y}^{(3)} - y^{(3)}) + (\hat{y}^{(4)} - y^{(4)}) ... (1)$$

BUT, above formula has a problem that error can be offset each other.

→ SO, it effects the total error.

One way to solve this problem is to square each errors a.k.a (SUM) SQUARE ERROR

In fomula..

$$(\hat{y}^{(1)} - y^{(1)})^2 + (\hat{y}^{(2)} - y^{(2)})^2 + (\hat{y}^{(3)} - y^{(3)})^2 + (\hat{y}^{(4)} - y^{(4)})^2 ... (2)$$

In short..

$$\sum_{n=1}^{m}(\hat{y}^{(n)} - y^{(n)})^2$$

Since

$$\hat{y} = w_0.x_1 + w_1 ...(3)$$

$$\sum_{n=1}^{m}(\hat{y}^{(n)} - y^{(n)})^2 = \sum_{n=1}^{m}(w_n.x^{(n)} + w_0 - y^{(n)})^2 ...(4)$$

To find the least error, differential is needed to above fomula.

To satisty the purpose(minimize) of the fomula above(4) is to find weight (w0, wn)

2) Concept of cost function

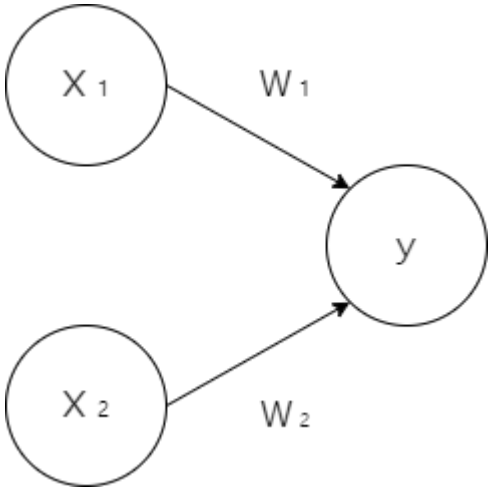
DEEP LEARNING

PERCEPTRON

Perceptron is a origin algorithm of neural net (deep learning).

Perceptron receives multi signals and prints one signal.

Perceptron has ONLY 2 signals which is 0 and 1.



Up image is a picture of a perceptron that has received 2 signals.

x_1, x_2 is 2 input signals of pereptron. y is a single output signal. and w_1, w_2 means weight.

The circle above the image is called nods or neuron.

When the signal heads to another neuron / nod. weight is multiplied to each signal.

And if the total sum of weight x signal is over threshold(**θ)** the nod prints 1 and it means that the nod is activated.

In fomula…

$$y = 0(w_1x_1 + w_2x_2 \leq \theta)$$

0(w_{1}x_{1} + w_{2}x_{2} \leq \theta)

※ ADD - ONS

- IMAGE(.png,.jpg,etc) DISPLAY

//////SORRY,,, it's a sample. 🤨