



deeplearning.ai

Recurrent Neural Networks

Different types of RNNs

Note that: the Recurrent Neural Network before this slide requires $T_x = T_y$

Examples of sequence data

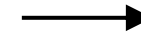
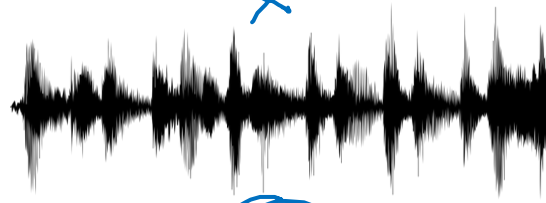
Length of x

T_x

T_y

Length of y

Speech recognition

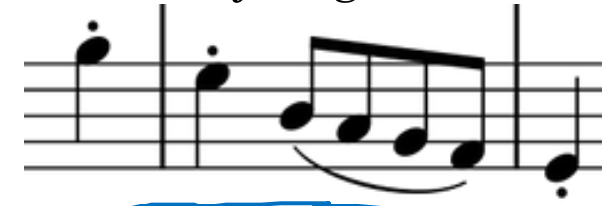
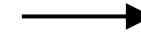


“The quick brown fox jumped over the lazy dog.”

Music generation

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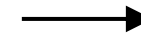
One to many



Sentiment classification

“There is nothing to like in this movie.”

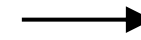
Many to one



DNA sequence analysis

AGCCCCTGTGAGGAACTAG

Many to Many



AG**CCCCTGTGAGGAACT**AG

Machine translation

Voulez-vous chanter avec moi?



Do you want to sing with me?

Video activity recognition



Running

Name entity recognition

Yesterday, Harry Potter met Hermione Granger.

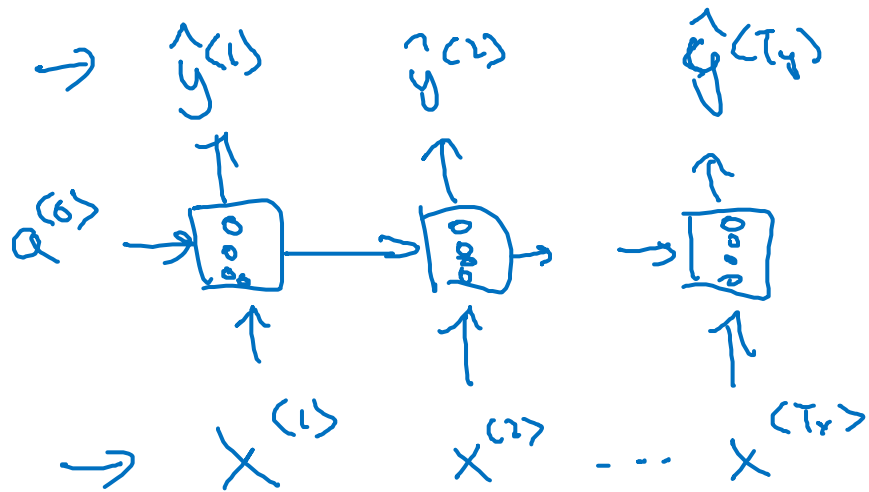


Yesterday, **Harry Potter** met **Hermione Granger**.

Examples of RNN architectures

$$T_x = T_y$$

it has property

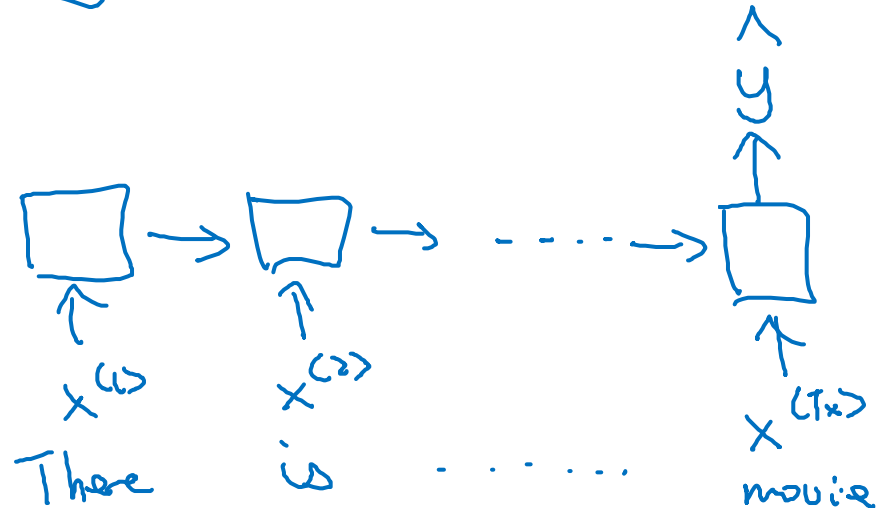


Many-to-many

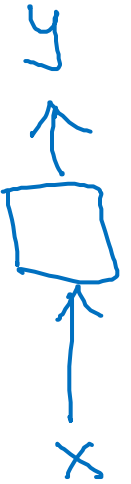
Sentiment classification-

$x = \text{text}$

$y = 0/1 \quad 1 \dots 5$

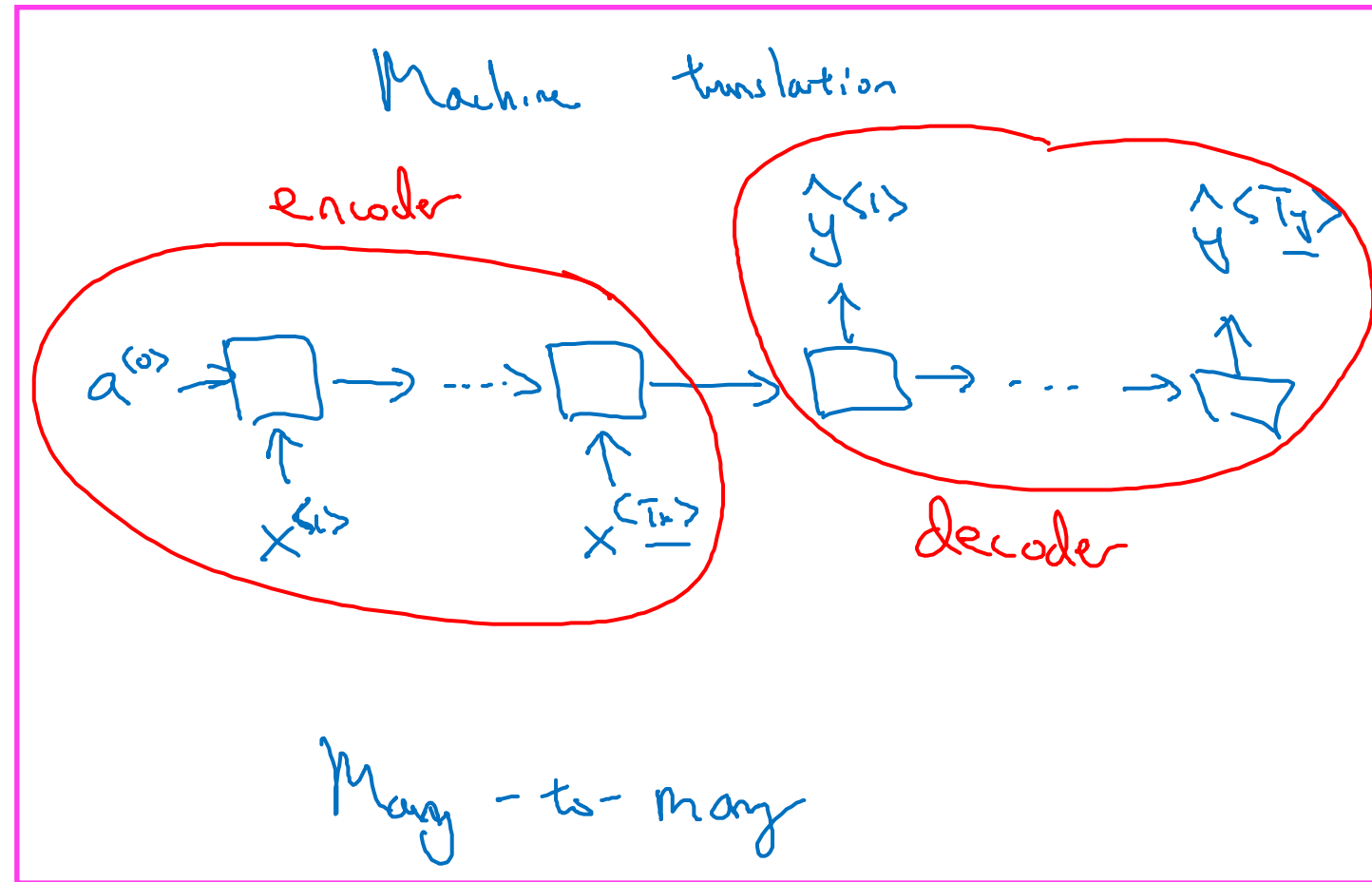
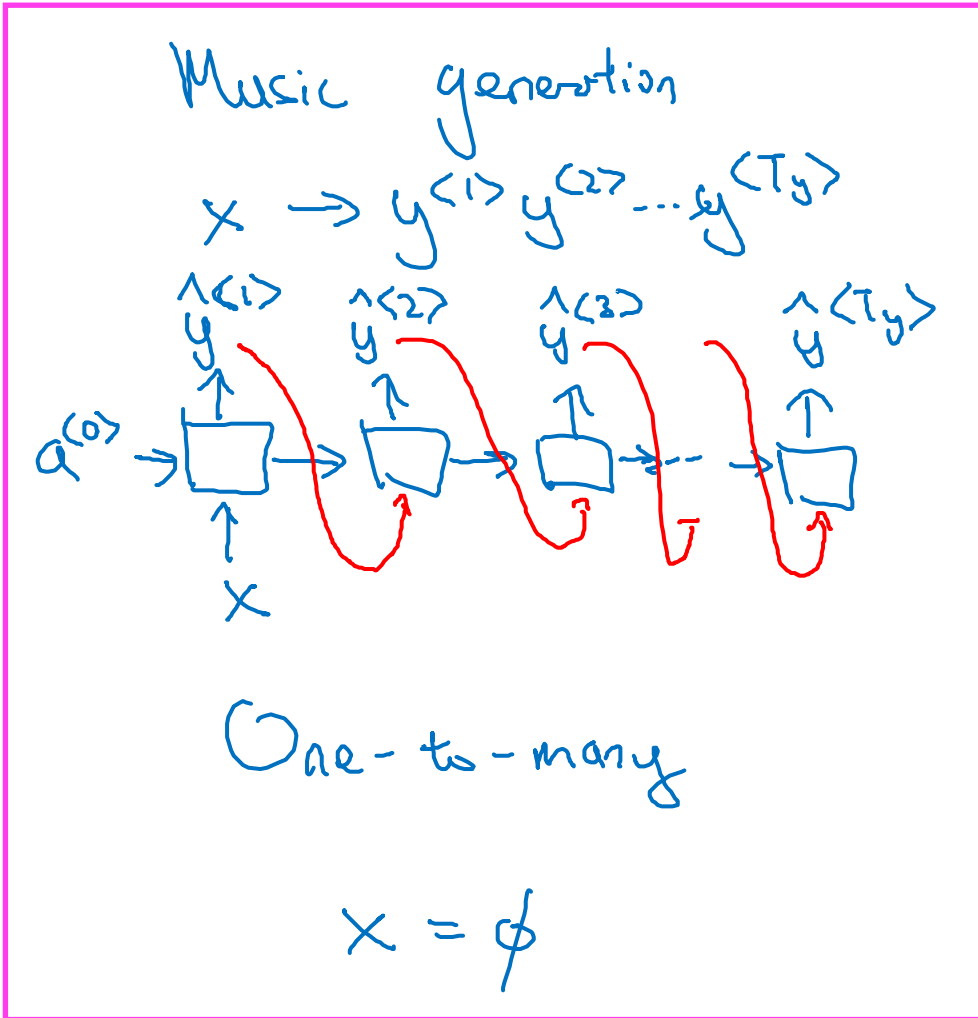


Many-to-one

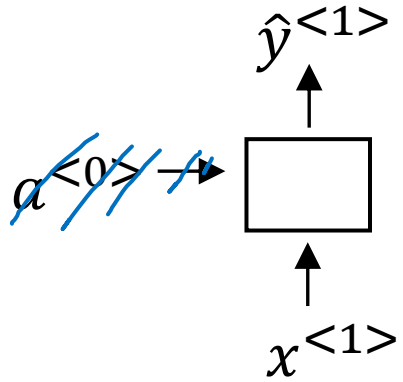


One-to-one

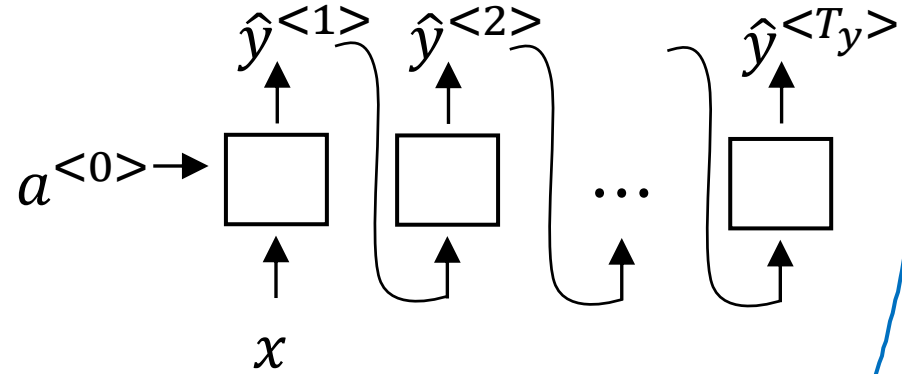
Examples of RNN architectures



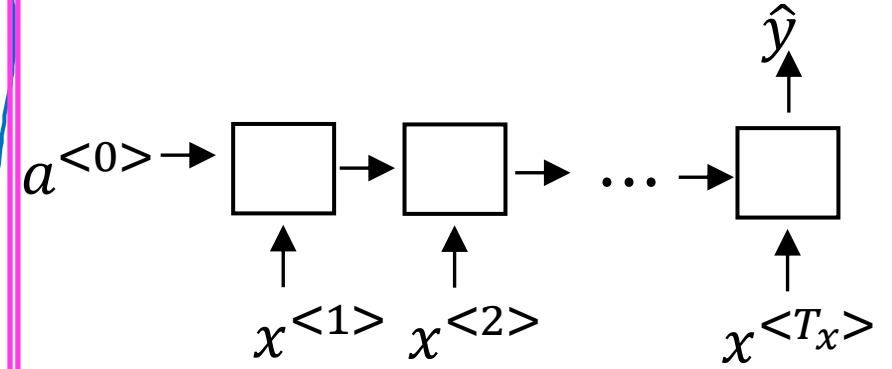
Summary of RNN types



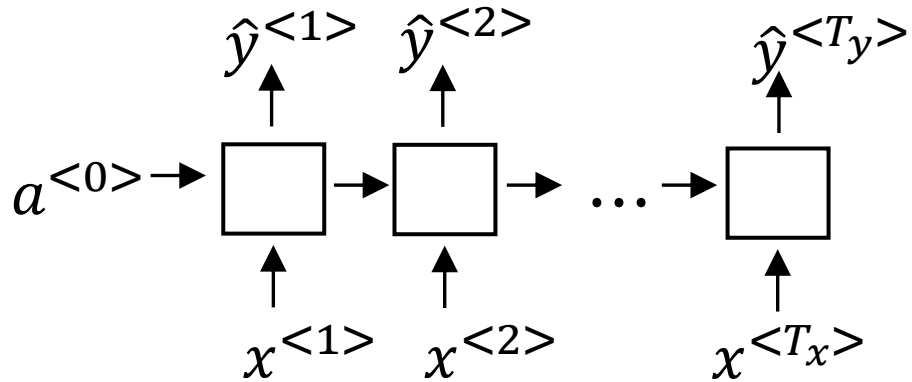
One to one



One to many

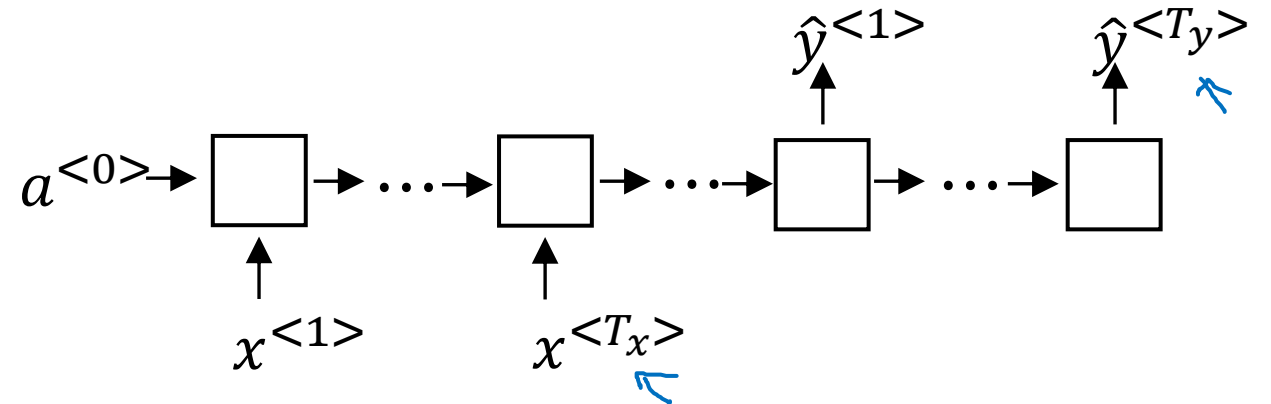


Many to one



Many to many

$T_x = T_y$



Many to many