Training a CBOW Model: Cost Function

The cost function for the CBOW model is a cross-entropy loss defined as:

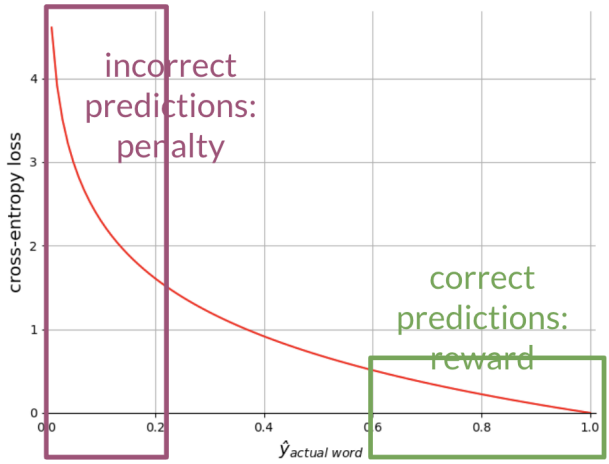
$$J = -\sum_{k=1}^{V} y_k \log \hat{y}_k$$

Here is an example where you use the equation above.

$$J = -\log \hat{y}_{\text{actual word}}$$

y		$\hat{y}$
0	am	0.96
0	because	0.01
1	happy	0.01
0	I	0.01
0	learning	0.01

→ J = 4.61



Why is the cost 4.61 in the example above?