

# Advanced Deep Learning Assignment 1

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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, 0.24, 0.5; flip with original, vertical, horizontal, and vertical + horizontal; rotation with 0, 90, 180, 270.

The graphs show the loss through epochs in each objective. In general, the lines almost follow the same shape, the loss of each objective all stabilize towards zero after 8 epochs. But look at the details, we can see the initial point is different in each graph, and figure 3 has the lowest value, where figure 2 has the highest value.

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).

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

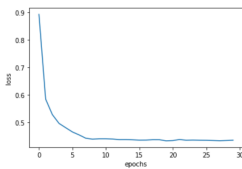


Figure 1: Brightness

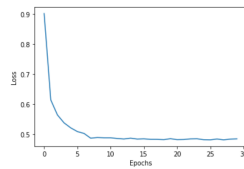


Figure 2: Hue

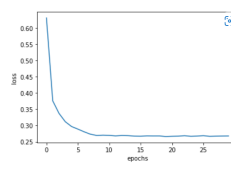


Figure 3: Flip

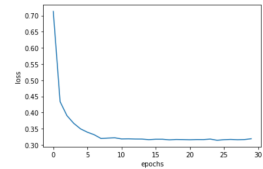


Figure 4: Rotation