15-400 Milestone 5
Spring 2019

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1 Milestone Summary

We have been able able to complete our testing on prednet. In particular, we've conducted a suite of tests including predicting frames from the florida dataset, rotating propellers, and variants of the rotating snake illusion. We continue our work with HPNet, which has a different set of challenges including the difference in taking in input.

2 Current Progress

For this milestone, we have been able to produce some results with our version of PredNet. The original code used for PredNet was ultimately converted from using Chainer to Pytorch with the help of Yimeng as the lab primarily uses pytorch and this would allow for others to more easily use the model. With the trained weights, we have done a suite of tests, with the most important being the snake illusion.

We first tested prednet's ability to correctly predict a rotating propellers motion by inputing 20 frames of the video and asking the model to predict frames 21, 22, and 23. Once successful, we moved onto the snake illusion.

We tested 3 different 'illusions'. The illusion with 4 circles, one with 1, and an altered version of the illusion that doesn't produce the phenomena. We once again inputted 20 frames of the same static image, and looked at the predictions generated after each one. At a high level the model is able to see 'motion' in both the 4 circle and one circle case, and nothing with the fake illusion. It should however be noted that the colors were somewhat washed out and not as high of a resolution as one of the sample videos. This may be due to the porting from Chainer to Pytorch.

3 Changes and conclusion

We focus our efforts on HPNet now. In particular, we are currently trying to reproduce these same results with the new network. One potential issue with testing however is that HPNet has various configurations to test on. In particular our network is trained such that it takes in a 'block' of frames simultaneously, and predicts another block of frames. There are other configurations such as Block to single frame, and single frame to single frame, in which we may need to also look at later on.