神经网络与深度学习——PJ1

线性模型

按照README文件中的要求进行了代码填充。

使用 *SGD* 优化器的结果：

```
epoch: 0, iteration: 0
[Train] loss: 32.92024084197722, score: 0.03125
[Dev] loss: 31.594587498661458, score: 0.0756
epoch: 0, iteration: 100
[Train] loss: 28.850947001007146, score: 0.15625
[Dev] loss: 31.594587498661458, score: 0.0756
epoch: 0, iteration: 200
[Train] loss: 32.671153019574675, score: 0.03125
[Dev] loss: 31.594587498661458, score: 0.0756
```

明显误差太大，分数太低了。

使用自己编写的 *MomentGD* 优化器结果：

```
epoch: 2, iteration: 1100
[Train] loss: 2.429813626654367, score: 0.90625
[Dev] loss: 2.6032029732182598, score: 0.9046
epoch: 2, iteration: 1200
[Train] loss: 5.432797715475614, score: 0.8125
[Dev] loss: 2.590038150630056, score: 0.9047
epoch: 2, iteration: 1300
[Train] loss: 2.159031503915428, score: 0.9375
[Dev] loss: 2.5659868257211786, score: 0.9062
```

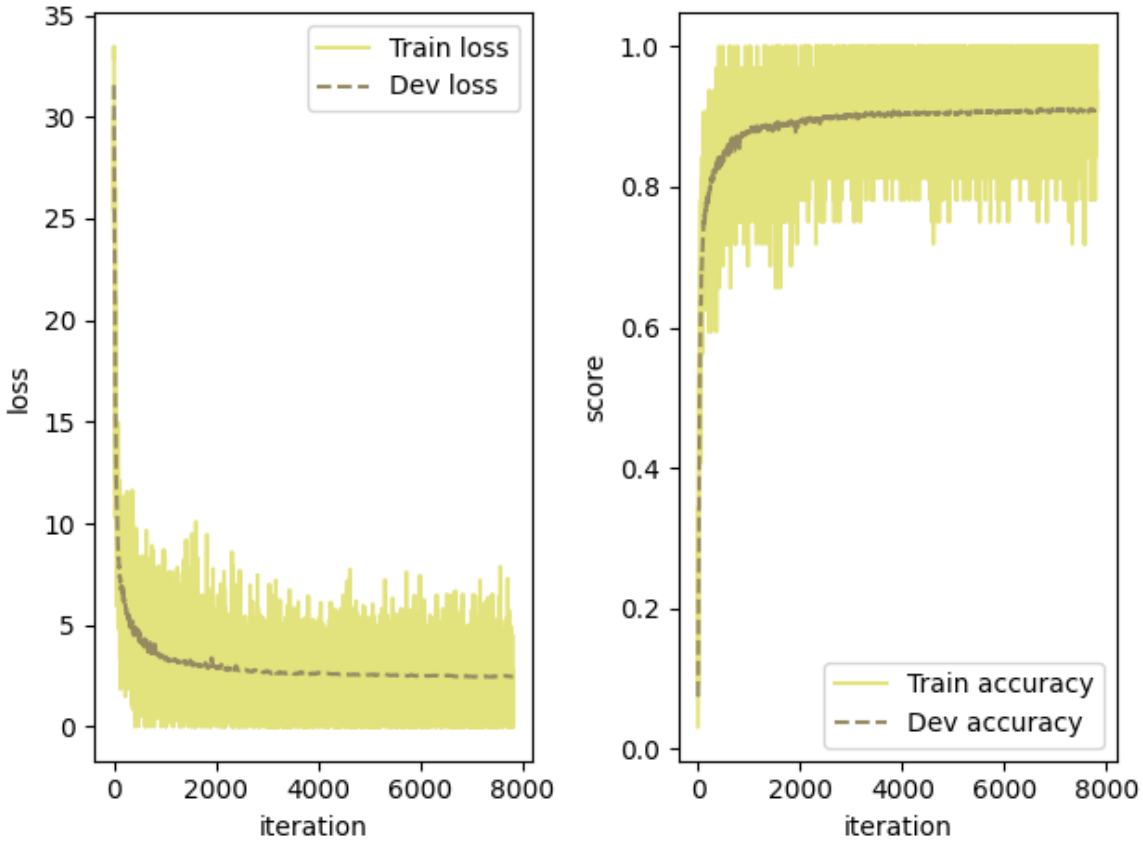
误差大大减少，且分数在**九十分**左右。

总共训练迭代结束后的结果：

```
[Dev] loss: 2.460894295403028, score: 0.9087
epoch: 4, iteration: 1400
[Train] loss: 0.14933733302796093, score: 0.96875
[Dev] loss: 2.5044450821812863, score: 0.9074
epoch: 4, iteration: 1500
[Train] loss: 3.823227777372685, score: 0.875
[Dev] loss: 2.478836651667009, score: 0.9085
best accuracy performence has been updated: 0.90650 --> 0.90940
```

最佳准确度为**0.90940**。

训练迭代**loss**与**score**的变化图：



最后测试结果为：

```
PS C:\Users\LILINHAN\Desktop\codes> & "C:/Program Files/Python39/python.exe" c:/Users/LILINHAN/Desktop/codes/test_model.py
0.9104
```

准确率为**0.9104**