RNN (Recurrent Neural Network)

RNN is a type of sequential model. It is good for sequential data.

Text as sequential data

1) Time-series
2) speech
3) DNA sequence

Text preprocessing

Paragraph → Sentence → word →

one-hote encoding

Row 1 = [[1,0,0,0][0,1,0,0][0,0,1,0][0,0,0,1]]

Row 2 = [[1,0,00], [0,1,00]]

Row 3 = [[1,0,0,0] [0,1,0,0] [0,0,1,0]]

Why to use RNN?

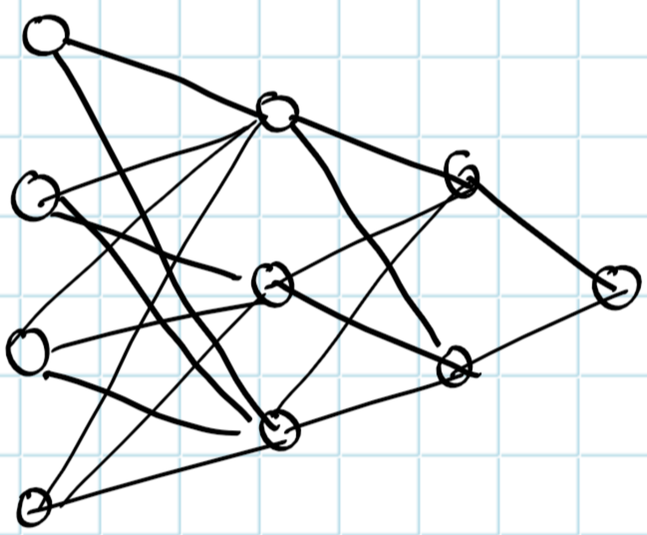
	Review	Sentiment
1	My name is amit	Positive
2	Data science	Negative
3	I love AI	—

Row1 [1,0,0,0]

[0,1,0,0]

[0,0,1,0]

[0,0,0,1]



Note- In ANN and CNN

because of input size always same, padding will be required.

more padding,

more computation powel,

more time complexity

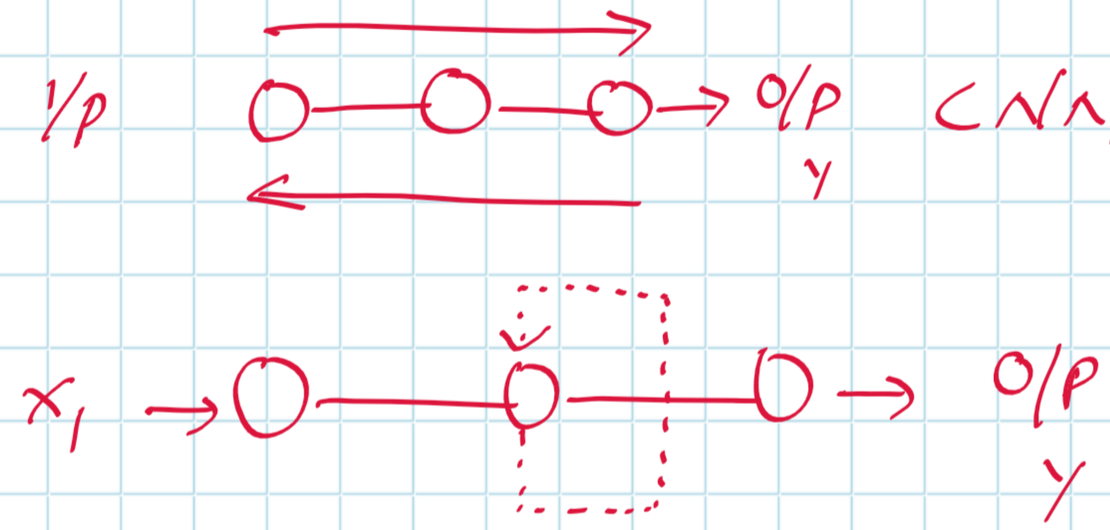
#Cons / Disadvantage / limitation-

1) Text input varing size
2) zero padding - unnessesory
3) prediction problem
4) loosing sequentical information

So that, A Network proposed in 1980, RNN recursive (again, again, again)

Sequencial A, B, C, D - - - - - - - - - - - - - - - - - - X, Y, Z

Reverse seqn. Z, Y, X - - - - - - - - - - - - - - - - - - C, B, A,



in RNN output becomes input again and again

Hello - We have 5 characters in 'hello' so it will unroll 5 time.