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After getting back my old code on sys lab computer, it looks like the size of the face bounding box is better with opencv. I tried to emphasize point to alter pca result, but the result doesn’t seem to be too good. I made the mouth point relative position more impactful. I didn’t use jaw’s key point because it’s not crazy accurate. However, the result wasn’t amazing. The vector from pca just doesn’t look different enough in value. Considering there might be error for key point detection as well, I would prefer to take a different approach: pixel based knn.

There are couple problem comes with pixel based knn though. It’s not as customizable. It needs extra sample data to make sure it’s more accurate because any turning in head can result in very far off image. I will solve it by writing a script taking a name of gesture to take pictures of specific gesture and put it into the folder with gesture name. I’m almost done with the script. In addition, the knn will be less adaptable: if gesture recognition is done with relative position, facial feature matter less. With pixel based knn, different face can have very different value despite having same gesture. Background can also have impact on pixel based knn if we directly take image from facial detection box. I will make any point outside of 68 key point border black to solve this issue.

I found the scikit learn tool kit to do knn. However, I feel like implementing my own knn might be better because it gives me more control over the gesture that isn’t neutral nor registered. It fixes the problem of misdetection. Knn in nature isn’t a insanely complicated algorithm to implement. I will implement my own knn to count gesture that are “far away” from all other images as neutral. My main concern with my implementation might be slower than a library one. I will keep looking around for a implementation that works for me.

