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Lecture: Word Embeddings

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Training a CBOW Model: Forward Propagation

Forward propagation is defined as:

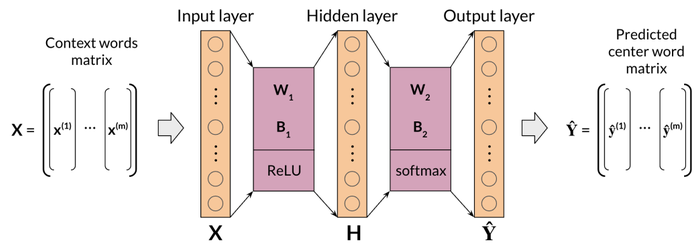
$$Z1 = W1X + B1$$

$$H = ReLU(Z1)$$

$$Z2 = W2H + B2$$

$$\hat{Y} = softmax(Z2)$$

In the image below you start from the left and you forward propagate all the way to the right.



To calculate the loss of a batch, you have to compute the following:

$$Jbatch = -\frac{1}{m}\sum_{i=1}^{m}\sum_{j=1}^{V} y_j^{(i)} \log \hat{y}_j^{(i)}$$

Given, your predicted center word matrix, and actual center word matrix, you can compute the loss.

Predicted center word matrix

$$\hat{\mathbf{Y}} = \begin{bmatrix} \begin{bmatrix} \hat{y}^{(1)} \end{bmatrix} & \cdots & \begin{bmatrix} \hat{y}^{(m)} \end{bmatrix} \end{bmatrix}$$

Actual center word matrix

$$\mathbf{Y} = \begin{bmatrix} \begin{bmatrix} y^{(1)} \end{bmatrix} & \cdots & \begin{bmatrix} y^{(m)} \end{bmatrix} \end{bmatrix}$$

Mark as completed

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