

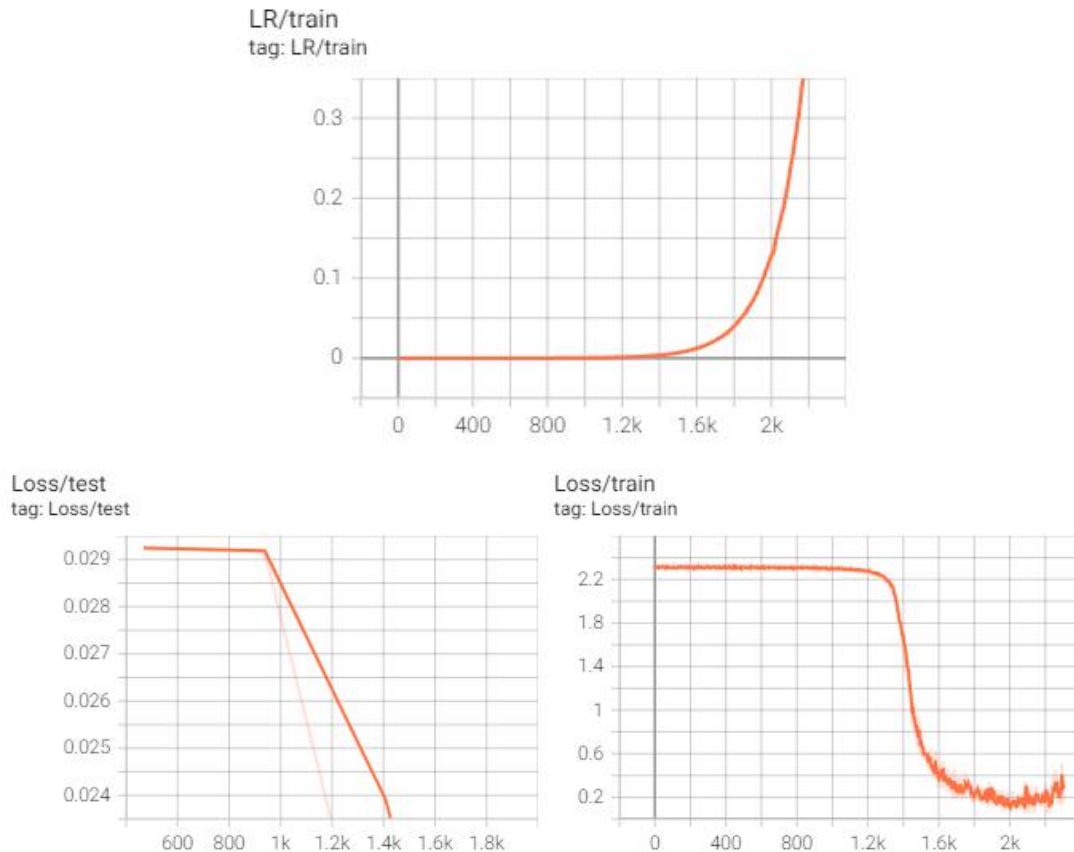
# Assignment 6 Report

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Optimizer: SGD

Epoch: 30

## 1. Learning rate selection:



Given the figures above, I select learning rates of [0.0003, 0.003, 0.03, 0.07, 0.13], corresponding with learning rate values range from 900 to 2k when training loss starting to dramatically down and reach the bottom point.

## 2. For no optimizer situation:

The results are enclosed on Github. According to the results, the best learning rate with the pair [SGD, no optimizer] should be around 0.003 to 0.07, with best achieved by 0.03. When learning rate is too small (0.0003), the performance of accuracy and loss is worse with lower start and relative lower end. And when learning rate is larger (0.13), besides low accuracy and high loss, the performance is even much more unstable than in other situations.

## 3. For MultiStep optimizer:

The results shows that the best learning rate for pair [SGD, MultiStep] should be around 0.03 to 0.13.

Compared with no optimizer situation, the learning rate will be multiplied with 0.5 three times in each epoch. This may make the most suitable learning rate to be larger, as showed with higher best learning rate than in no optimizer situations. And

in the meantime, the variation of loss and accuracy are seems to be relatively lower than situation without optimizer.

Github link:

[https://github.com/dyc1998108/CS5260\\_Assignment6](https://github.com/dyc1998108/CS5260_Assignment6)