Multimedia Project SoSe 23

Assignment 2

Multimedia Computing Lab
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Please take a look at assignment 0 on how to submit your work.

Exercise 2.1 Transfer Learning Model — 5 Points

Create a class for a neural network and name it `MmpNet`. The constructor receives a parameter named `num_classes`. This parameter determines the number of output features of your model.

This time, use MobileNet v2 from torchvision as a backbone for transfer learning. Use the tools from your IDE to inspect MobileNet's forward pass. Your forward pass should should look very similar but with a different classifier. Decide for yourself what the new classifier should be.

Exercise 2.2 Data — 3 Points

Implement a function

```
def get_dataloader(is_train, data_root, batch_size, num_workers)
```

that returns a data loader for the CIFAR-10 dataset. You can use the `CIFAR10` class from `torchvision`. Remember to correctly transform your image.

Exercise 2.3 Training — 9 Points

(a) Implement `def get_criterion_optimizer(model)` which should return a loss function and an optimizer for the specified model.

(b) Create a method for your model that performs one training epoch. Put your code inside `def train_epoch(model, loader, criterion, optimizer)`. This function must also make sure that the model is in training mode.

(c) Implement `def eval_epoch(model, loader)`. It must iterate over the whole validation set provided by the `loader` and return the accuracy as a `float`.

(d) Put everything together in `def main()`: create the model, load the datasets and train the model for at least five epochs. Report your final accuracy.

(e) Implement GPU support