RNN

28 January 2023 17:44

Agenda

1. Revision ANN & RNN, LSTM
2. Word2vec
3. Implement LSTM with W2V
4. Collecting face img using Open CV.

—x—

ANN

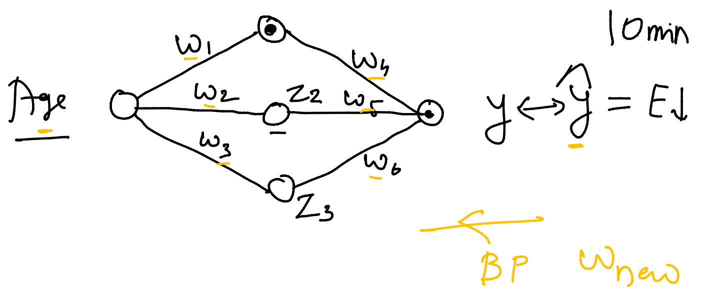
→ FP $Z_1 = f(\text{Age} \times w + b)$

$f(Z) = f(Z_1 \times w_4 + Z_2 \times w_5 + Z_3 \times w_6 + b)$

$= \hat{y}$

→ FP

10 min



model = Sequential ( ) ⇒ ANN

layer = Dense (units = #, activation = " ")

model.add (model) ↗ SGD, MB ....

model . compile (Optimizer, metric, loss) ↘ acc. mae

model. fit(Xt, yt, epochs = , -,)

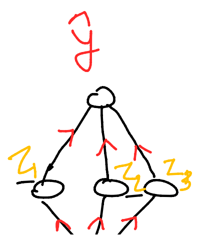
—x—

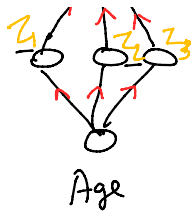
RNN → Sequential

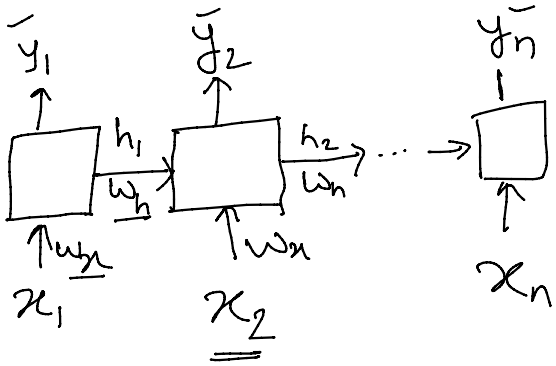
text, TS.

(.....) ⇒

(1 Jan ..... 20 Jan) ⇒ 21st

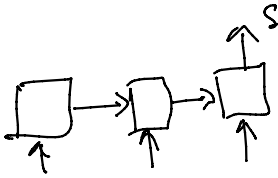






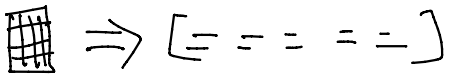
1. Many to one (Seq. to vec.)

[- - - - - -] ⇒ +ve / -ve
0 / 1

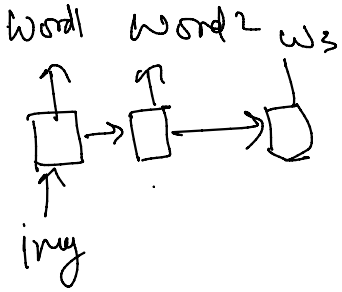


2. One to many (vec. to seq.)

image caption



vect.

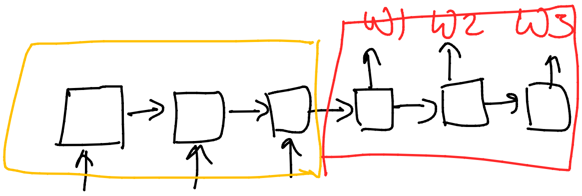


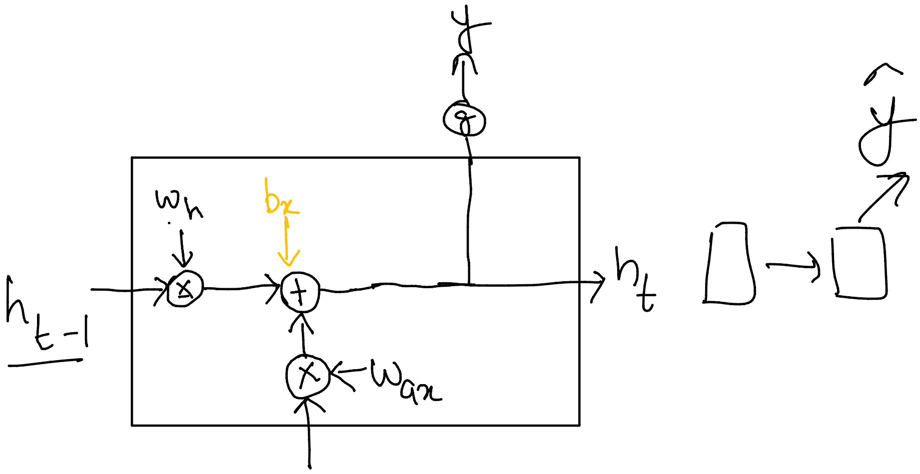
3. Seq to seq (many to many)

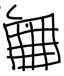
3. Seq to seq (many to many)

machine translatn

Zulu [- - - - -] ⇒ Eng [. - - - - . .]

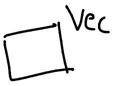




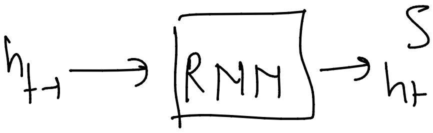
vec  100x100

M1 ⟶ M2, M3

vec 40 col^n

[Cant + crew + plot + genre] 

Seq



Short term memory

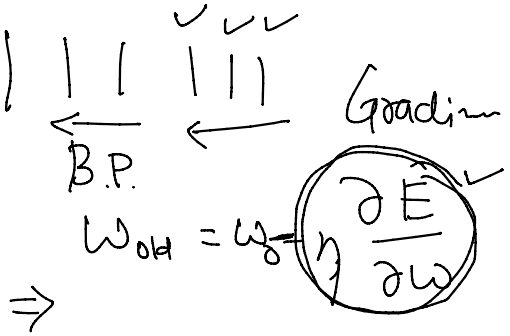
I didn't like the product .....

But after using it for 2 good prod.

The 1st half of the movie good

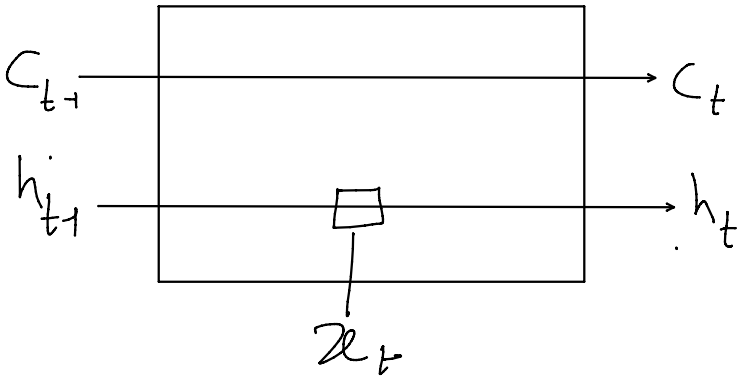
⇒ The 1st half of the movi good but 2nd half was quik boring

.....



LSTM ⇒

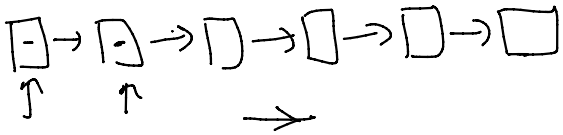
Long short term memory

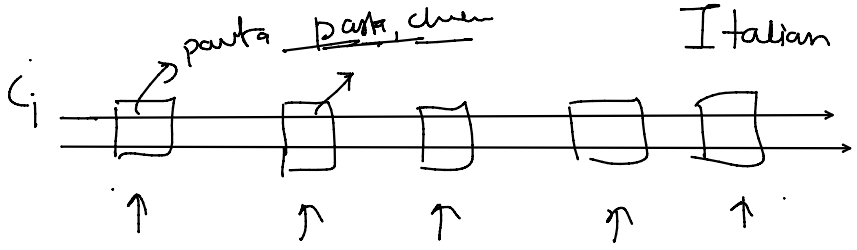


— — — — ~~~

Ahmed eats pasta & cheese, — —
— — his fav. cusine is italian.

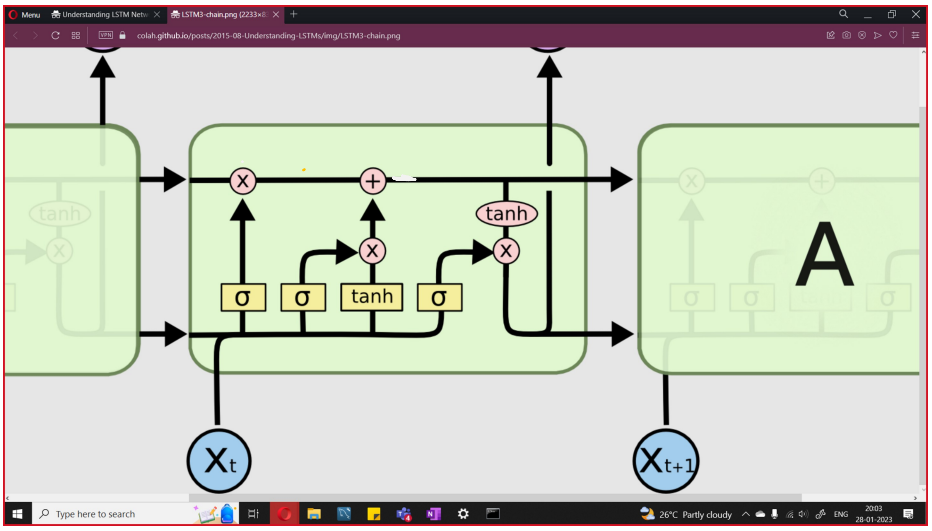
RNN





Para

i/p
Forgot
o/p



LSTM (⟶)

W2V ⇒ CBOW, Skipgram

BoW, OHE, TF-IDF

1 like this book

1 dont like this book

OHE
I like this
I: [1 0 0]
like: [0 1 0]
this: [0 0 1]

Tokenization

I → 1

like → 2

this → 3

	I	like	this	book	don't
① →	1	1	1	1	0
② →	1	1	1	1	1

Word embedding

word ⇒ vector

book [0.5, 0.60, 1, 0.33] 5,500,100

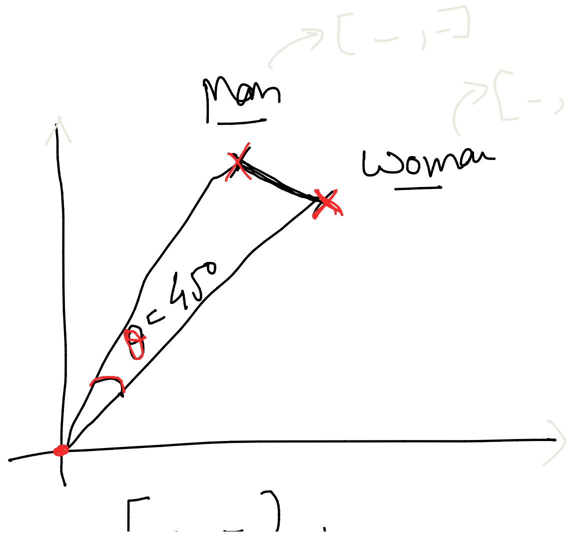
magzine [0.6, 0.4, 0, 0.9, 0.47]

3 billion

Feature List

	Man	Woman	King	Queen	Apple
Gender	-1	1	-0.98	-0.93	0.01
Royalness	0.001	0.005	0.96	0.97	0.01
Age	0.003	0.004	-	-	=
food	0.001	0.01	0.003	=	0.96

King − Man + Queen = Woman

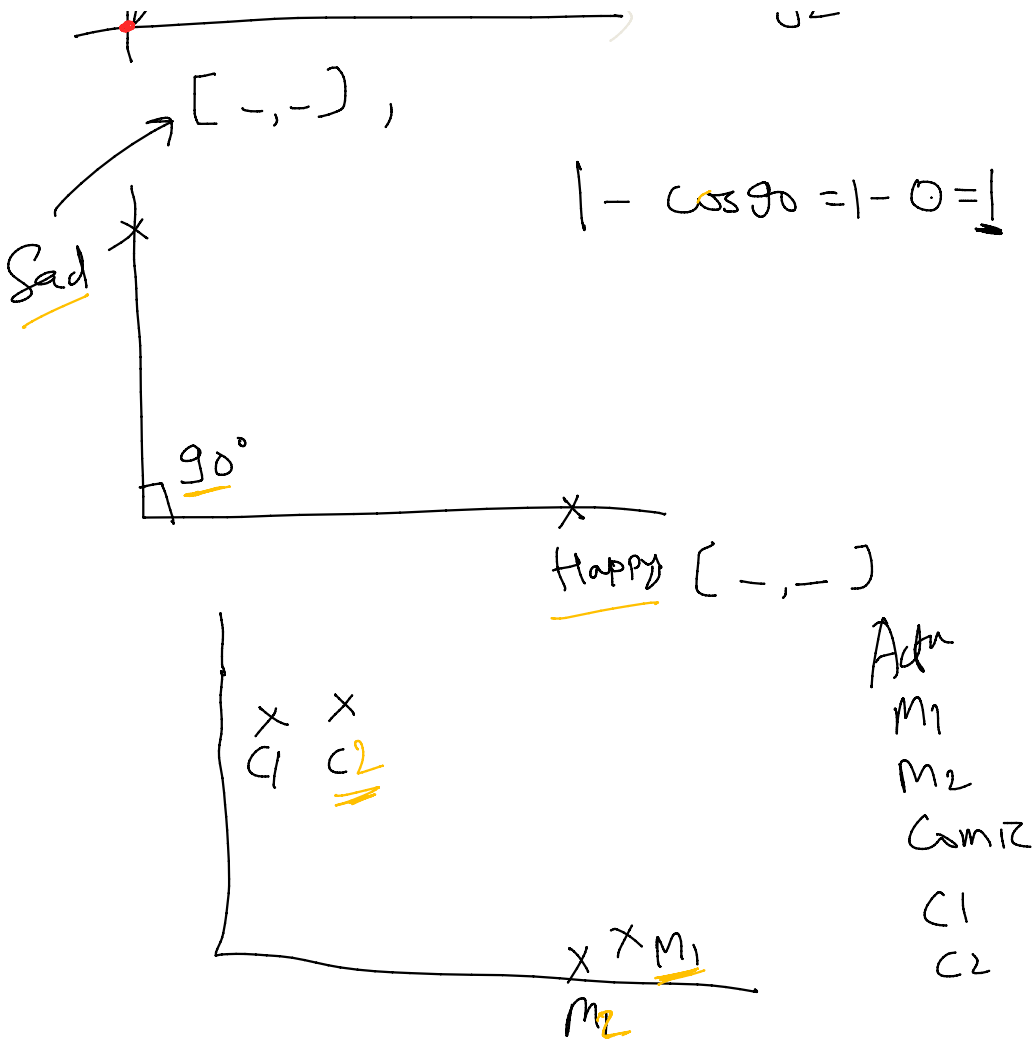


cos θ

Dist = 1 − cos θ

1 − cos 45°

$1 - \frac{1}{\sqrt{2}} = 0.2....$



Corpus → Vocab size

3 B

text data

text data = Word 2 Vec ⇒ Sup ⇒ i/p ⇒ o/p

CBOW

Digital Regenesys offers courses in Data Sci. ←

Window size = 5 / odd no.

300

VGG16

i/p

Digital, Regencsys, courses, in

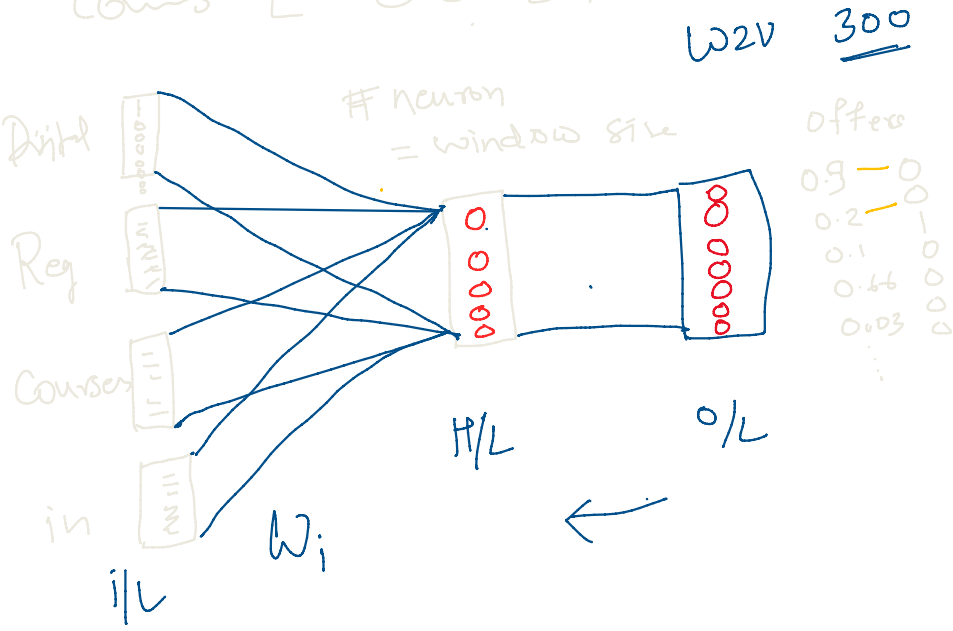
Regcnsys, offers, in, Data

o/p

offers

Courses

in



RNN / LSTM

[Courses]

1→ 10

2→ 22

3→ 30

4→ 40

I_{250}

rew.
sent.
P
N
seq to vec
RNN
LSTM
P
[1,0]
N
[0,1]
LSTM
L.C.
S.W.
⇒ W2V
Imdb movies review
data
Kaggle