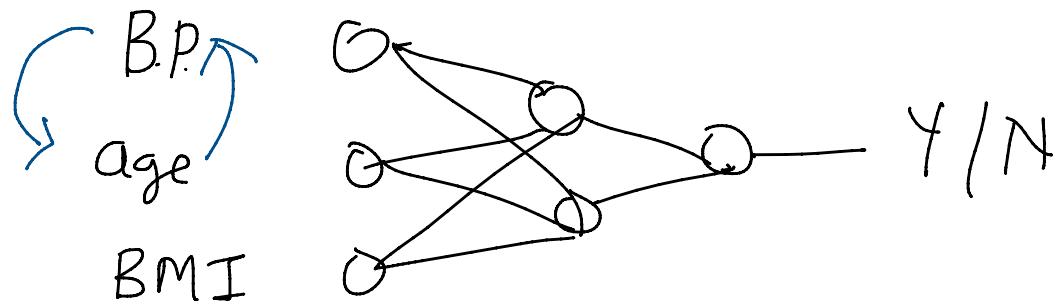


Agenda

1. What is sequential data
2. ANN vs RNN (Seq. data)
3. Sequential data categories
4. Structure of RNN
 - OHE of text
5. Simple RNN implementation
 - movie sentiment analysis
 - Integer encoding of text

Non-Seg. data

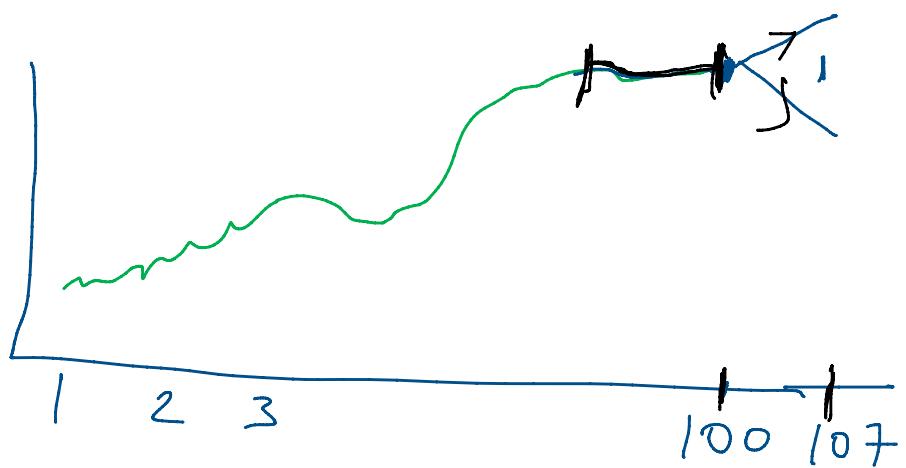


text \times "I am not feeling well"

audio \rightarrow spectrogram

~~Machine~~

T-S. data \rightarrow



Categories of seq. data:

① i/p o/p
Many many \rightarrow trans form

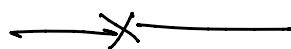
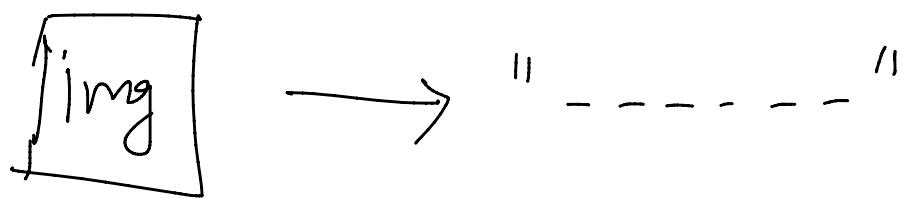
i/p \rightarrow MLM \rightarrow Outcome
10 feature

784 \rightarrow ANN \rightarrow 1

② many to one \rightarrow sentiment analysis.

mom ran "-----" \rightarrow true or -ve

③ one to many \rightarrow image captioning



RNN Structure:

	Review	Sentiment
x_1	x_{11} movie x_{12} way x_{13} good	3.5
x_2	x_{21} movie x_{22} was x_{23} bad	3.5
x_3	x_{31} movie x_{32} was x_{33} not x_{34} good	4.5

* i/p format \Rightarrow [(time step, #i/p features)] 100

movie was good bad not 5
 $[10000]$ $[01000]$ $[00100]$ $[00010]$ $[00001]$

$x_1 \Rightarrow [[\underline{10000}], [\underline{01000}], [\underline{00100}]] \Rightarrow (3, 5)$
 movie was good

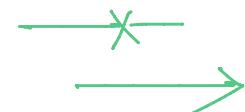
$x_2 \Rightarrow$

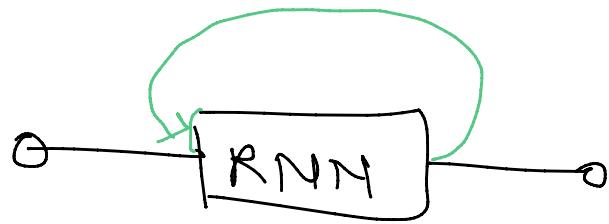
$x_3 \Rightarrow$

$x_{11} \rightarrow \boxed{RNN} \rightarrow o/p t_1$

$x_{12} \rightarrow \boxed{RNN} t_2$

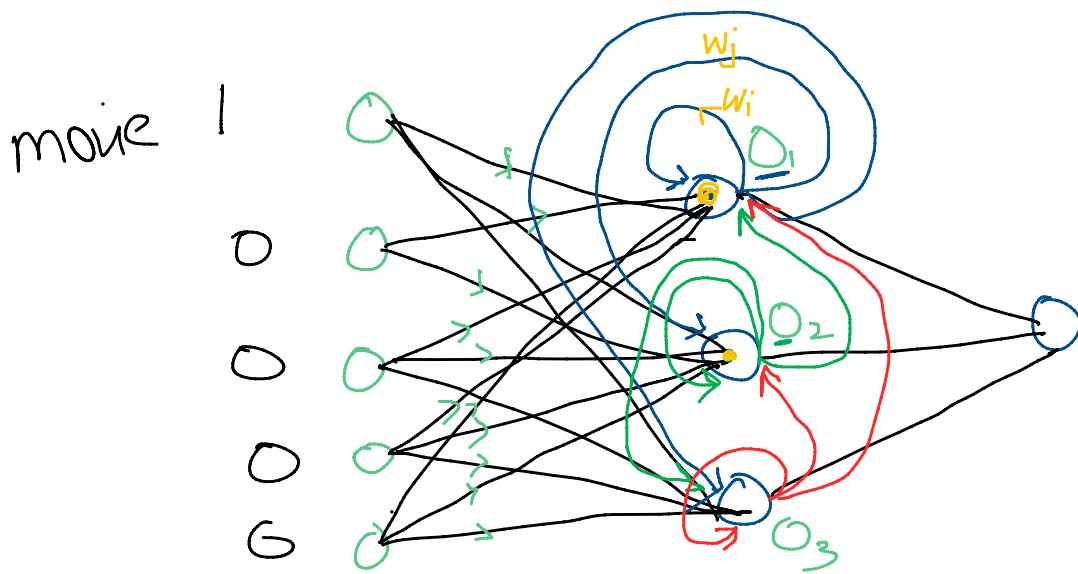
$x_{13} \rightarrow \boxed{RNN} - t_3$



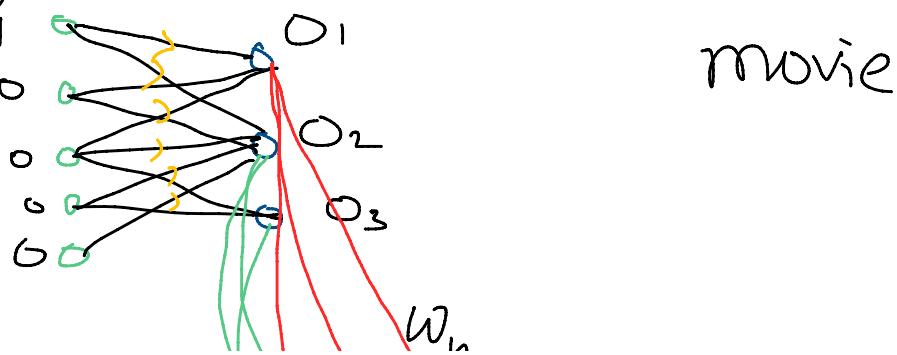


Review

x_1 x_{11} movie x_{12} way x_{13} good
 x_2 x_{21} movie x_{22} was x_{23} bad
 x_3 x_{31} movie was x_{32} x_{33} x_{34} not good



$t=1$ Diagram 2 - RNN



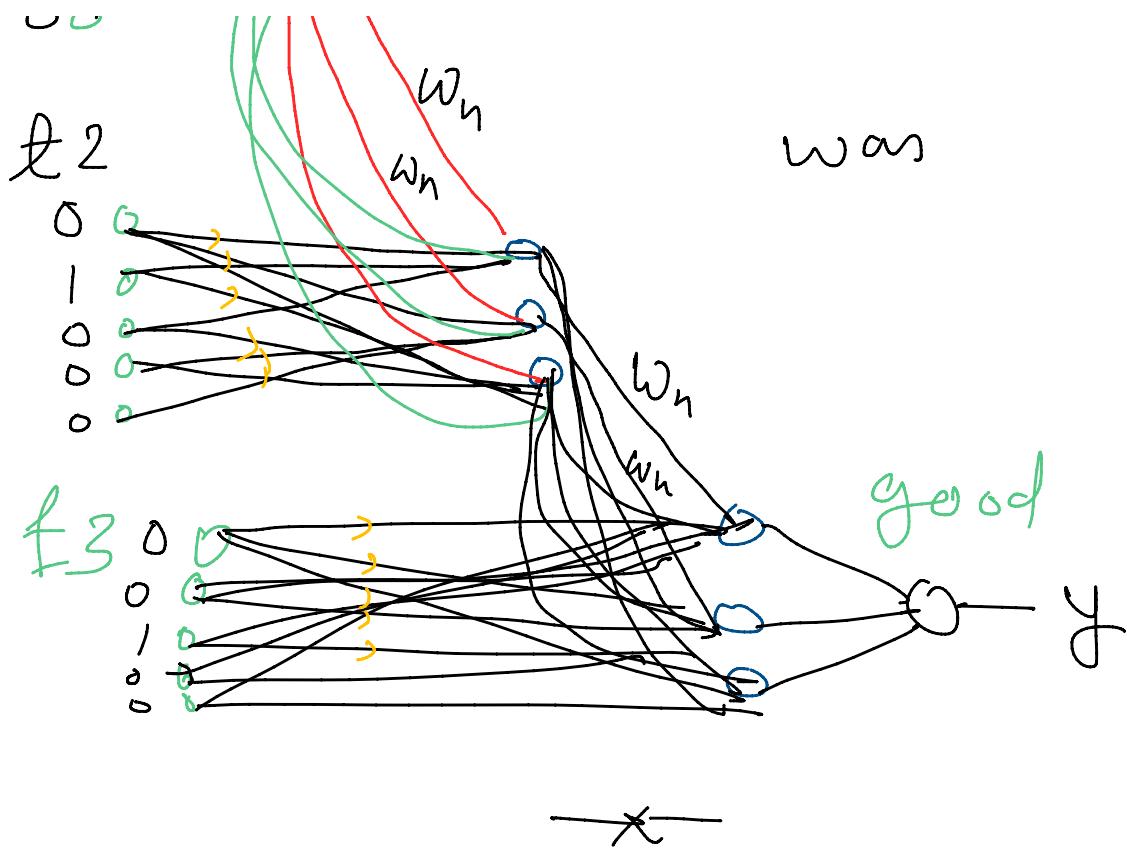
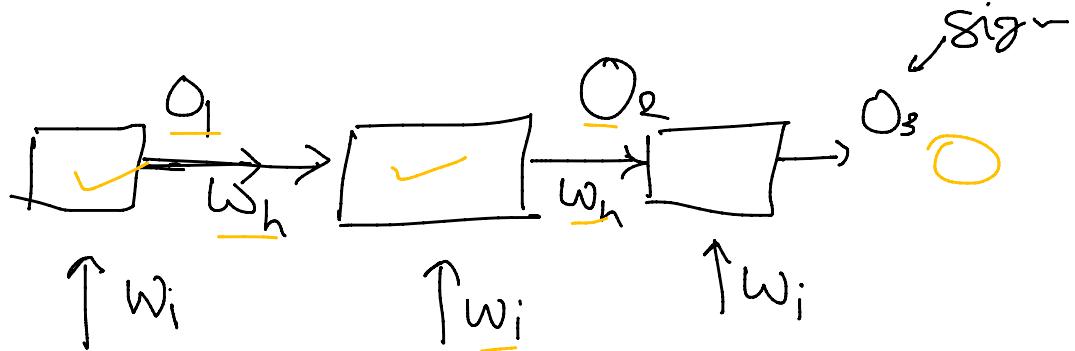


Diagram 3

$$f(x_{11} \times w_i) = o_1$$

$$\tanh \begin{cases} +1 \\ -1 \end{cases}$$

$$f(x_{12} \times w_i + o_1 \times w_h)$$



$$t=1$$

$$\begin{matrix} x_{11} \\ \hline \text{movie} \end{matrix}$$

$$\begin{matrix} x_{12} \\ t=2 \\ \hline \text{was} \end{matrix}$$

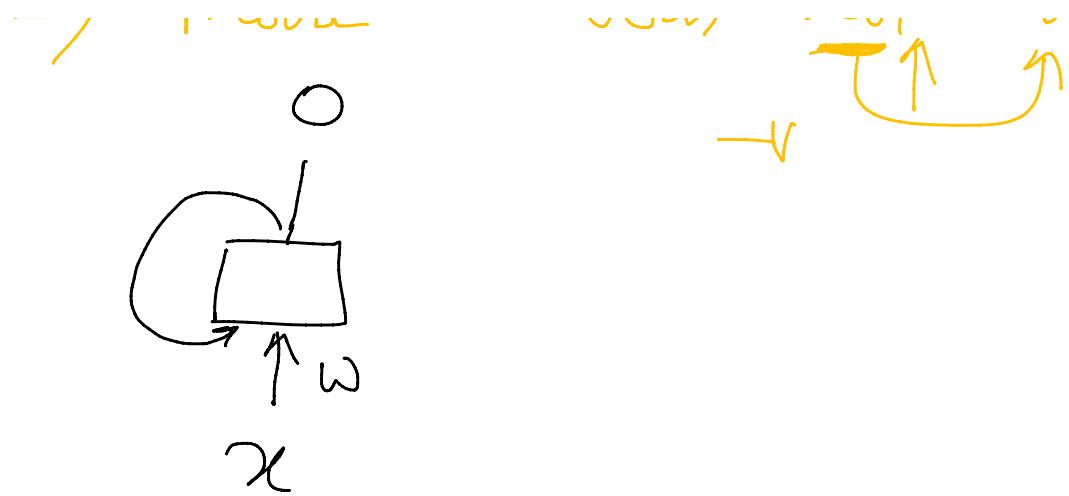
$$x_{13}$$

$$\begin{matrix} t=3 \\ \hline \text{good} \end{matrix} \rightarrow +ve$$

\rightarrow movie

was

not good
 $T \uparrow$



50k \rightarrow [5, 6, 10... 23000000] 200 2294
] 2494

