NYCU Introduction to Machine Learning, Homework 5

Deadline: Dec 20, 23:59

Environment details:

Python version:3.7

Implementation details:

Model architecture:

```
def __init__(self):
    super().__init__()

    self.F = nn.Sequential(*list(vgg19(weights=VGG19_Weights.IMAGENET1K_V1).children())[:-2])
    self.AvgPool = nn.AdaptiveAvgPool2d((1, 1))
    self.C0 = nn.Sequential(
        nn.Linear(512, 36)
        )
    self.C1 = nn.Sequential(
        nn.Linear(512, 36)
        )
    self.C2 = nn.Sequential(
        nn.Linear(512, 36)
        )
    self.C3 = nn.Sequential(
        nn.Linear(512, 36)
        )

    return
```

We use vgg19 as our model and our pre-trained weights, and took out last 2 layer since we want to change the data to the specified dimensions. After we put data into vgg19, we use average pooling to get feature, for two or more characters for recognizing, each character will have a corresponding output layer to recognize. We load 128 data from memory at a time and put every data into the model to get the predicted result. After calculating the loss with the answer, we update the model with learning rate, for each loop, we save the model as a checkpoint, thenloop the training process for n_epoch time that we specify.

Hyperparameters:

```
self.n_epoch = 20
self.batch_size = 128
self.n_worker = 2
self.lr = 0.001
```

n_epoch : We loop the training data for 20 times to have the desired loss.

batch_size : since we don’ t want to load all of the data simutaneously, we load 128 data once at a time.

n_worker : Like thread, we have 2 working process to accelerate the training time.

lr: the learning rate for the model.

Used deep learning framework: PyTorch

Model weights:

Model1: https://drive.google.com/file/d/1A1jJXTT5vMbmy74uGBHmITTqbCPEq-bo/view?usp=share_link

Model2: https://drive.google.com/file/d/1Ytrk2PavLPoUPZDaMDJ2z4Cvt09gpJy8/view?usp=share_link

Model3: https://drive.google.com/file/d/1afw5Gu8xPWVywzLJbK2rQT1OTdxltRPx/view?usp=share_link

Score: