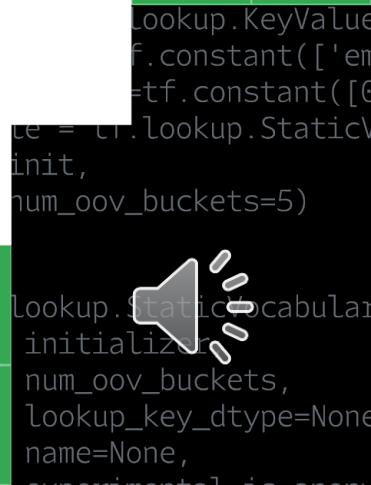
Google Developer Student Clubs

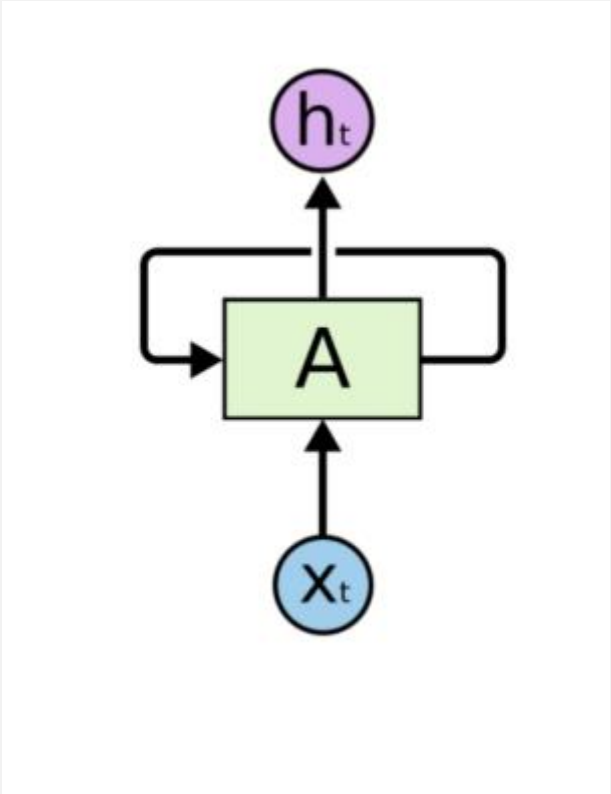
ML/DL Study W05

- Recurrent Neural Network
- Many to one (stacking)
- Many to many
- Many to many (bi-directional)
- Seq 2 Seq



Recurrent NN

RNN



Many to one (stacking)

Many to one

Sequence classification

eg. classify polarity of sentence

sequence : sentence, tokens : word

['This movie is good']

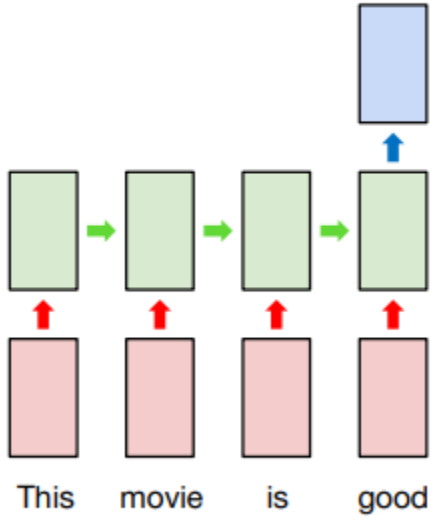
↓ *Tokenization*

['This', 'movie', 'is', 'good']

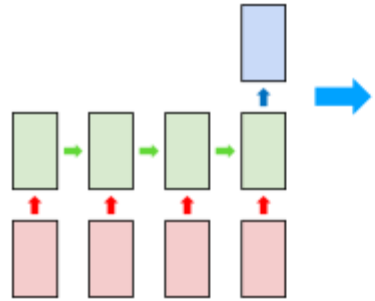
↓ *Classification*

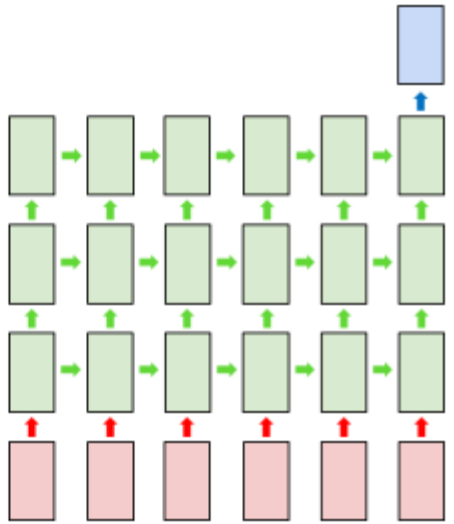
Positive

Classification : Positive or negative?



Many to one (stacking)





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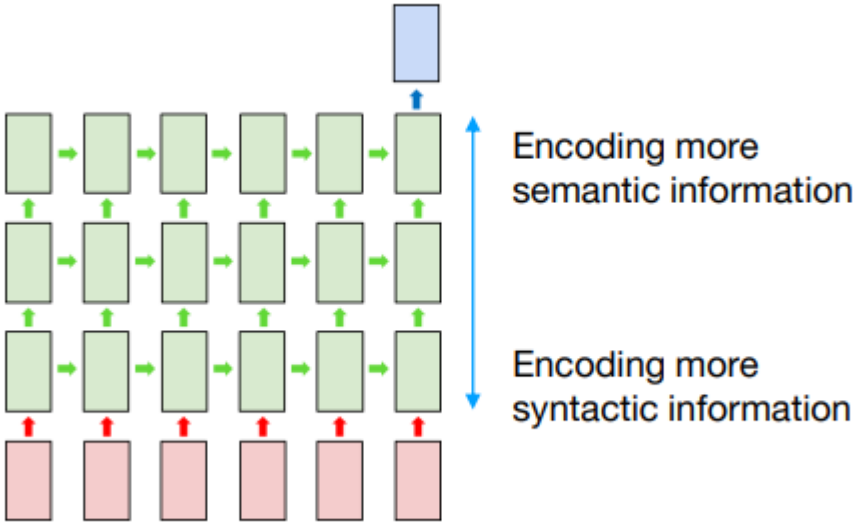


Depending on the task…

Binary entropy loss (binary classifier)
Cross entropy loss (softmax classifier)
Mean squared loss (regression)

Many to many

Many to many

Sequence tagging

eg. part of speech tagging

sequence : sentence, tokens : word

['tensorflow is very easy']

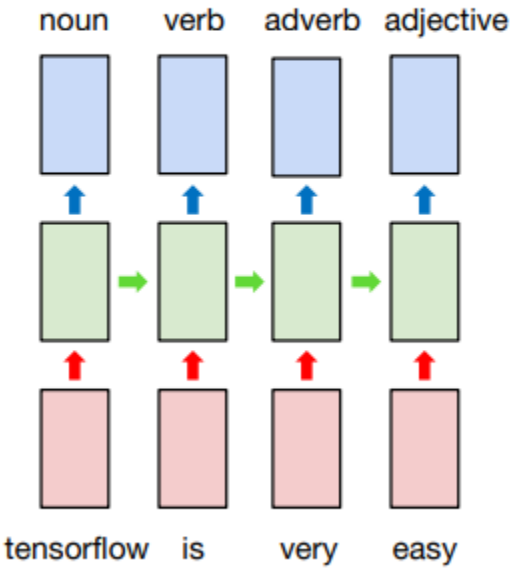
↓ *Tokenization*

['tensorflow', 'is', 'very', 'easy']

↓ *Tagging*

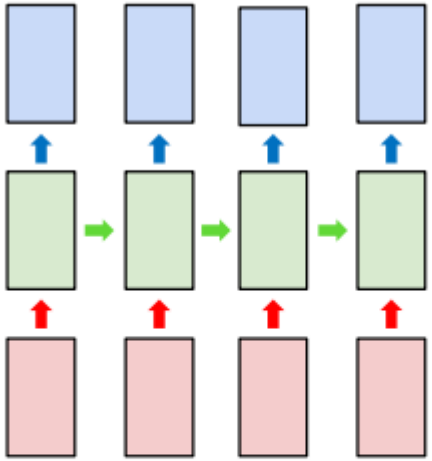
['noun', 'verb', 'adverb', 'adjective']

classification (each time step)



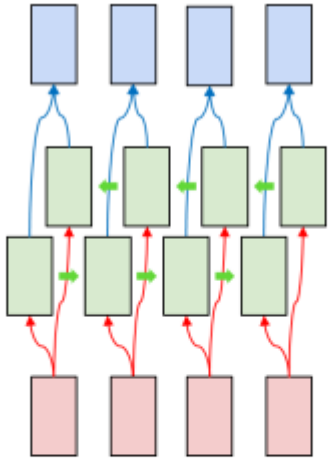
Many to many (bi-directional)

Many to many (bi-directional)



There is imbalance in the amount of information seen by the hidden states at different time steps.

VS



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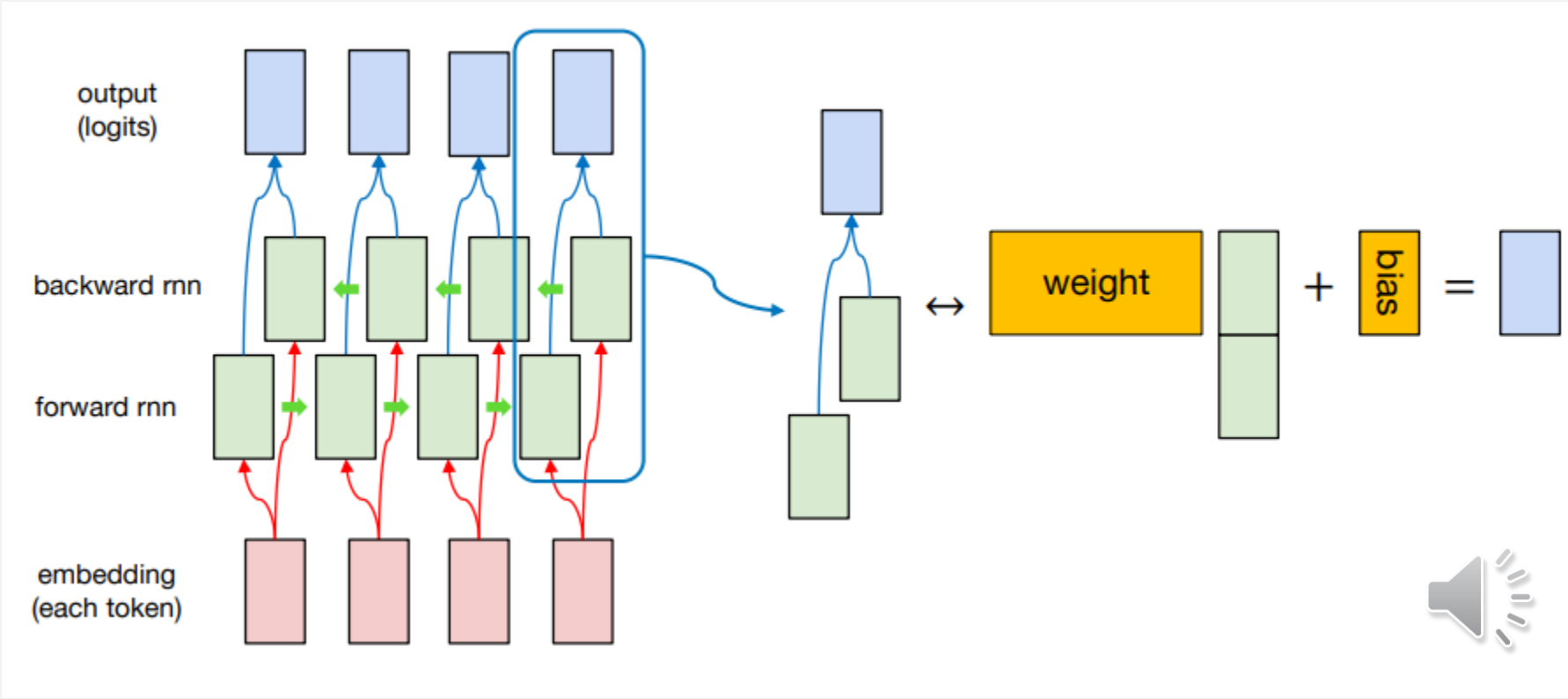
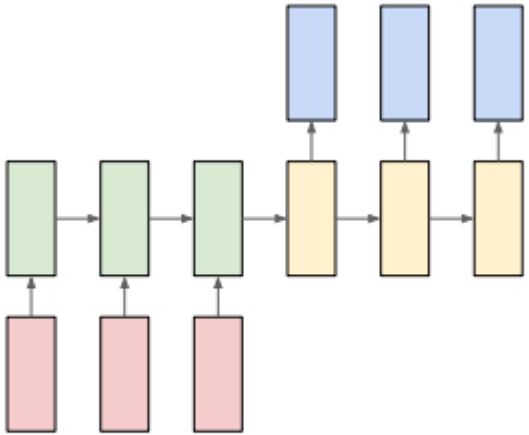
Many to many (bi-directional)



Seq 2 Seq

Seq 2 Seq



Seq2Seq

- Encoder
- Decoder (Attention)
- Train
- Prediction

Problem with Seq2Seq