Worth: 15% **Due:** By 6:45pm on Oct. 31st

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GitHub repo: https://github.com/awuyz0214/DS1011

CNN/RNN NLP Inference

Parameters considered
RNN
Hidden size = 100, 200, 300

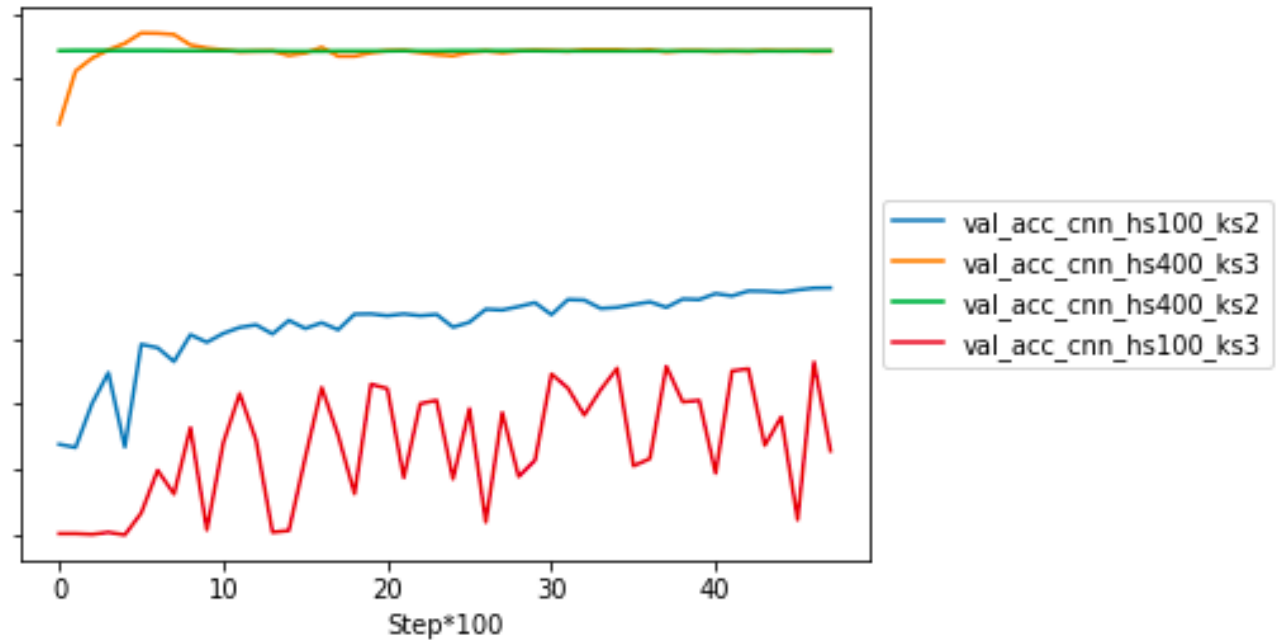
CNN
Hidden size = 100, 400
Kernel size = 2, 3

Results

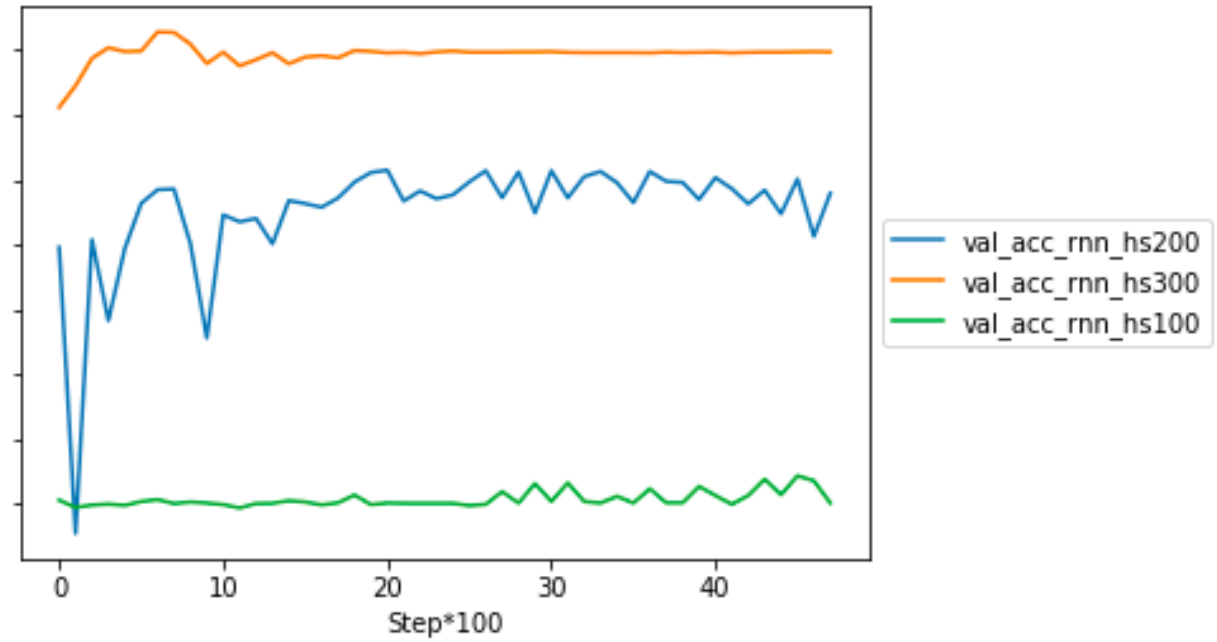
RNN	Train Loss	Val. Loss	Val. Accuracy
Hidden size=100	0.46	0.51	0.69
Hidden size=200	0.42	0.45	0.72
Hidden size=300	0.35	0.42	0.73

CNN	Train Loss	Val. Loss	Val. Accuracy
Hidden size=100, Kernel=2	0.55	0.59	0.59
Hidden size=400, Kernel=2	0.48	0.50	0.65
Hidden size=100, Kernel=3	0.52	0.55	0.60
Hidden size=400, Kernel=3	0.44	0.48	0.71

Comments
1.
For RNN, as the hidden size increases, both of losses and accuracies improve for training and validating data sets. This makes sense since the more complex the model is the better it should perform.
2.
The complexity trand also applies to CNN, where the validation losses decrease as we increase the hidden sizes.
3.
As we increase kernel size from 2 to 3, the accuracies and losses see a significant improvement.
4.
The **best** model I have created is RNN with hidden size=300. This is rewarding given that the long training time RNN is required.



(a) CNN Results



(b) RNN Results

Evaluating on MultiNLI
Accuracy

	Fiction	Government	Slate	Telephone	Travel
RNN	0.51	0.48	0.49	0.48	0.50
CNN	0.48	0.49	0.45	0.48	0.47

Comments:

RNN performs better than CNN. The accuracy for Slate is the lowest among CNN models. Goverment, Slate and Telephone all have low accuracy in RNN models.

Note that the accuracy is lower than that of the SNLI data. This means MultiNLI is somewhat different than SNLI and we cannot simply extend the trained model to MultiNLI.