Date: 16-Oct 2024

Applications of RNN:

- Sentiment Analysis
- Next word prediction
- Generating image caption demo
- google translate
- Question and Answering

Data for RNN:

- Data format for RNN is {timesteps, input_feature}

		(X) Review	sentiment
X_1	1	movie was good	1
X_2	2	movie was bad	0
X_3	3	movie was not good	0

movie → [1 0 0 0 0]
was → [0 1 0 0 0]
good → [0 0 1 0 0]
bad → [0 0 0 1 0]
not → [0 0 0 0 1]

* review-1: [[1 0 0 0 0], [0 1 0 0 0], [0 0 1 0 0]]

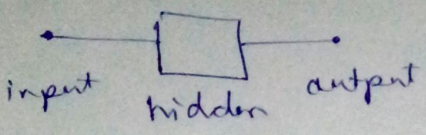
(3, 5) Here,
3 → number of timestep
5 → number of feature

* for review-2 (3, 5)
* for review 3 (4, 5)

- in keras for simple RNN Data format is {batch_size, timesteps, input_features}

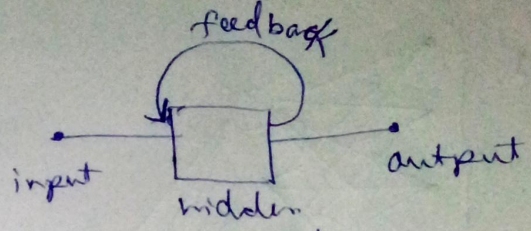
example for above data (3, 4, 5) → 3D Tensor

How RNN works:



ANN

- feed forward neural network



RNN

- the input data feed is based on time basis

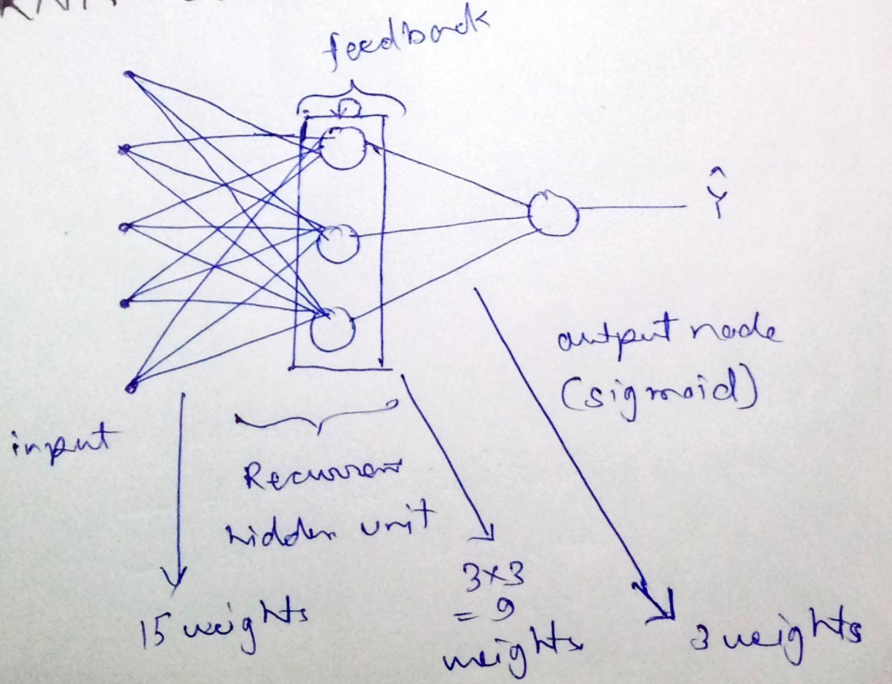
time. word

X_1 { $t=1$ X_{11}
$t=2$ X_{12}
$t=3$ X_{13}
⋮ ⋮

similarly for other.

- it is not a feed forward neural network

RNN overview architecture:



Total 27 weights.