

Deep Learning Homework 2

Classification

due on March 24, 2021

1 Task description

In this homework, you need to train a model to classify images. Some examples are shown in figure 1 and 2. Given an image, you need to distinguish its category, e.g., whether it is a horse or an automobile. There are total 10 classes, i.e., airplane, automobile, bird, cat, deer, dog, frog, horse, ship and truck. We release 40,000 images for training, 10,000 images for validation. Each image has a shape of (128, 128, 3). You need to submit your code, trained model, and a report. We will evaluate your model in 10,000 images on the test set.

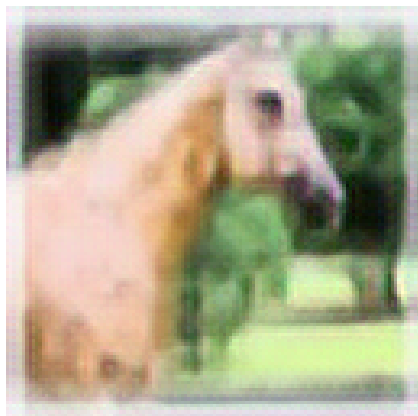


Figure 1: Horse

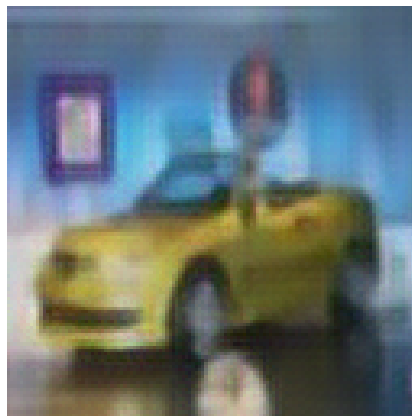


Figure 2: Automobile

2 Coding

We provide an example implementation in https://github.com/xsstory/dl_course_hw2. You can follow the README to run our example. Then You

can modify our example files to train your own model. Your final submitted model should not be larger than 200M. Using any pretrained model is NOT permitted

DO NOT change the file *evaluation.py* or *cifar10_4x.py*, and make sure you can test your model using *evaluation.py*. Name your best model “*cifar10_4x_best.pth*”. Submit this single model file and all your .py files to weblearning. We will use *evaluation.py* to evaluate your model on the test set.

3 Report

You should report

1. the details of your model,
2. all the hyper-parameters,
3. all the tricks or training techniques you use,
4. the training curve of your submitted model.

Reporting additional ablation studies and how you improve your model are also encouraged.

4 Grading

We will grade this homework based on the performance of your model (70%) and your report (30%). Regarding the evaluation metric of your model, assume your test accuracy is X then your score is

$$\frac{\min(X, H) - 0.6}{H - 0.6} \times 7$$

where H is accuracy of the model trained by TAs and $H = 0.9$.

Bonus: The best submission with the highest testing accuracy will get 1 bonus point for the final course grade.