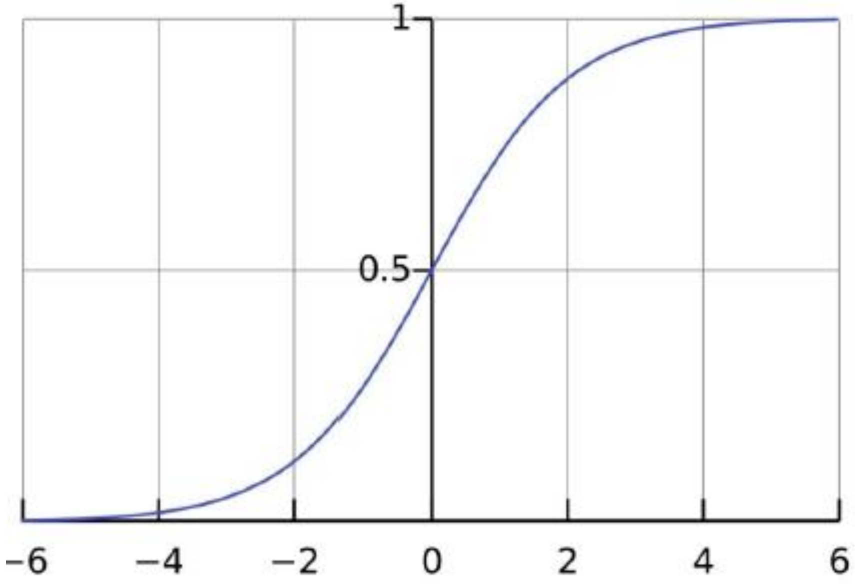
Logistic回归

$$h_\theta(x)=g\left(\theta^T x\right)=\frac{1}{1+e^{-\theta^T x}}$$



Sigmoid函数

$$g(z)=\frac{1}{1+e^{-z}}$$

$$g'(x)=\left(\frac{1}{1+e^{-x}}\right)' = \frac{e^{-x}}{\left(1+e^{-x}\right)^2}$$

$$=\frac{1}{1+e^{-x}}\cdot\frac{e^{-x}}{1+e^{-x}}=\frac{1}{1+e^{-x}}\cdot\left(1-\frac{1}{1+e^{-x}}\right)$$

$$=g(x)\cdot(1-g(x))$$

Machine Learning

$$h_\theta(x) = \theta_1 x + \theta_0 .$$

$$J(\theta_0, \theta_1) = \frac{1}{2m} \sum_{i=1}^{m} (h_\theta(x_i) - y_i)^2$$

$$\frac{\partial J(\theta_0, \theta_1)}{\partial \theta_0} = \frac{1}{m} \sum_{i=1}^{m} (h_\theta(x_i) - y_i).$$

$$\frac{\partial J(\theta_1)}{\partial \theta_1} = \frac{1}{m} \sum_{i=1}^{m} (h_\theta(x_i) - y_i) * x_i$$

$$\theta_1 := \theta_1 - \alpha * \frac{\partial J(\theta_0, \theta_1)}{\partial \theta_0} \qquad \theta_0 := \theta_0 - \alpha * \frac{\partial J(\theta_0, \theta_1)}{\partial \theta_1}$$