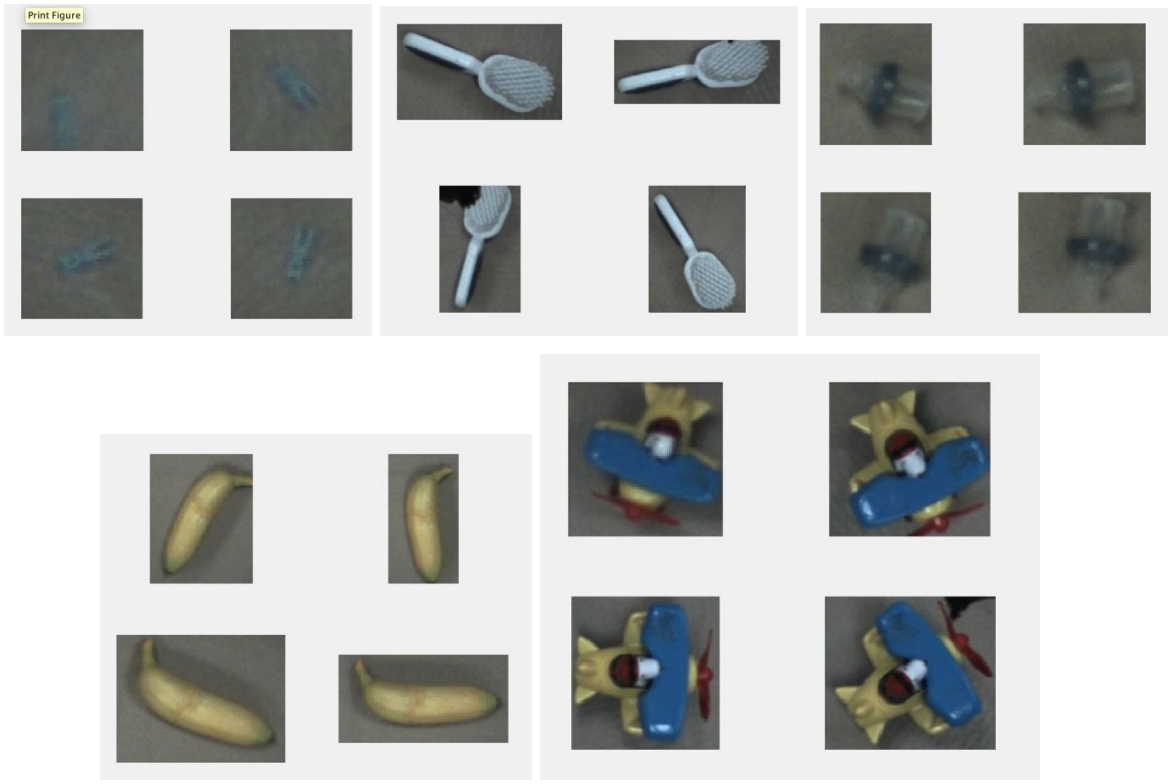
Mason DiMarco Module7 11/14/2015

Part 2.1



It's necessary to have the images at different angles because we want an angle-invariant model, so that when seeing the images live / during test the CNN will be able to recognize the objects at different angles.

Potentially because they are both relatively blurry and have somewhat similar colors/shape, bottleTop and clothespin may be difficult to discern. The only other I can think of being challenging is the bananaBaby vs airplane, due to similar colors and both being somewhat elongated.

Part 2.2

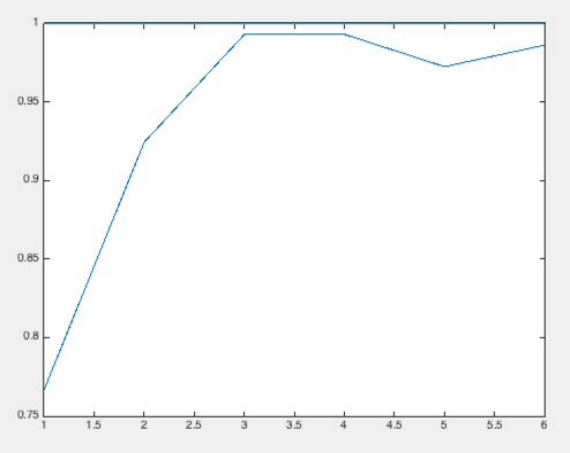
The three major types used seem to be convolutions, rectifications, and then max poolings. Convolutions are applying various filters to the images like we have been doing throughout the semester, rectifications are formatting the responses from the previous layer to remove negative values, and mpool is taking the maxpool across different filters as we have been doing to find optimal filters for different pixels.

Part 2.3

Last convolution layer (36) results in accuracy of between 98-100%

Part 2.4

Layers with convolution:
[1, 3, 6, 8, 11, 13, 15, 18, 20, 22, 25, 27, 29, 32, 34, 36]



Layer	Acc
1	0.7671
8	0.9247
15	0.9932
22	0.9932
29	0.9726
36	0.9863

The later layers certainly have higher accuracies than the earlier layers, topping off at very high accuracy.

Part 3

As hoped, the CNN performed much better in its upper layers than Assignment 2's techniques. This is great at showing that multiple convolutions and the use of back-propagation learning result in a much better model than we were using before (98% compared to 76%).

NOTE:
I did not resize the feature vectors, but this actually performed pretty well (~76%) when not resized; much better than when it was resized.