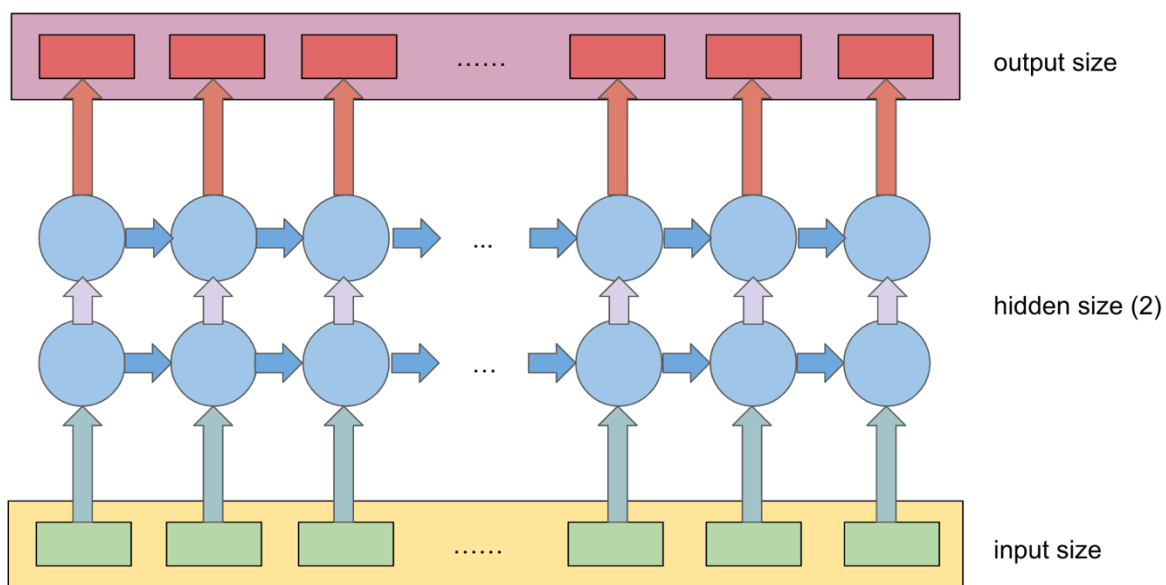


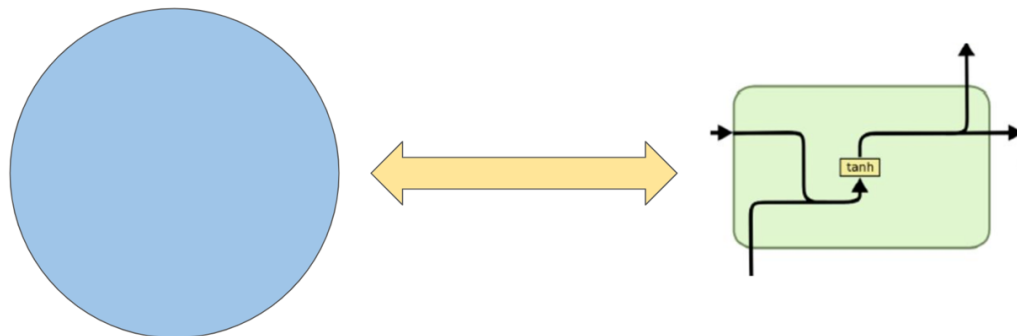
Deep Learning HW4

0851924 許朝鈞

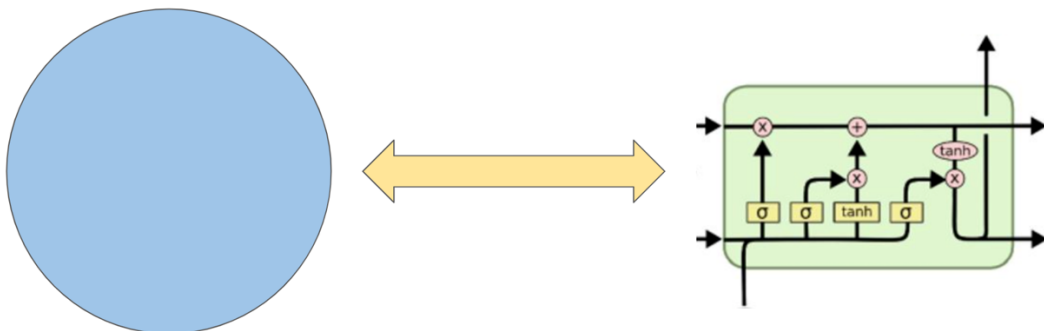
1. Network architecture:



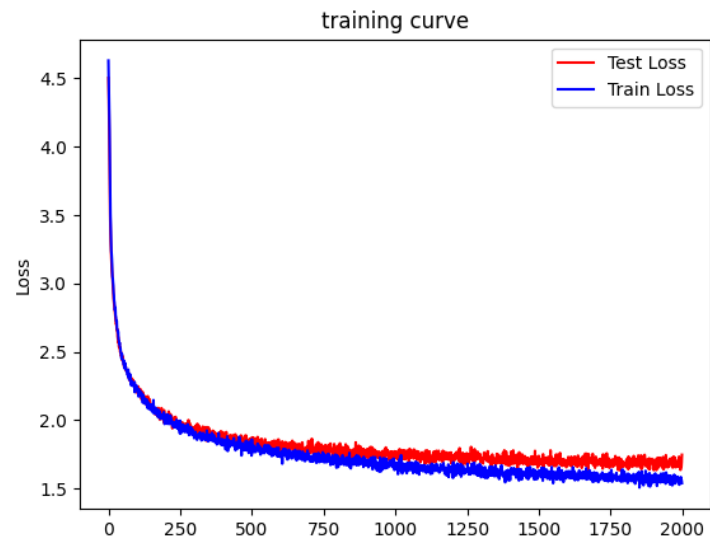
a. RNN cell



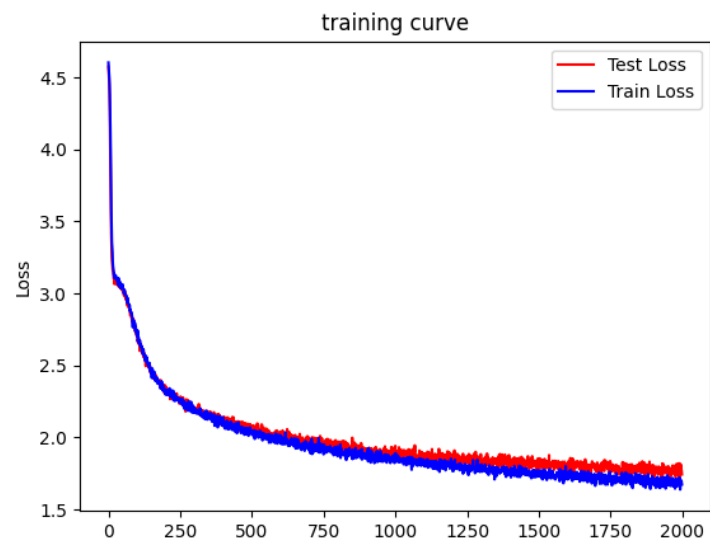
b. LSTM cell



a. RNN learning curve



b. LSTM learning curve



2.

- a. RNN model with 2000 epoch, hidden size: 150, sequence length: 50
(input text: 'he')

Epoch	Train loss	Validation loss	Generate text
400	1.8291746520996093	1.9136328125	he poon begorcusts to is i pure to neom the may restive 't store. krewartion. duphall, have born. p
800	1.737723388671875	1.7780685424804688	he hearth: well heren-male ench a speece to sailt blood that that you conting honester will shall glis
1200	1.6060601806640624	1.727032928466797	he world's bold desire in more, and this gentleman, are to the pountend your come her his percure abou
1600	1.614979248046875	1.6934017944335937	he artcess. amerture: the king, why and crowned and spany water king, with i would marcus charge with
2000	1.5397731018066407	1.7477688598632812	her beard in the given in the god unwast of sworn'd as worth ragone. edmin: then i am the king, i am

b. LSTM model with 2000 epoch, hidden size: 150, sequence length: 50
(input text: 'he')

Epoch	Train loss	Validation loss	Generate text
400	2.139723052978516	2.115438690185547	he fong wall leve me pomgis a: but hath and her by in i as watherd, to buffer me comes sher the the ha
800	1.869774627685547	1.9593894958496094	he! 'cliong: what a sure stains. hill ies of price an and fister. i in the let, poffort- gailing: p
1200	1.7965939331054688	1.8652680969238282	he his the suse sounder cause, to see, could his thus did more to deak the conder not tweet thou peapt
1600	1.7436557006835938	1.8143585205078125	heit; the greeding, fees, sinder slay out dimst brownt, reveade on been no simal so know see see wear
2000	1.6740200805664063	1.743956298828125	he worbands, and me; sir. ull: ford diving heart somerove tempory and his nay, is thy did call, i hav

3.

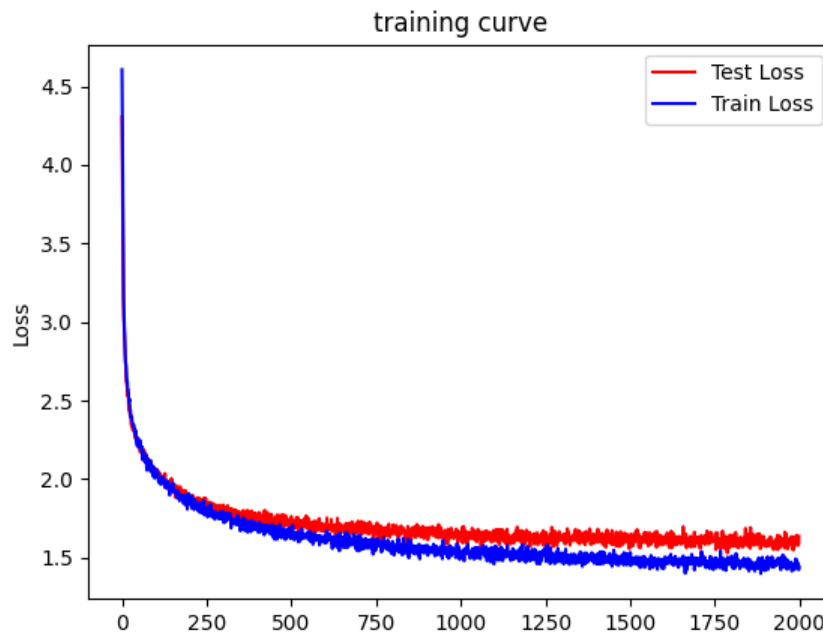
4.

a. Compare result of different size of hidden state and sequence length

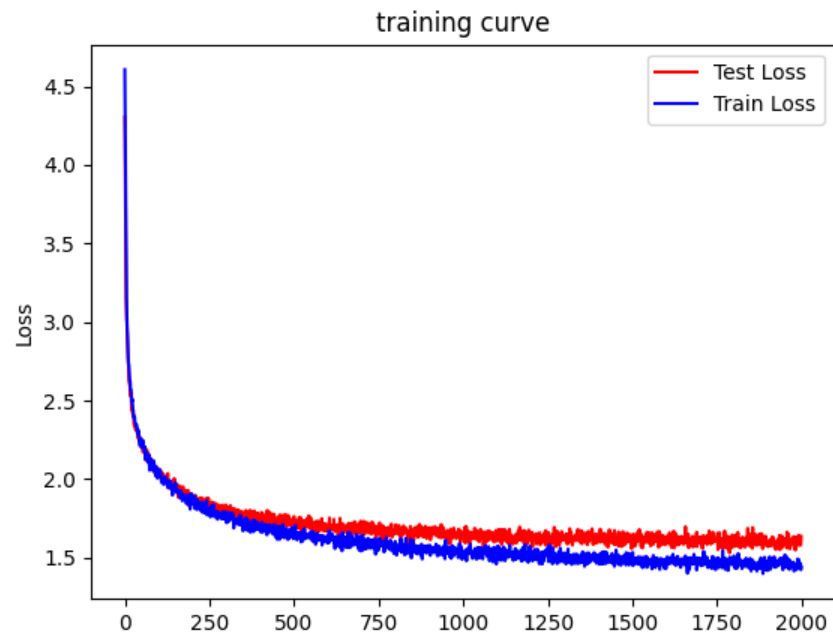
model	epoch	Hidden state size	Sequence length	Training loss
RNN	2000	150	50	1.5397731018066407
	2000	300	50	1.44021728515625
	2000	150	100	1.5149125671386718
LSTM	2000	150	50	1.6740200805664063
	2000	300	50	1.5340580749511719
	2000	150	100	1.604589385986328

b. Figures

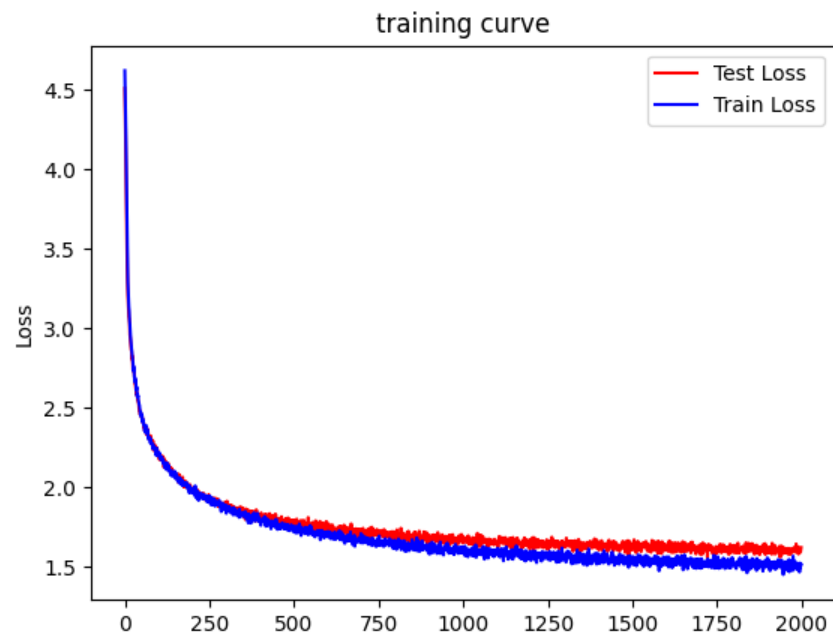
i. RNN/2000/150/50/1.5397731018066407



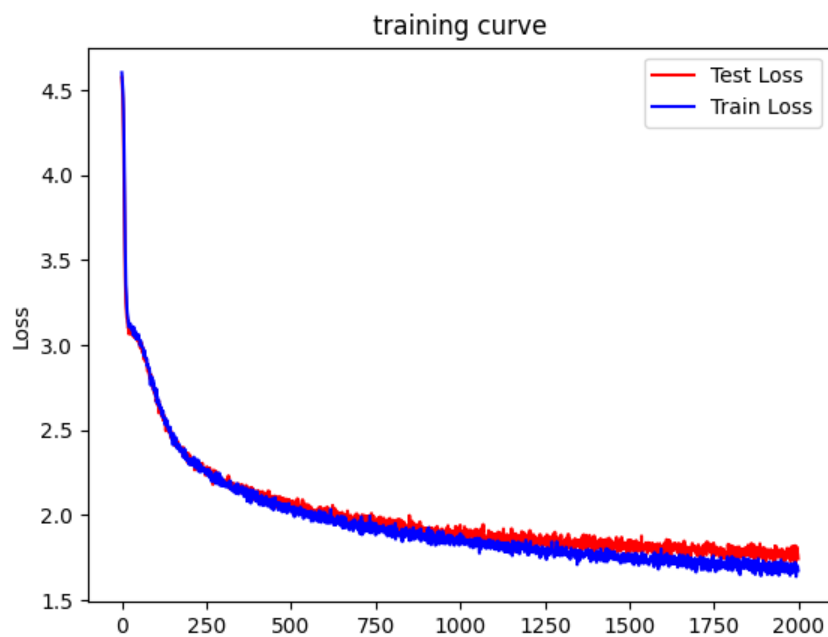
ii. RNN/2000/300/50/1.44021728515625



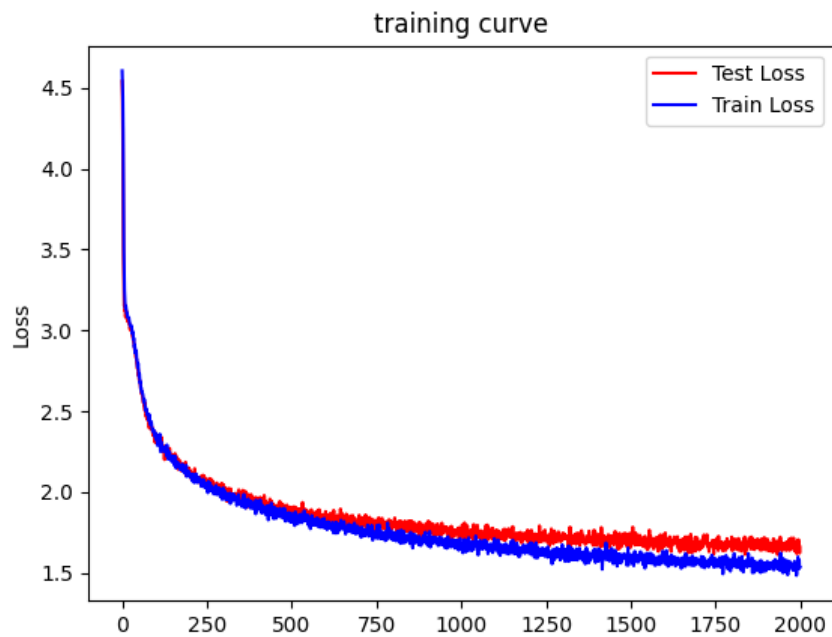
iii. RNN/2000/150/100/1.5149125671386718



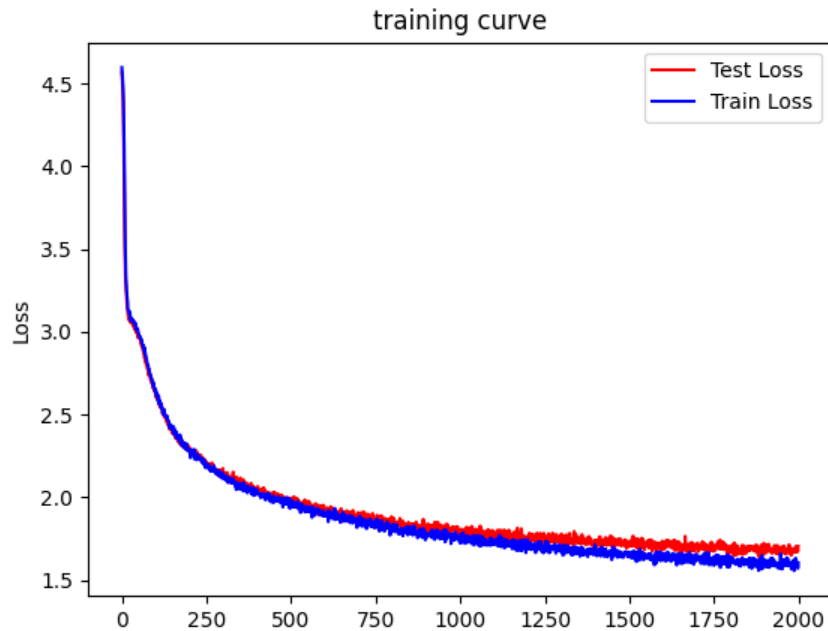
iv. LSTM/2000/150/50/1.6740200805664063



v. LSTM /2000/300/50/1.5340580749511719



vi. LSTM /2000/150/100/1.604589385986328



5. Model description: RNN/4000/300/100
Prime text: juliet

output text:

juliet:

he's heaven in as wish'd nothing:

and so to write a holy loved up my sacred face?

isabella:

why, then, and cannot be well beaten nothing; i can can be made
on

your lates and high

of staring of my bedmactical of your leave may be such traitor,
mangled.

alragited:

the cordelia, boyeth valour, of your mother?

mistress quickly:

why, we will have the honour and be become on this sature on
the sungle me: i'll love you
weeping to the name.

rosalind:

that saving him of it.

first comfort:

i said to speak
to the men-conjured thee in my son.

queen margaret:

why, sir, shall hold thee in rest, that your parley of the most
precedy. what angelo you should danced, being nearer in the boy
why sous.

loder:

are not the days,
to snay for the orting
a chance is own fair of my heart and bloody sound and mark
antony.

norfolk:

why, i know not tell them not with you. i'll make no more:
let us but like me in true public else be so,
if your brewd home to this descried of roys:
whilst thou dost thou be a