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One Shot Recognition – YouTube Edition

-Antonio Rodriguez

I apologize in advance for the incoming wall of text.

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- YouTube data: 11 Categories, 100 videos each
- First, we used 5 categories to train the algorithm, the remaining 6 to test.
- Discovered that using our PCA code, the run time was approx. 4 hours before optimization even started.
- It has been a week of improvement.

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- Tried (Spencer's) Fast SVD for dimension reduction
- Very quick run time.
- The average accuracy with 5 training categories, 6 testing was around 31%
- Tried other combinations of 1 training, 10 test, etc. But the results were not as good.

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- Decided to try using PCA anyways on the same tests.
- Results varried: In the case of 5 training, 6 testing the results of PCA were worse.
- In other combinations, the results ranged from slightly better to slightly worse.
- This is most likely due to the randomness of the input data.

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- Next we switched from training over all of some categories, to training on some of all catergories.
- Specifically: Training on 75 videos from each category, Testing on 25.
- Using 1 video from each category from the test data itself to train in the evaluation stage, the results averaged 30% using Fast SVD.

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- Then we tried using the built in SVDS function in matlab.
- The run time was relatively quick, and at first the results were better than SVD and PCA.
- However, we discovered the function used to evaluate the accuracy of the categorization was not behaving as we needed it to.

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- We corrected the evaluate program and retested most of what we tried before with some videos from each class.
- The results improved.
- Surprisingly, when we retested, PCA which takes the longest performed the worst.
- The Fast SVD seems to be performing the best currently.

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- We switched to using an video(s) from the training set to train in our evaluation function, since our method is optimized for our training set.
- Results were consistenly above 50% accuracy with SVDS for 1-training video.
- Using only the testing data, the accuracy was roughly 15% lower.
- Patrick will go into more detail about specific results

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- What to do next:
- Cross Validate our results for the YouTube set.
- Revisit the Caltech101 with our current knowledge and try to improve the results: Try Fast SVD/SVDS
- Redo old tests with the correct evaluation function.