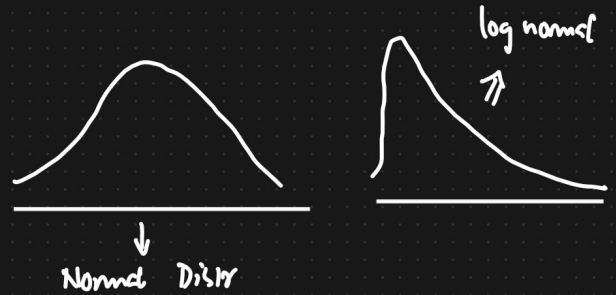
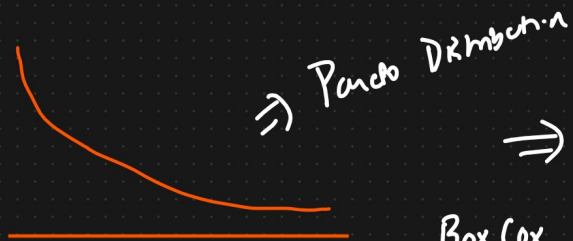


# Day 7 → Natural Language Processing

RNN ⇒ Forward Propagation

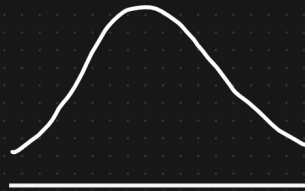


Stats : 1<sup>st</sup> Interview

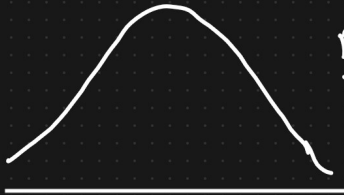


⇒ Pareto Distribution

⇒



Box Cox  
Transform.



Follows

⇒

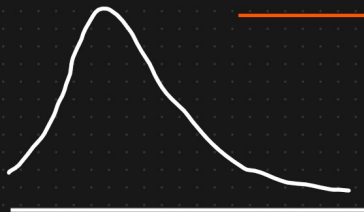
Normal or Gaussian Distrib

↓

{ Q-Q plots }

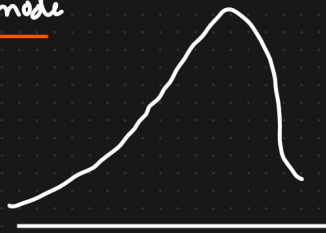
Standard Normal Distribution ??

Ⓐ



mean, median & mode

Ⓑ

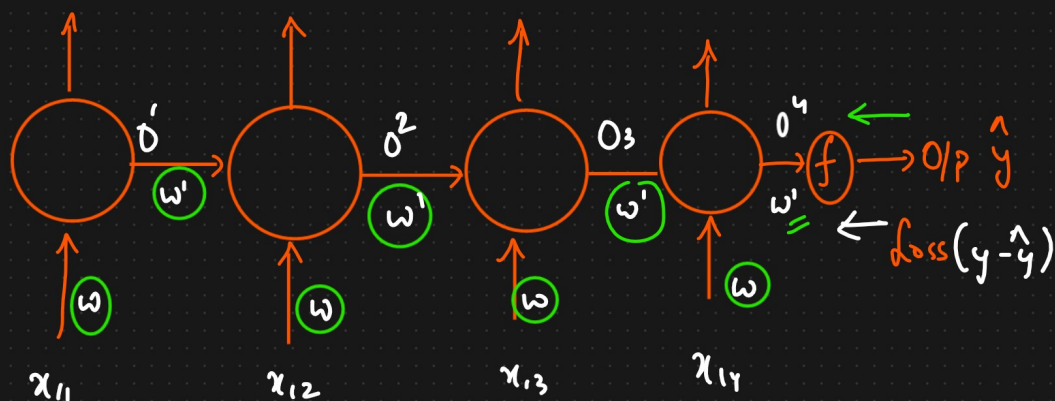


⊛ Diff fit-transform and transform

fit-predict method?

⊛ Normalization And Standardization ??

RNN



$\langle x_{11}, x_{12}, x_{13}, x_{14} \rangle$

$$o_1 = f(x_{11} * w)$$

$$o_2 = f[(x_{12} * w) + o_1 * w']$$

$$o_3 = f[(x_{13} * w) + o_2 * w']$$

$$o_4 = f[(x_{14} * w) + o_3 * w']$$

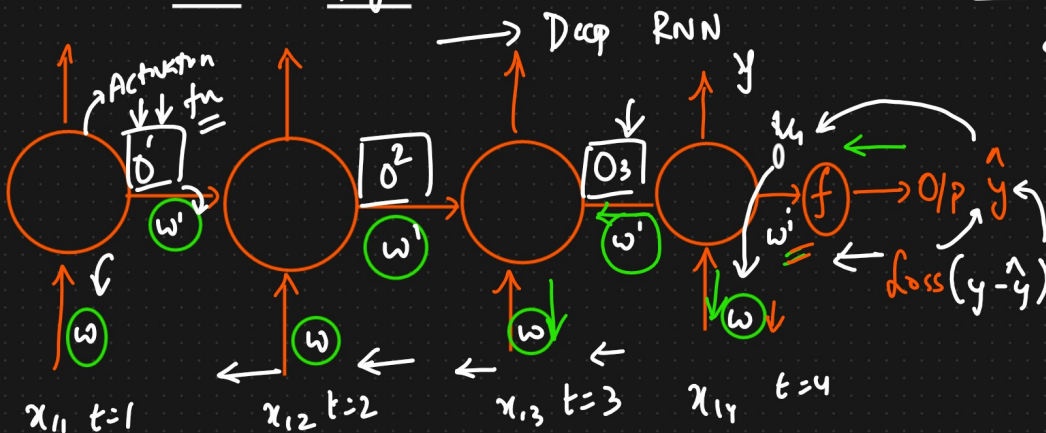
loss  $\rightarrow$  segment

Epochs  $\Rightarrow$  Early Stopping

Sigmoid  $\Rightarrow$  0 to 1

Derivation(Sigmoid)  $\Rightarrow$  0 to 0.25

Backward Propagation



My Name is KRISH and I want to eat pizza

Weight Update formula

$$w'_{\text{new}} = w'_{\text{old}} - \eta \left[ \frac{\partial h}{\partial w'} \right]$$

$$w_{\text{new}} = w_{\text{old}} - \eta \frac{\partial h}{\partial w_{\text{old}}}$$

$$\frac{\partial h}{\partial w'} = \frac{\partial h}{\partial \hat{y}} * \frac{\partial \hat{y}}{\partial w'}$$

$\Rightarrow$  Chain Rule

$$\frac{\partial h}{\partial w} = \frac{\partial h}{\partial \hat{y}} \cdot \frac{\partial \hat{y}}{\partial o_4} \cdot \frac{\partial o_4}{\partial w}$$

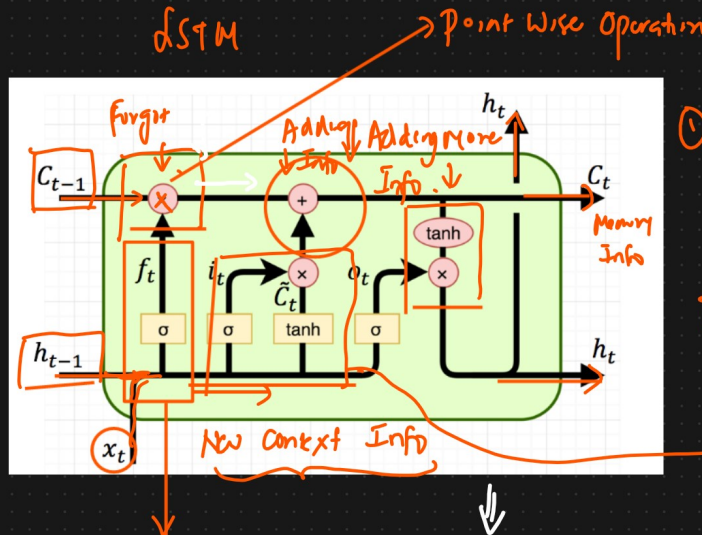
$$\frac{\partial h}{\partial w'} = \frac{\partial h}{\partial \hat{y}} * \frac{\partial \hat{y}}{\partial o_y} * \frac{\partial o_y}{\partial w'}$$

LSTM RNN  $\Rightarrow$  { Long Short term Memory  
Recurrent Neural N/w }

$\downarrow$  continuation

- ① Memory cell
- ② Forget cell
- ③ Input cell

{ forget cell  
memory cell  
Input layer }



① Memory cell { Reconn  
bir } { Forget }

KRISM like DS

{ Yann LeCun like CNN - - }

Practical Appl python} Forget cell

Detailed Architecture

Why LSTM RNN instead of RNN ??

- ① Vanishing Gradient or Dead Neuron
- ② Context Info. Deep RNN { Huge }  $\Rightarrow$  Gap