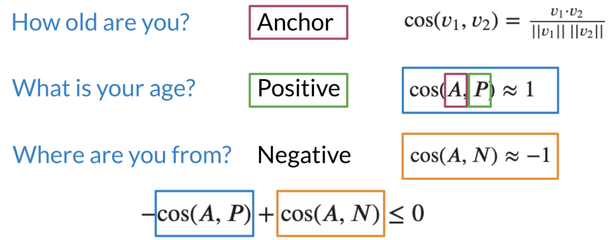
Cost Function

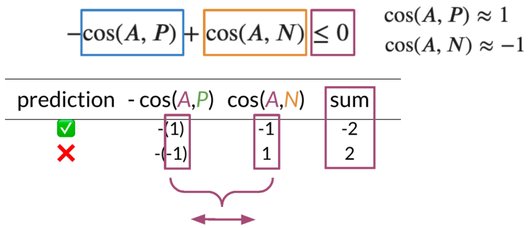
Take a close look at the following slide:



Note that when trying to compute the cost for a siamese network you use the triplet loss. The triplet loss looks at an Anchor, a Positive and a Negative example It's important to note that you aim to adjust the model's weights in a way that the anchor and the positive example have a cosine similarity score close to 1. Conversely, the anchor and the negative example should have a cosine similarity score close to -1. More concretely, you seek to minimize the following equation: n:

$$-\cos(A, P) + \cos(A, N) \leq 0$$

Note that if $\cos(A, P) = 1$ and $\cos(A, N) = -1$, then the equation is definitely less than 0. However, as cos(A,P) deviates from 1 and cos(A,N) deviates from -1, then you can end up getting a cost that is > 0. Here is a visualization that would help you understand what is going on. Feel free to play with different numbers.



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