Image Similarity using Deep Ranking

Zhenye Na (zna2)

Code

Please refer to uploaded python file.

Accuracy

Calculate from scratch took up **so much** time, I have switched to use KNN for calculating the accuracy score, it gives me 50% - 51% accuracy.

Implementation details

I used ResNet101 pre-trained model as the ConvNet in the paper, I used SGD+ nesterov momentum as the optimizer and tripletMarginLoss as the loss function.

Optimizer and loss

```
criterion = nn.TripletMarginLoss(margin=args.g, p=args.p)
optimizer = torch.optim.SGD(net.parameters(),
                            lr=args.lr,
                            momentum=args.momentum,
                            weight_decay=args.weight_decay,
                            nesterov=args.nesterov)
```

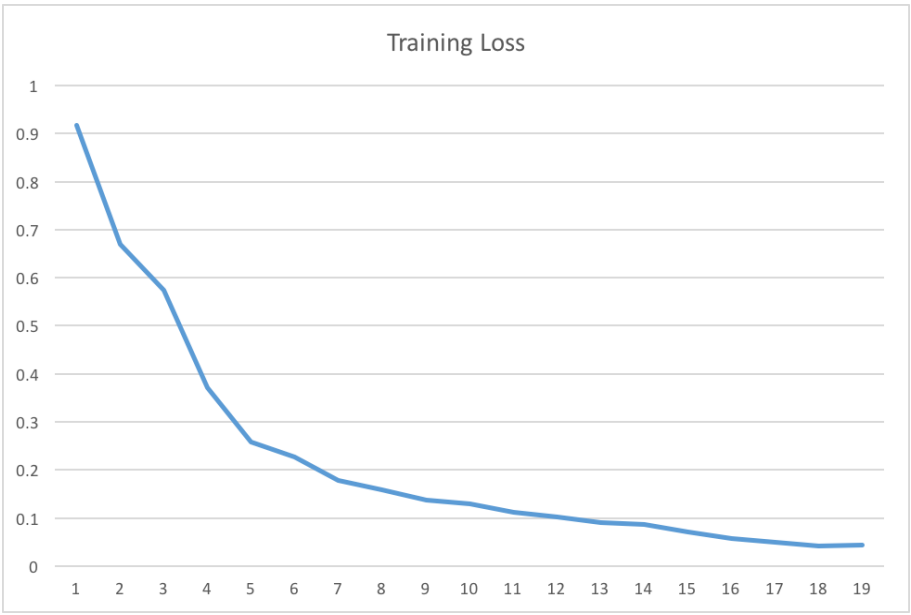
Hyper-parameters

Hyper-parameters	Description
lr=0.001	learning rate
momentum=0.9	momentum factor
nesterov=True	Nesterov momentum
weight_decay=1e-5	weight decay (L2 penalty)
epochs=50	number of epochs to train
batch_size_train=30	training set input batch size

batch_size_test=30	test set input batch size
num_of_pos_images / num_of_neg_images = 3	number of p / n images for each query image
g=1.0	gap parameter

Quantitative results

Show a plot of your training loss (continue training after make the plot)



Describe at least one way in how you can improve the performance of your network

Improve the sampling techniques.

In this case we only combine “same” class as positive result and “different” class as negative class. What we can do is add “images in same class but distance from query image is much greater than a threshold”. This may improve the performance a lot.