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In [ ]: import torch as t
import numpy as np
import torch.nn as nn
import torch.nn.functional as F
import torch.optim as optim
```

#Author: 坚定的唯物主义鼠鼠

```
In [ ]: data=np.genfromtxt('./data/data_处理后.csv',delimiter=',',dtype='float32')
data=data[1:,:]
np.random.set_state(np.random.get_state())
data=np.random.permutation(data)
tu=t.from_numpy(data[:519,2:])
tc=t.from_numpy(data[:519,1:2])
tc=F.one_hot(tc.long().view(-1),2).float()

vu=t.from_numpy(data[519:,2:])
vc=t.from_numpy(data[519:,1:2])
vc=F.one_hot(vc.long().view(-1),2).float()
```

```
In [ ]: class Net(nn.Module):
    def __init__(self, *args, **kwargs) -> None:
        super().__init__(*args, **kwargs)
        self.model=nn.Sequential(
            nn.Linear(30,256),nn.ReLU(),
            nn.Linear(256,64),nn.ReLU(),
            nn.Linear(64,2)
        )
    def forward(self,x):
        return self.model(x)
def train(epochs,model,opt,lossfn,traindata,trainlabel):
    for epoch in range(epochs):
        opt.zero_grad()
        output=model(traindata)
        loss=lossfn(output,trainlabel)
        loss.backward()
        opt.step()
        if epoch%1000==0:
            print('epoch:{},loss:{}'.format(epoch,loss.item()))
```

```
In [ ]: model=Net()
epochs=10000
optimizer=optim.SGD(model.parameters(),lr=0.0001)
```

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In [ ]: train(epochs,model,optimizer,nn.CrossEntropyLoss(),tu,tc)
```

```
epoch:0,loss:24.11726188659668
epoch:1000,loss:0.21015366911888123
epoch:2000,loss:0.2041037231683731
epoch:3000,loss:0.20008163154125214
epoch:4000,loss:0.19666464626789093
epoch:5000,loss:0.19382183253765106
epoch:6000,loss:0.19079194962978363
epoch:7000,loss:0.1881030946969986
epoch:8000,loss:0.1857258379459381
epoch:9000,loss:0.18392398953437805
```

```
In [ ]: correct=0
total=0
with t.no_grad():
    for i in range(len(vu)):
        output=model(vu[i])
        _,predicted=t.max(output.data,0)
        total+=1
        if predicted==t.argmax(vc[i]):
            correct+=1
print('Accuracy: %f %%' % (float(correct)/total*100))
print('总数: %f ' % (total))
print('正确数: %f ' % (correct))
```

Accuracy: 96.000000 %

总数: 50.000000

正确数: 48.000000