Model: "sequential\_2"

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Layer (type) Output Shape Param #

=================================================================

simple\_rnn\_3(SimpleRNN) (None, 28, 128) 20096 28\*128+128\*128+128

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dropout\_3 (Dropout) (None, 28, 128) 0

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simple\_rnn\_4 (SimpleRNN) (None, 128) 32896 128\*128\*2+128

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dropout\_4 (Dropout) (None, 128) 0

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dense\_2 (Dense) (None, 10) 1290 128\*10+10

=================================================================

Total params: 54,282

Trainable params: 54,282

Non-trainable params: 0

Ht = f(Uxt+Wht-1+b)

例：simple\_rnn\_3

Param = 28\*128+128\*128+128

LSTM：

Model: "sequential\_1"

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Layer (type) Output Shape Param #

=================================================================

lstm\_1 (LSTM) (None, 28, 128) 80384

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dropout\_1 (Dropout) (None, 28, 128) 0

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lstm\_2 (LSTM) (None, 128) 131584

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dropout\_2 (Dropout) (None, 128) 0

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dense\_1 (Dense) (None, 64) 8256 128\*64+64

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dense\_2 (Dense) (None, 10) 650 64\*10+10

=================================================================

Total params: 220,874

Trainable params: 220,874

Non-trainable params: 0

80384 = （28\*128+128\*128+128）\*4

f (t) + i(t) + C(t) + ot

(forget gate)+(input gate:’tanh,sigmoid’)+(output gate)

131584 = （128\*128\*2+128）\*4