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ML

Mod-3

Non-linear learning

$f = mx + c$

$$\theta_{t+1} = \theta_t - \alpha \frac{df}{d\theta}$$

$x_1 = (x_1)^2$

$x_1 w_1$
$x_2 w_2$
$x_3 w_3$

$y = x_1 w_1 + x_2 w_2 + x_3 w_3 + x_4 w_4 \ldots\ldots$

$y = \Sigma x_i w_i$

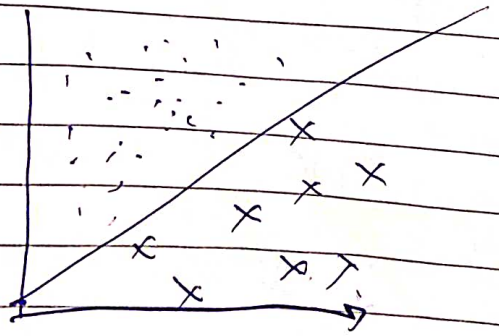
Linear Reg

$y = \Sigma x_i w_i$

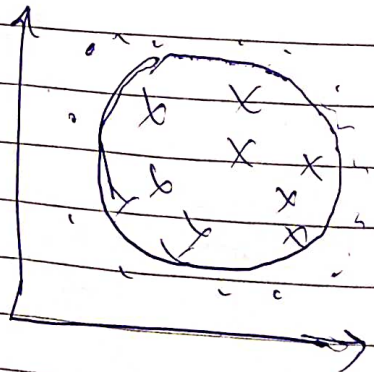
Logistic Reg

$$z = \frac{1}{1 + e^{-y}}$$

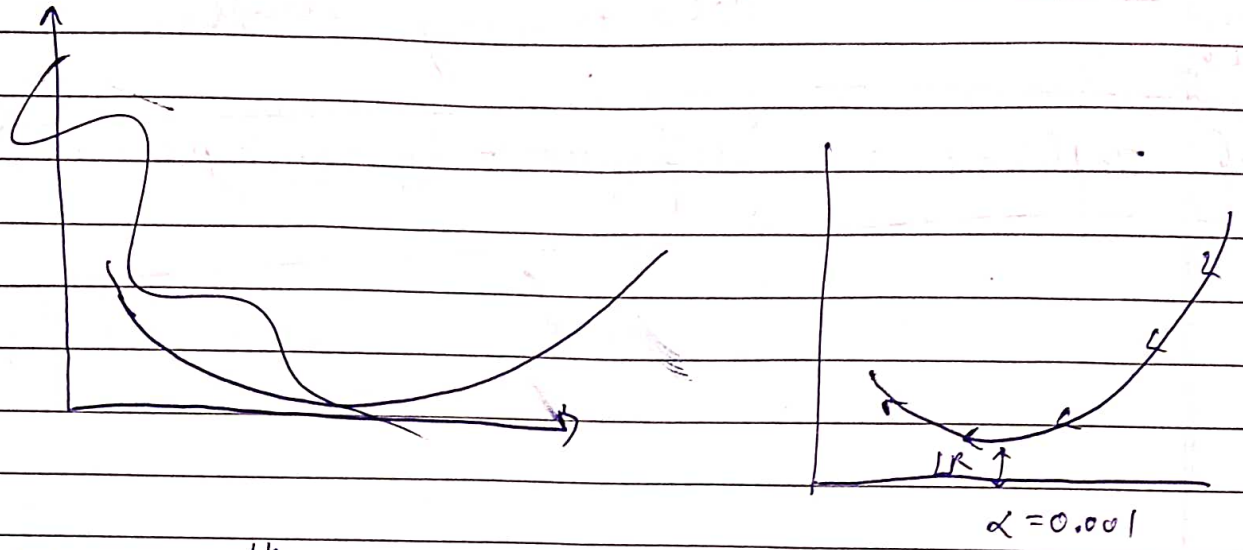
Linear



Logistic



If either the data seperation or weight is linear, then linear regression can be applied



Activation f^n → cost function

1. Stochastic GD (Smaller dataset)
2. Batch GD
3. Mini batch GD (Larger dataset)

1000 training samples

Model

x_1 →

Batch GD → cost cale^n one time entire batch one time

Disadvantage

training of noise as well in iteration causes overfitting

~~Wlen dat~~

Mini batch — smaller batch size like 50 for 1000 training sample

(LAB)

Exp-6 Implement a classification - logistic regression problem

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ML

Module-3

Perceptron
- ↳ use supervised learning
- ↳ use target set data
- ↳ works best with binary data

Feed Forward
- & move only in forward direct
- No feedback

Radial bias

use radial bias in activation func^n activate neuron

RNN
- ↳ RL?

Hopfield

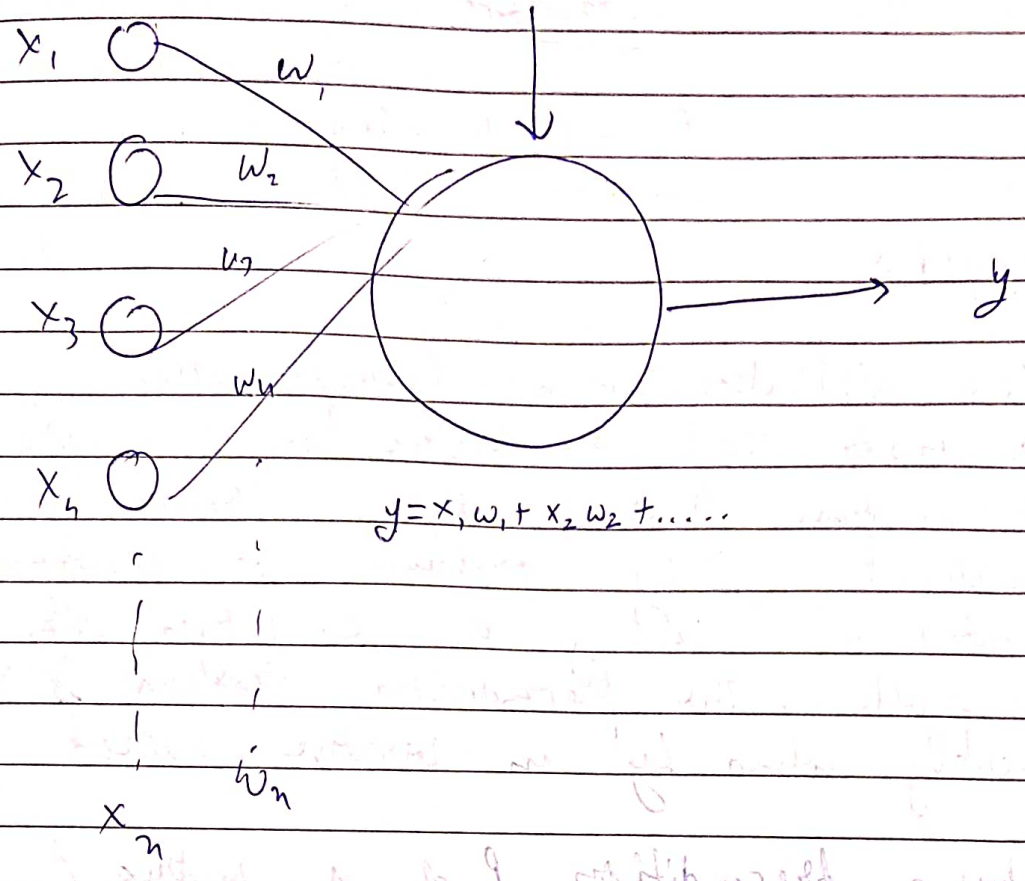
each layer is given specific feature to be extracted

Categorical
- Ordinal
- ranked

Bias

how less the spread
how similar they are

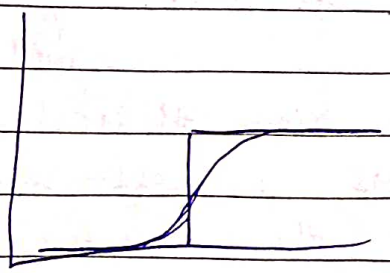
bias



Smooth Curve

$\frac{1}{1+e^{-x}}$ Sigmoid fun^n

logistic regression - classification



Inversion in tan h ?

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ML

Perceptron Model Representation

bias → designs the boundary line

Sigmoid classification → Logistic classification

Updating weight till error reduces

Threshold Unit

$$z = \begin{cases} 1 & \Sigma x_i w_i > \theta \\ 0 & \Sigma x_i w_i < \theta \\ -1 & \Sigma x_i w_i = \theta \end{cases}$$

Instance 1

$z = 0.8 \times 0.4 + .3 \times (-0.2) = 0.26$

$z = 1$

$t = 1$

So, weights won't change for this iteration

Instance 2

$z = 0.14 \rightarrow 1$

$z = 1$

$t = 0$

Weight should change

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Multi Layer Perceptron

Backpropagation - ?

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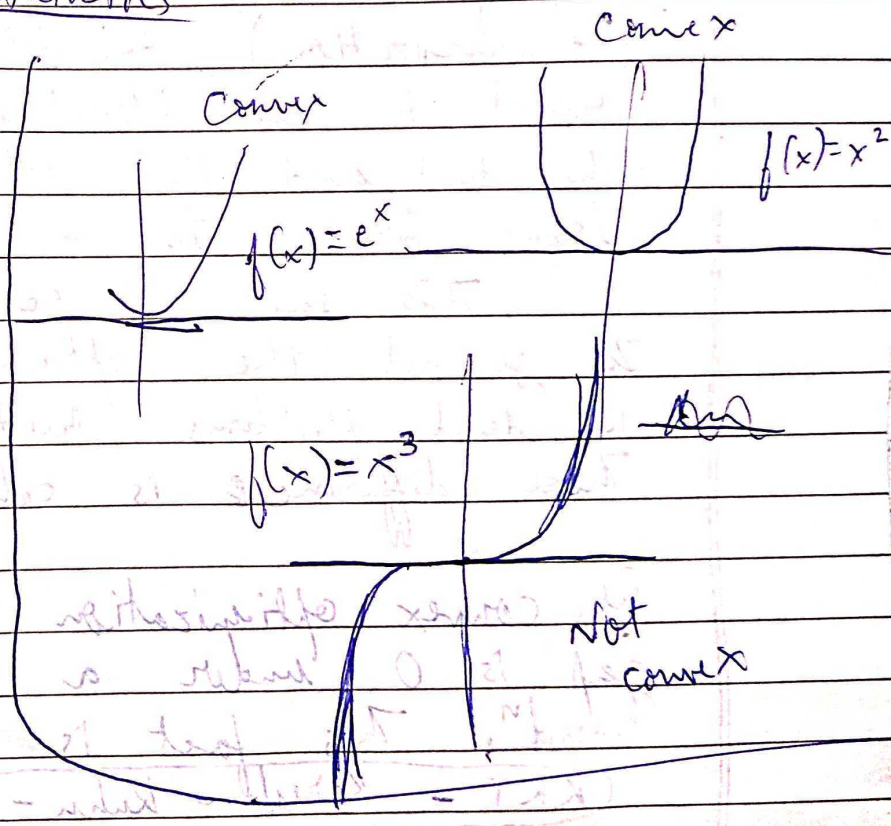
Convex functions

Statistics



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ML
Presentation

Block diagrams
Research Paper - Schematic Diagrams
Flow chart
10 minutes - max

~~Clustering~~
Fuzzy based Unsupervised clustering Technique

Next Week

28 - 29 September, Wednesday - Thursday

Max 6-7 slides

~~To build~~
Exp 4
AIM
To build a network topology in Cisco packet tracer and configure the switch with different VLANs (Virtual Local Area Networks)