

It is not a traditional RNN, the input_length=1 indeed, so I just used the function of CudnnGRU to get pattern of clicks which can be expressed like the following:

```
zx=sigmoid(K.dot(Wz,X)
hx=tanh(K.dot(W,X)
h=zx*hx
```

As we want to know the theory behind the structure, and I have no time to prove it or write a paper, we can have a look at the paper by Google: [Searching for Activation Functions](#) Swish: $x \cdot \sigma(\beta x)$, where $\sigma(z) = (1 + \exp(-z))^{-1}$, we can get some ideas to explain my setting.

As to private score estimation, it's always an interesting part of my competition :).

There is not certain method to do so, I just bear in mind:

Distribution variances lead to score variances.

For example, in this competition, some category values in test-set are not in trainset, so I changed the same ratio of category value of validation set to values unseen in trainset. And the App19 is a very important app with high ratios of download and is imbalanced in train and test-set. What's more, the ratio is different between the public and private set, so I tried to keep the ratio of my validation as test set... We can also use a submission which I believe it is stable as True label, and calculate AUC based on it, if the public and private score are as close, then we can believe it too.

Thanks for all the congrats to me, I will upvote your comment and will not reply to everyone to save space of this page.

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