Logistic Regression Algorith

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Use vectorization

Avoid explicit for loops

$J = 0 ; dw_1 = 0 ; dw_2 = 0 ; db = 0$

For $i = 1$ to m

$z^{(i)} = w^T x^{(i)} + b$

$a^{(i)} = \sigma(z^{(i)})$

$J += -\left[y^{(i)} \log a^{(i)} + (1 - y^{(i)}) \log (1 - a^{(i)}) \right]$

$dz^{(i)} = a^{(i)} - y^{(i)}$

loop over n features

$dw_1 += x_1^{(i)} dz^{(i)} \quad ; \quad dw_2 += x_2^{(i)} dz^{(i)} \quad ; \quad db += dz^{(i)}$

$J = \frac{1}{m} \times J \quad ; \quad dw_1 = \frac{1}{m} \times dw_1 \quad ; \quad dw_2 = \frac{1}{m} \times dw_2 \quad ; \quad db = \frac{1}{m} db$

$dw_1 = \frac{dJ}{dw_1}$

$w_1 := w_1 - \alpha dw_1$

$w_2 := w_2 - \alpha dw_2$

$b := b - \alpha db$