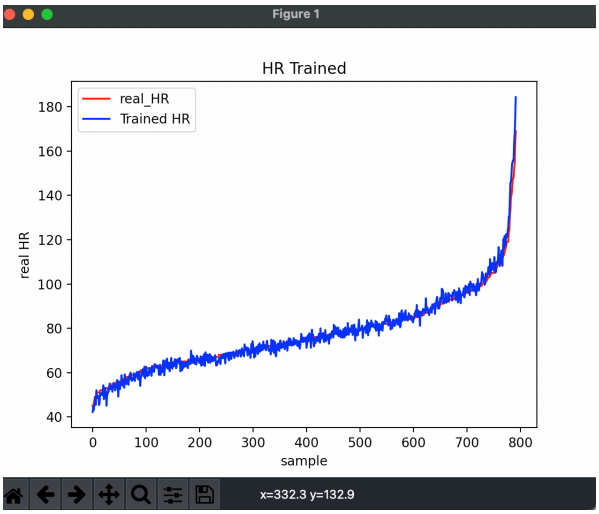
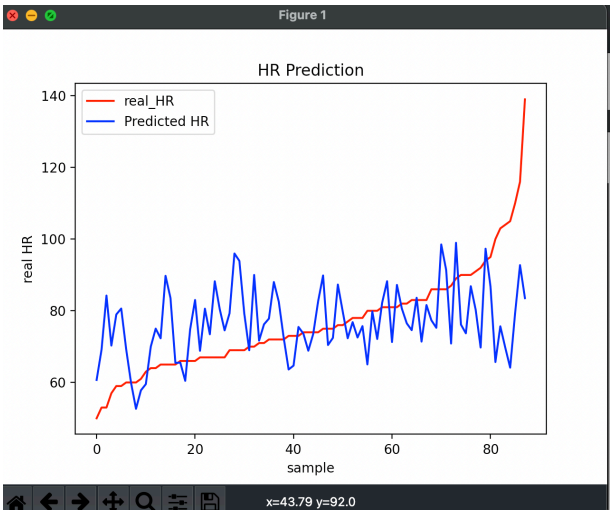
Origin model:



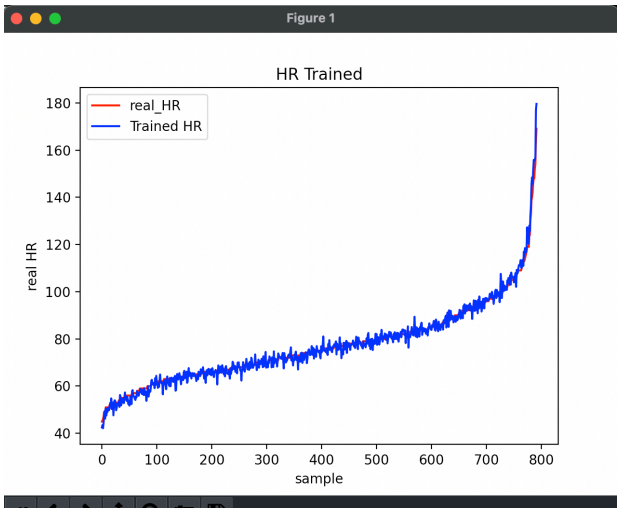


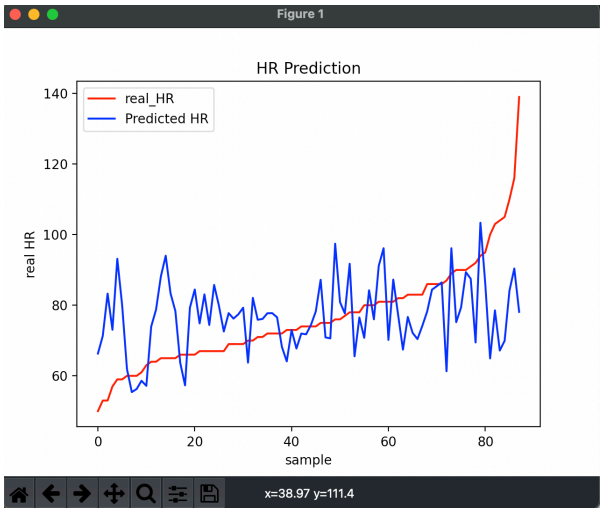

```
test set
mse:     228.175098
rmse:    15.105466
mae: 11.157427
train set
mse:     6.321496
rmse:    2.514258
mae: 1.828774

Process finished with exit code 0
```

Modification on model:

Try to reduce overfitting Using L2 regularizer(parameter=0.1) (all layers):

The result is as following:






```
mse:      243.913000
rmse:    15.617714
mae: 11.716439
train set
mse:      4.295141
rmse:    2.072472
mae: 1.546186
```

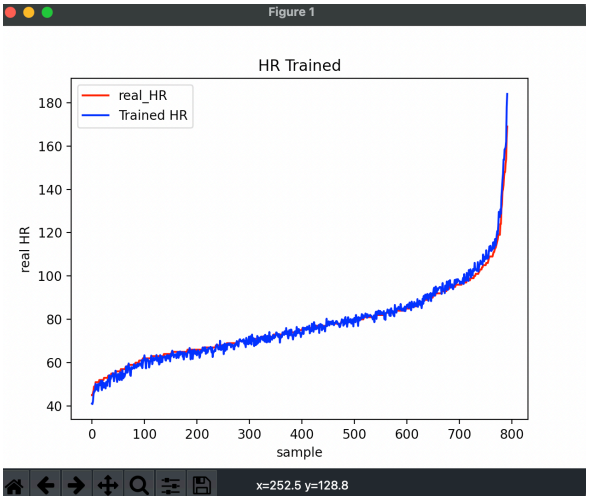
Using parameter=0.2 for Conv1d and leave rest unchanged:

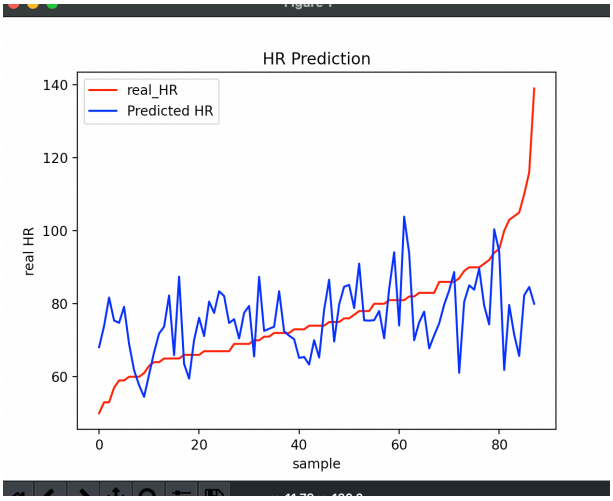
```
test set
mse:      255.113394
rmse:    15.972270
mae: 11.327378
train set
mse:      4.021888
rmse:    2.005464
mae: 1.512249
```

Increase dropout to reduce overfitting(dropout 0.2):

```
test set
mse:      268.277753
rmse:    16.379187
mae: 11.883649
train set
mse:      11.723044
rmse:    3.423893
mae: 2.491798
```

Then we add **10-fold cross validation** to original model:

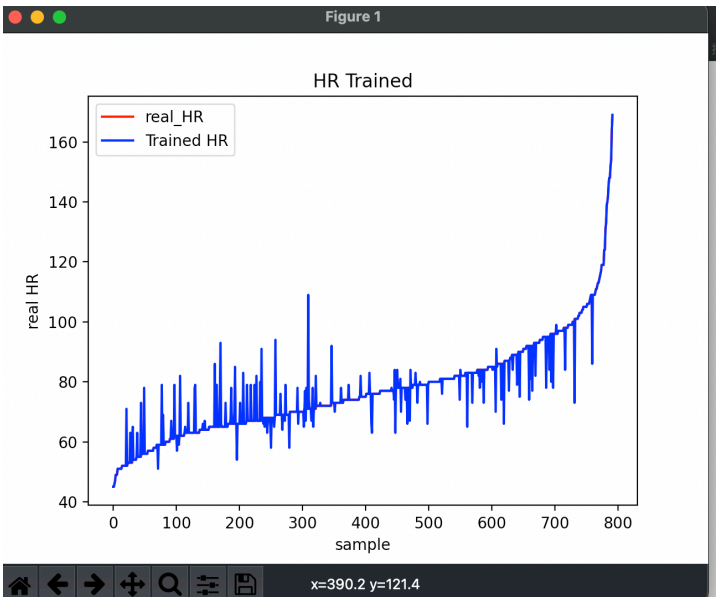


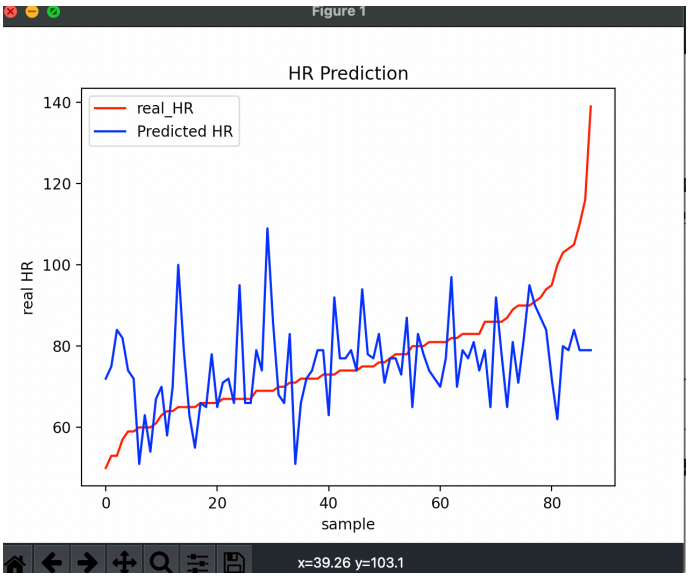



```
test set
mse:      218.103246
rmse:    14.768319
mae: 10.785048
train set
mse:      5.259977
rmse:    2.293464
mae: 1.609323
```

Then we change the model a little bit ,to make it a classification problem(LSTM removed)

And then:

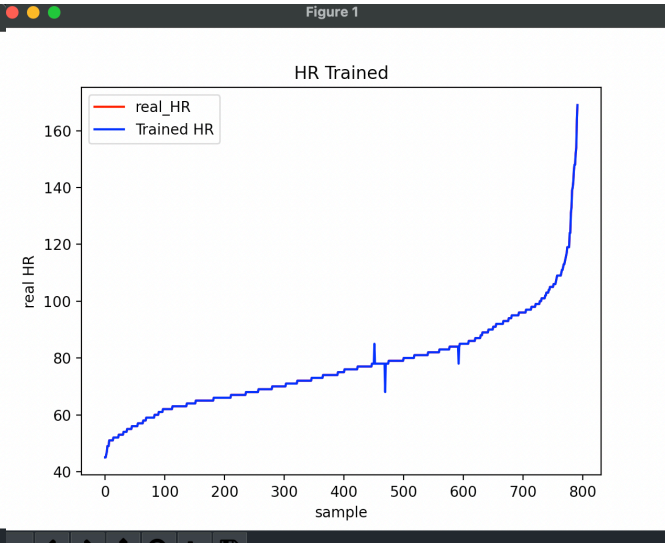





```
test set
mse:     246.761364
rmse:   15.708640
mae: 11.193182
train set
mse:     22.309343
rmse:   4.723277
mae: 1.536616
```

Then I found if I change the epoch to 100, the model will totally fit the training data and test set would perform really bad on the model,I think the **main problem is that we have relatively very small dataset**

epoch=100:




```
test set
mse:     246.477273
rmse:   15.699595
mae: 11.750000
train set
mse:     0.233586
rmse:   0.483307
mae: 0.029040
```