

Ex01 algorithm assignment

m5261113 Akihiro Hattori

m5261176 Yuta Uchida

m5261159 Taisei Shibakura

m5261162 Taisei Shiraishi

Linear Regression is a well-established and widely used machine learning algorithm that, like the Perceptron algorithm, is not as definitive as +1 or -1 in its output but can take real numbers. However, as the name Linear implies, basically the data must be able to be classified in a straight line, just like Perceptron.

The primary goal of Linear Regression is to return results with a minimized error rate. The blue line in Figure 1 represents the difference (error) between the actual data and the expected result. If this is minimized, the result is good.

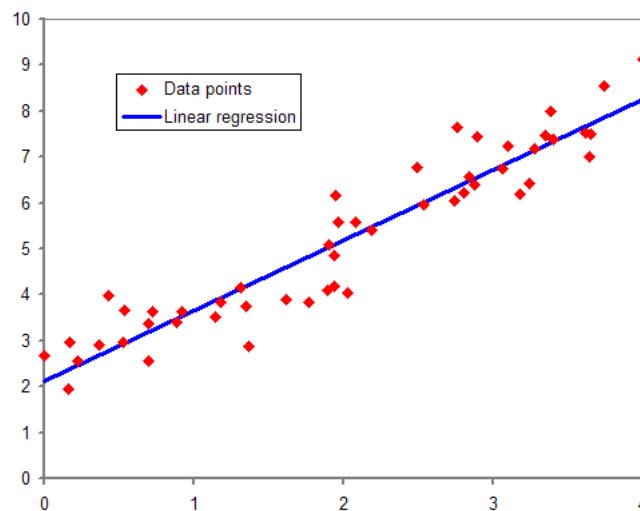


Figure1 Regression line

https://ja.wikipedia.org/wiki/%E3%83%95%E3%82%A1%E3%82%A4%E3%83%AB:Normdist_regression.png

When $f(x)$ as model function,

$$\sum_{i=1}^n (y_i - f(x))^2$$

Find $f(x)$ to be the minimum.

$f(x)$... model function

y ... data points

$y_i - f(x)$... distance between $f(x)$ and y

$(y_i - f(x))^2$... The result obtained by the above formula with the processing to remove the difference due to the absolute value.

