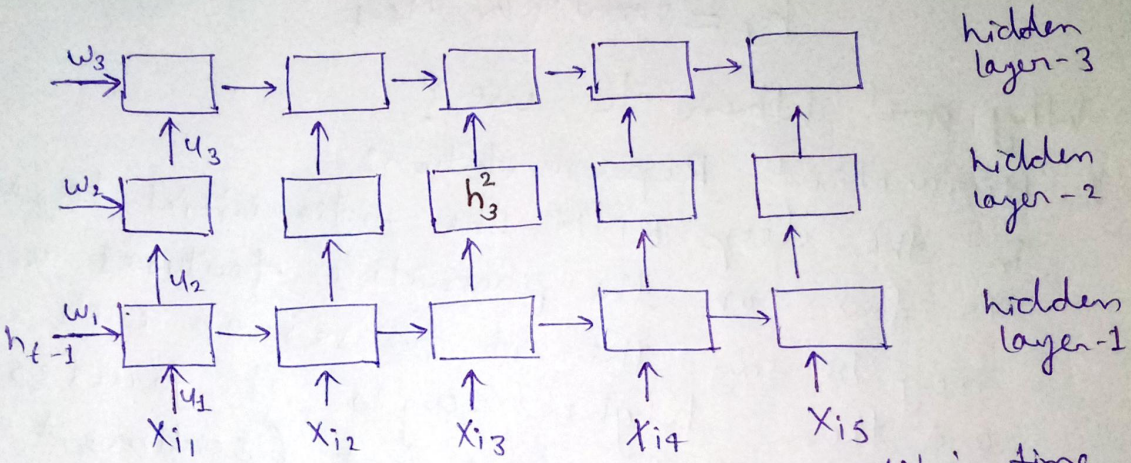
23 Oct 2024

DEEP RNN

Deep RNN:

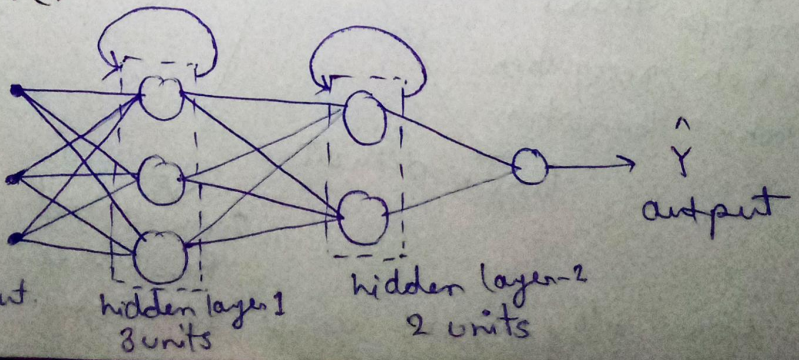
- A deep recurrent neural network (DRNN) is a type of ~~deep~~ deep learning model that uses feedback connections to process sequential data and make predictions.

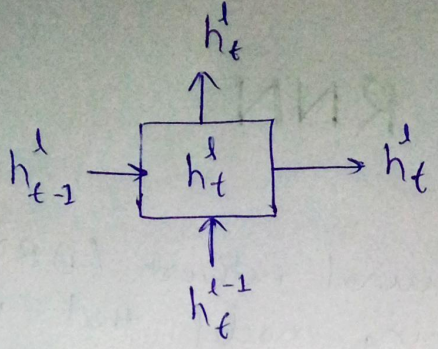


architecture unfolding RNN in time.

- Deep RNN is stacking on RNN cell on top of each other and unfolding all of them in time step.
- in Deep RNN the number of unit in each hidden layer may be same or different.

Architecture:

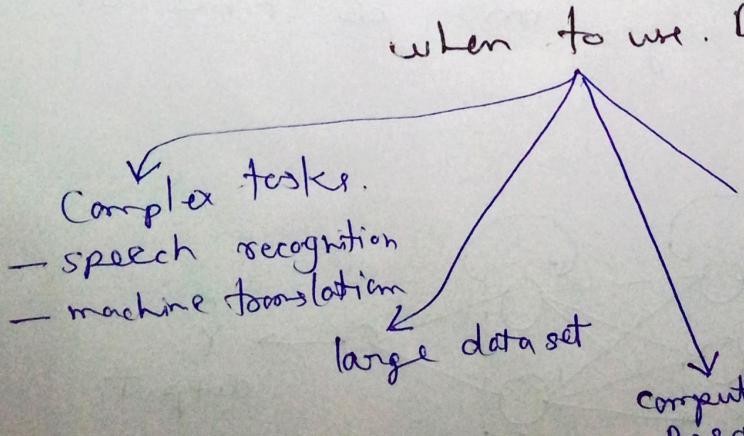




$$h_t^l = \tanh\left(W^l h_{t-1}^l + U^l h_t^{l-1} + b\right)$$

Why and When to use?

1. Hierarchical Representation:
   In the deep RNN the initial layer is focus on the primitive features we may be say the it focuses on each words and then higher layer it focuses. overall feature/sentiment (sentiment analysis) on all sentences.
2. Customization for advanced tasks:
   build encoder-decoder for attention mechanisms.



— we can also make deep LSTM and deep GRU