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## **Siamese Networks**

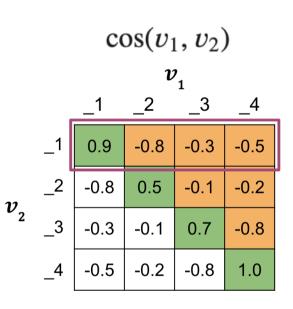
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Reading: Computing the Cost II

## 

## Computing the Cost II

Now that you have the matrix with cosine similarity scores, which is the product of two matrices, we go ahead and compute the cost.



mean\_neg: speeds up training closest\_neg: helps penalize the cost more

We now introduce two concepts, the **mean\_neg**, which is the mean negative of all the other off diagonals in the row, and the **closest\_neg**, which corresponds to the highest number in the off diagonals.

$$Cost = \max(-\cos(A, P) + \cos(A, N) + \alpha, 0)$$

So we will have two costs now:

$$\mathrm{Cost}1 = \mathrm{max}(-\cos(A,P) + mean\_neg) + lpha, 0)$$

$$\mathrm{Cost2} = \mathrm{max}(-\cos(A,P) + closest\_neg + lpha, 0)$$

The full cost is defined as: Cost 1 + Cost 2.



