

# 邱博模型

## 整体框架

### 数据集

- aiopsdata
- 单变量

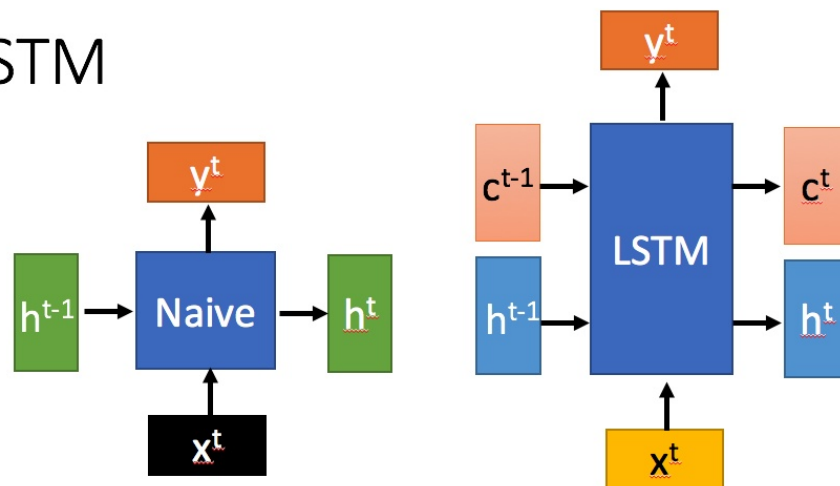
timestamp	value	label	KPI ID	
1.494E+09	1.9016393		0	02e99bd4f6cfb33f
1.494E+09	1.7868853		0	02e99bd4f6cfb33f
1.494E+09	2		0	02e99bd4f6cfb33f
1.494E+09	1.8852459		0	02e99bd4f6cfb33f
1.494E+09	1.8196721		0	02e99bd4f6cfb33f
1.494E+09	1.8852459		0	02e99bd4f6cfb33f
1.494E+09	1.8852459		0	02e99bd4f6cfb33f
1.494E+09	1.9344262		0	02e99bd4f6cfb33f
1.494E+09	1.9672132		0	02e99bd4f6cfb33f
1.494E+09	1.9508197		0	02e99bd4f6cfb33f
1.494E+09	1.9508197		0	02e99bd4f6cfb33f
1.494E+09	1.9508197		0	02e99bd4f6cfb33f
1.494E+09	1.9016393		0	02e99bd4f6cfb33f
1.494E+09	1.9344262		0	02e99bd4f6cfb33f
1.494E+09	1.8032787		0	02e99bd4f6cfb33f
1.494E+09	1.8360655		0	02e99bd4f6cfb33f
1.494E+09	1.9180328		0	02e99bd4f6cfb33f
1.494E+09	2.0491803		0	02e99bd4f6cfb33f
1.494E+09	1.9672132		0	02e99bd4f6cfb33f
1.494E+09	2.0327868		0	02e99bd4f6cfb33f
1.494E+09	2.1803279		0	02e99bd4f6cfb33f
1.494E+09	1.9344262		0	02e99bd4f6cfb33f
1.494E+09	1.9508197		0	02e99bd4f6cfb33f
1.494E+09	1.9344262		0	02e99bd4f6cfb33f
1.494E+09	1.9836066		0	02e99bd4f6cfb33f

### 模型的构建和训练

#### ConvLSTM

- LSTM是一种特殊的RNN（有两个传输状态）

# LSTM



c change slowly  $\Rightarrow c^t$  is  $c^{t-1}$  added by something

h change faster  $\Rightarrow h^t$  and  $h^{t-1}$  can be very different

- ConvLSTM就是在LSTM之前加卷积操作，邱博的模型架构为三层卷积池化+LSTM+softmax
- 训练时，训练数据以窗口的形式传到模型里进行训练

## 运行结果截图

```
recall: 0.855422, f1: 0.8875
2020-11-25 13:06:00,555 - step: 49296, loss: 0.159137, accuracy: 0.933594, precision: 0.888889,
recall: 0.91954, f1: 0.903955
2020-11-25 13:06:00,555 - step: 49296, loss: 0.159137, accuracy: 0.933594, precision: 0.888889,
recall: 0.91954, f1: 0.903955
2020-11-25 13:06:00,562 - step: 49297, loss: 0.130756, accuracy: 0.960938, precision: 0.988506,
recall: 0.905263, f1: 0.945055
2020-11-25 13:06:00,562 - step: 49297, loss: 0.130756, accuracy: 0.960938, precision: 0.988506,
recall: 0.905263, f1: 0.945055
2020-11-25 13:06:00,568 - step: 49298, loss: 0.10864, accuracy: 0.949219, precision: 0.968421,
recall: 0.901961, f1: 0.93401
2020-11-25 13:06:00,568 - step: 49298, loss: 0.10864, accuracy: 0.949219, precision: 0.968421,
recall: 0.901961, f1: 0.93401
2020-11-25 13:06:00,575 - step: 49299, loss: 0.156045, accuracy: 0.945312, precision: 0.9375, recall:
0.892857, f1: 0.914634
2020-11-25 13:06:00,575 - step: 49299, loss: 0.156045, accuracy: 0.945312, precision: 0.9375, recall:
0.892857, f1: 0.914634
2020-11-25 13:06:00,582 - step: 49300, loss: 0.150227, accuracy: 0.9375, precision: 0.925, recall:
0.880952, f1: 0.902439
2020-11-25 13:06:00,582 - step: 49300, loss: 0.150227, accuracy: 0.9375, precision: 0.925, recall:
0.880952, f1: 0.902439
2020-11-25 13:06:00,628 - step: 49300, loss: 1.1826, accuracy: 0.836548, precision: 0.695778, recall:
0.905455, f1: 0.786888
2020-11-25 13:06:00,628 - step: 49300, loss: 1.1826, accuracy: 0.836548, precision: 0.695778, recall:
0.905455, f1: 0.786888

Test
INFO:tensorflow:Froze 12 variables.
2020-11-25 13:06:00,828 - Froze 12 variables.
2020-11-25 13:06:00,828 - Froze 12 variables.
Converted 12 variables to const ops.
```

