

Transforming Words into Vectors

To transform the context vectors into one single vector, you can use the following.

$$\left(\begin{array}{c} \text{I} \\ \text{am} \\ \text{because} \\ \text{happy} \\ \text{I} \\ \text{learning} \end{array} \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix} + \begin{array}{c} \text{am} \\ \\ \\ \\ \\ \end{array} \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix} + \begin{array}{c} \text{because} \\ \\ \\ \\ \\ \end{array} \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix} + \begin{array}{c} \text{I} \\ \\ \\ \\ \\ \end{array} \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \\ 0 \end{bmatrix} \right) / 4 = \begin{array}{c} \text{I am because I} \\ \\ \\ \\ \\ \end{array} \begin{bmatrix} 0.25 \\ 0.25 \\ 0 \\ 0.5 \\ 0 \end{bmatrix}$$

As you can see, we started with one-hot vectors for the context words and we transform them into a single vector by taking an average. As a result you end up having the following vectors that you can use for your training.

Context words	Context words vector	Center word	Center word vector
<i>I am because I</i>	[0.25; 0.25; 0; 0.5; 0]	<i>happy</i>	[0; 0; 1; 0; 0]