



deeplearning.ai

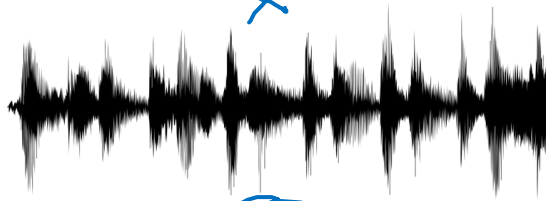
Recurrent Neural Networks

Different types of RNNs

This video was inspired by a long post by Andrej Karpathy titled "The Unreasonable Effectiveness of Recurrent Neural Network"

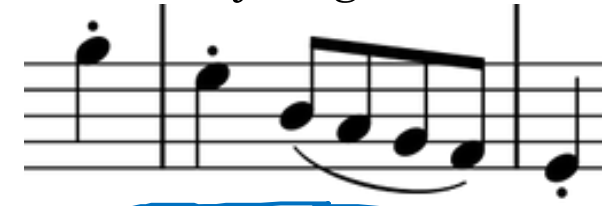
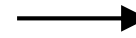
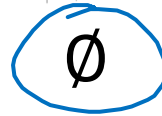
Examples of sequence data

Speech recognition



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

Music generation



Sentiment classification

“There is nothing to like
in this movie.”



DNA sequence analysis

AGCCCCTGTGAGGAACTAG



AG**CCCCTGTGAGGAACTAG**

Machine translation

Voulez-vous chanter avec
moi?



Do you want to sing with
me?

Video activity recognition



Running

Name entity recognition

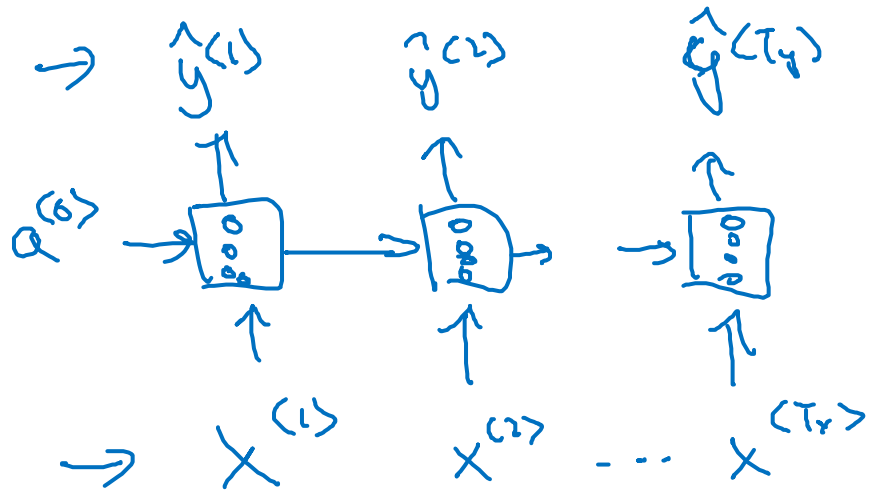
Yesterday, Harry Potter
met Hermione Granger.



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

Examples of RNN architectures

$$T_x = T_y$$

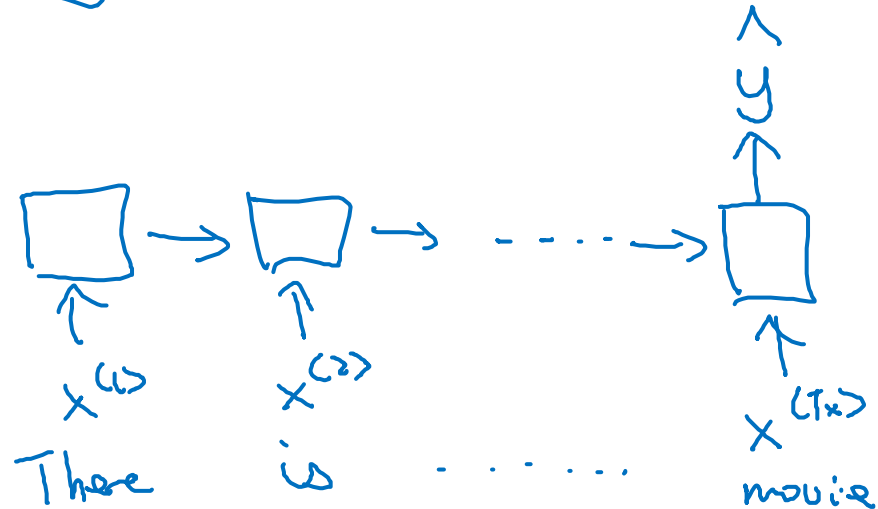


Many-to-many

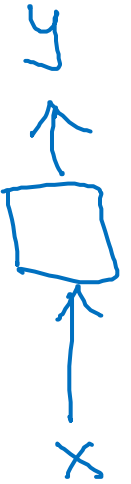
Sentiment classification-

$x = \text{text}$

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

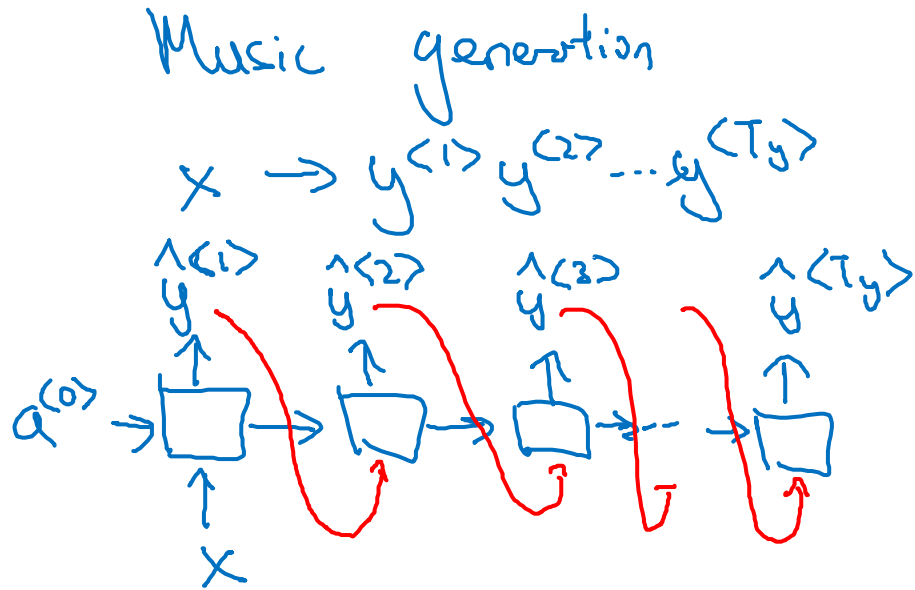


Many-to-one



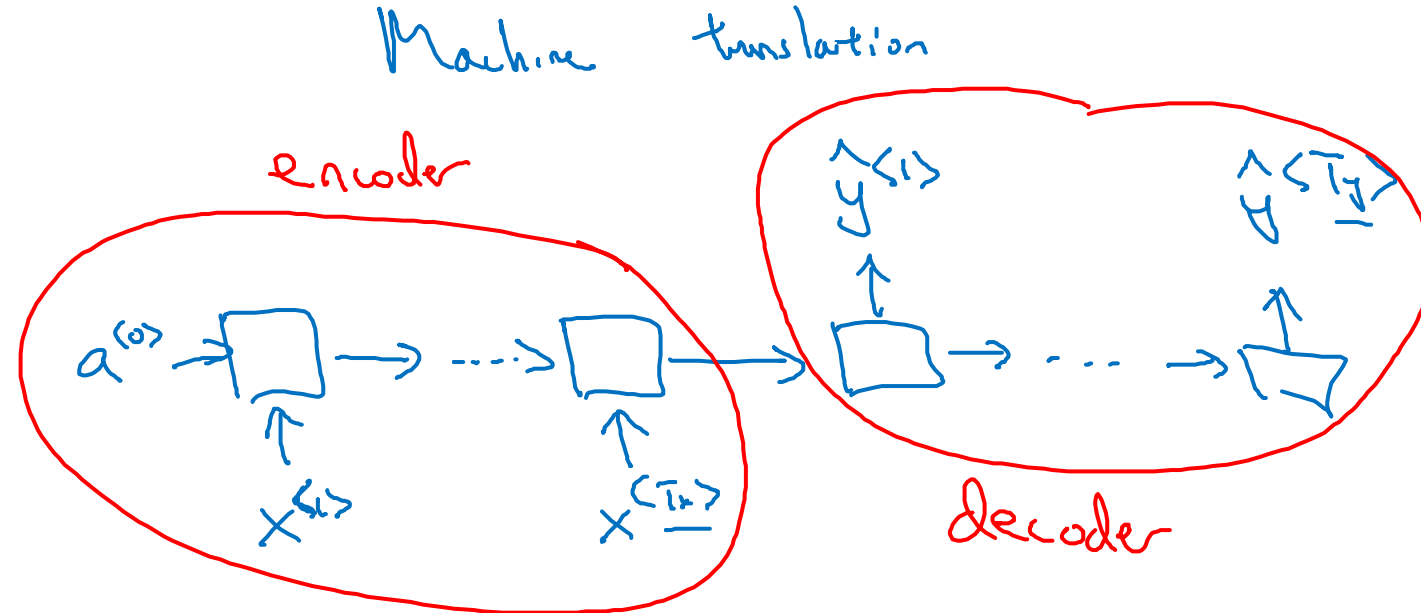
One-to-one

Examples of RNN architectures



One-to-many

$$x = \phi$$



With this architecture, T_x and T_y can be different lengths.

Many-to-many

attention based architecture

Summary of RNN types

