**Face recognition with OpenCV, Python, and deep learning**

So, how does deep learning + face recognition work?

**The secret is a technique called deep metric learning.**

If you have any prior experience with deep learning, you know that we typically train a network to:

* Accept a single input image
* And output a classification/label for that image

However, deep metric learning is different.

Instead, of trying to output a single label (or even the coordinates/bounding box of objects in an image), **we are instead outputting a real-valued feature vector.**

For the dlib facial recognition network, the output feature vector is **128-d** (i.e., a list of 128 real-valued numbers) that is used to quantify the face. Training the network is done using **triplets**

This network quantifies the faces, constructing the 128-d embedding (quantification) for each.

The general idea is that we’ll **tweak the weights** of our neural network so that the 128-d measurements of the user will be closer to their face only and farther from the measurements for unknown/unauthorized user.