RNN : • RECURRENT NEURAL NETWORK

• For ~~making~~ sequential ~~models~~ data

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• Output of one ~~o~~ node layer used as the input for ~~sub~~ future layers

• It is used to only process sequential data

Types of RNN

1) Sequence to sequence : • Mainly used for time series forcasting

2) sequence to vector : • The output is a vector.

3) Vector to sequence : • Image captioning.
(vector)
• ~~Image~~ → sequence

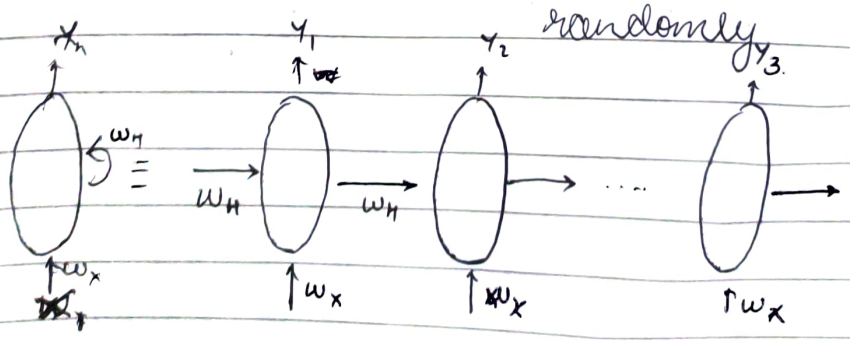
4) Encoder Decoder : • Used for translation

• Process the entire sequence before giving output. It is similar to sequence to vector

5) Types of weight matrices : • For input state

• For hidden state

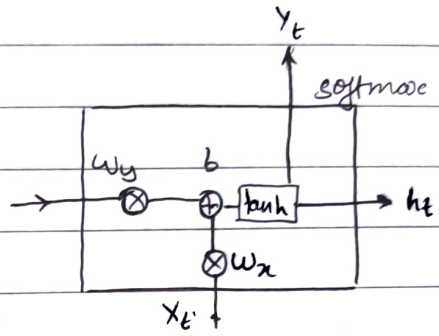
→ The weights are initially chosen randomly



- BPTT [Backpropogation Through Time]
  - The weights are updated through ~~tt~~ iteration of the program
  - It updates the weights based on minimizing the ~~tt~~ loss.

Output Calculation:

$$y_t = a(W_x x_t + W_y y_{t-1} + b)$$



softmax : Multi class classification.

Bias: A special factor that has importance so that it affects the entire output

Data Set : Split into Train & Test data.

Use keras Sequential Model to & make the RNN ~~dat~~ ~~sequence~~ model

→ Input Layer → RNN Layer → Dense Output Layer.

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- Researchers used Q-bits to run multiple calculations together for reinforcement learning.