



Multivariate Regression Classification

- ↳ Data Containing both dependent and Independent Variables
- ↳ Data Containing Several Variables without dependency relationship.

Logistic Regression

↳ It's used to predict the categorical dependent variable using a given set of independent variables.

↳ Logistic regression is used for solving the classification problems

↳ It gives the probabilistic values which lies between 0 and 1.

↳ In logistic regression, instead of fitting regression line, we fit an "S" shaped logistic function, which predicts two maximum values (0 or 1)



Mathematical Steps:

① The eqn of the straight line

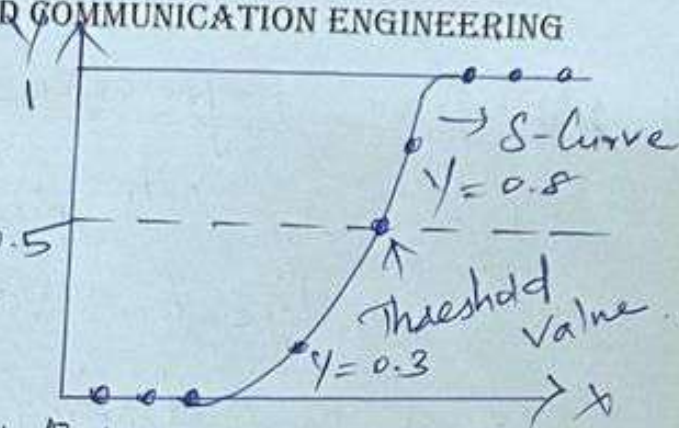
$$y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n$$

②. y can be b/w '0' and '1'

$$\frac{y}{1-y}; \quad 0 \text{ for } y=0 \text{ and infinity } 0 \text{ for } y=1$$

③ Range b/w $-\infty$ to $+\infty$

$$\log \left[\frac{y}{1-y} \right] = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n$$



Types:

①. Binomial

↳ Two possible of dependent variables such as 0 or 1, Pass or fail

②. Multinomial

↳ 3 or more possible types of dependent variable such as 'Cat', 'dog', 'Sheep' [un ordered type]

Ordinal

[ordered type]

↳ 3 types of dependent variable [low, medium, high]