Advaned Deep Learning
Assignment 1

Xingrong Zong

June 3, 2022

I set the batch size to be 64. Then, I chose to change the brightness, hue, and location of the images to see the differences. I set the brightness with 0.5, 1, 1.5, 3; hue with -0.5, 0, 0.24, 0.5; flip with original, vertical, horizontal, and vertical + horizontal; rotation with 0, 90, 180, 270.

The graphs show the loss through epoches in each objective.In general, the lines are almost follow the same shape, the loss of each objective all stabilize after 8 epoches. But look at the details, we can see the initial point is different in each graph, and Flip has the lowest value, where Hue has the highest value. Also, Flip stabilize with the lowest value among all.

In conclusion, from both the training loss graphs and accuracy, using Flip gives the best performance among all self-supervised pre-training objectives. Also, the Brightness and Hue (color) give more affect to the images compare to the Flip and Rotation (position). Among Bright and Hue, Brightness performs a bit better. Among Flip and Rotation, Flip performs a bit better.

SSL	Accuracy
Brightness	85.17%
Flip	91.59%
Rotation	90.28%
Hue	84.60%

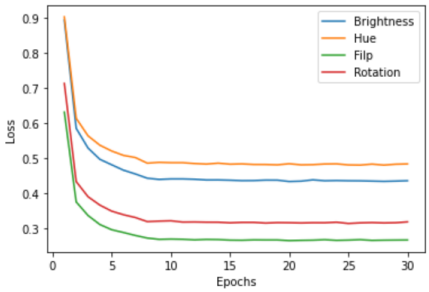

Figure 1: Loss