Neural Networks

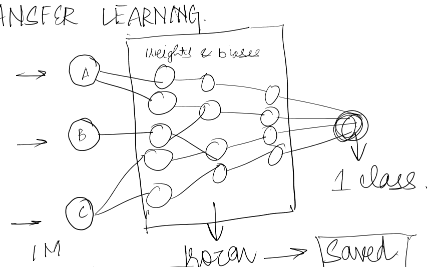
23 April 2023 11:16

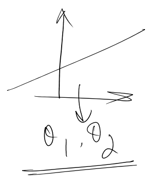
→ One of the most popular ML

→ Different types of NN:

- CNN : Image data
- RNN : Text data
- ANN : DL
- Transformers & Conformers
- FNN

* TRANSFER LEARNING

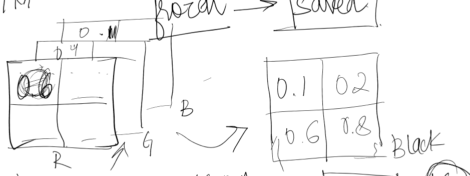




VGG-16

↳ for any img classification

Image Dataset Format



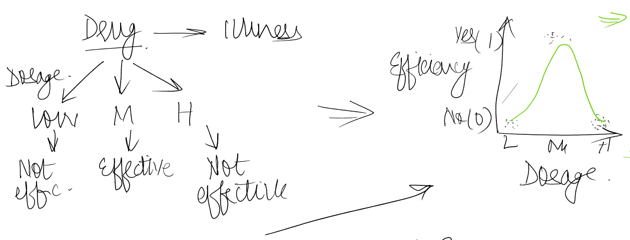
108 x 108 x 3 x 16 M → 100 → 16 → 1600.

Neural Networks

1. What is NN?
2. What NN does?
3. How NN fits on data?
4. Backpropogation (GFG Blog)
5. Variations

c/a BLACK BOX ⇒ because it is difficult to understand what happens inside a NN

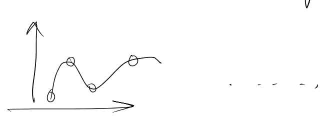
EXAMPLE :



⇒ No st line that can perfectly fit on such complex data

⇒ st line can predict only 2/3 dosages

* NN as shown can squiggle to any complex data.



* Concept & Composition of NN

NN consist of nodes & connections b/w nodes.

→ Node : represents parameter values that were estimated when NN was fit to a data
↓
similar to slope & intercept of LR

→ NN starts w unknown parameters & these are estimated during fitting using a process c/a BACKPROPOGATION.

Assuming BP is completed

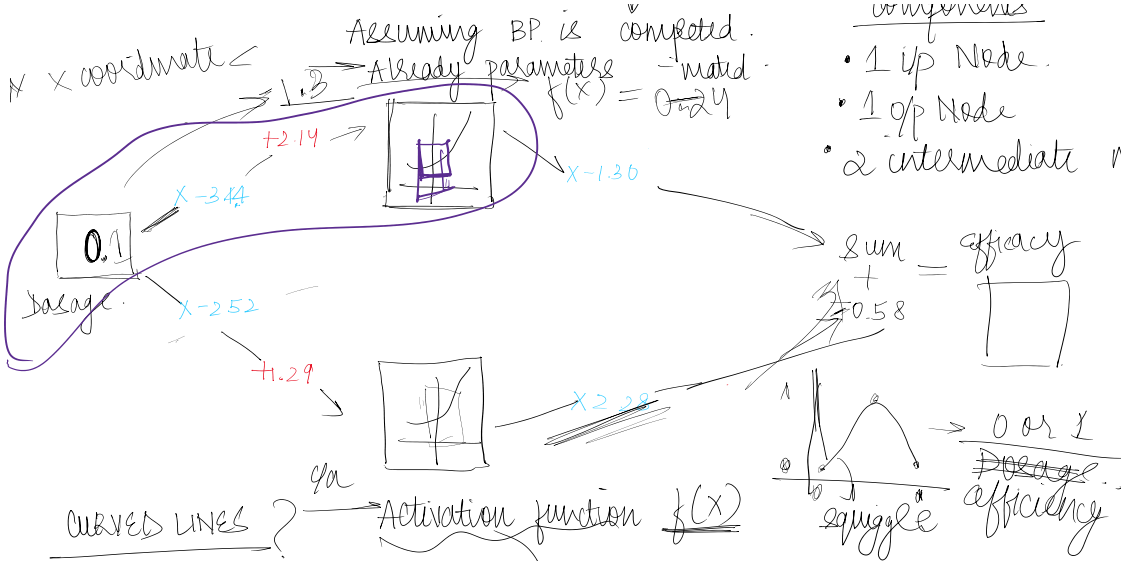
→ Already parameters -mated

x coordinates

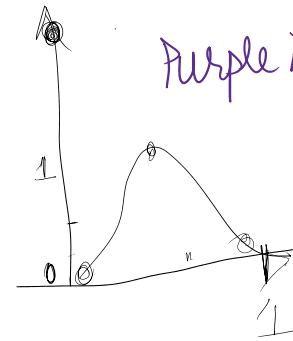
Components

• 1 i/p Node

Purple Part



components
- 1 i/p Node.
- 1 o/p Node
- 2 intermediate nodes



CURVED LINES ? → Activation function f(x)

↳ Building blocks of the final squiggle that fits on our data

which one you want to use
you can decide while building the NN

→ Sigmoid. $f(x) = \frac{e^x}{e^x + 1}$

→ ReLU (Rectified Linear Unit) $f(x) = \max(0, x)$

↳ practically

→ Softplus: $f(x) = \log(1 + e^x)$