

1.

a) True,

Some clusters cannot be represented by a ~~very~~ single prototype.

b) ~~False~~ ~~True~~ False.

The data can also be ~~into~~ categorical in nature.

In such case, $P(x_i | C_k)$ is the number of tuples

in C_k (k th class) having value x_i for i th tuple, divided by number of tuples of C_k in the dataset.

c) False,

The success of pattern classification scheme ~~is~~ using DF also depends on the coefficients of the DF along with its form.

~~d)~~ d) False. ~~Egg~~

~~e~~ Syntactic pattern classifier uses ~~pattern~~ training patterns, that include structural and relational information, which are difficult to express as feature vectors for classification.

e) False,

A node in ANN can have any number of outgoing connections but all the outgoing signals must be the same.

f) True,

Since ~~the~~ hierarchical clustering outputs ~~denotes~~ dendrograms, which ~~can cluster data~~ captures the hierarchical ~~clusters~~ relationships of the data at all granularity levels.

g) True,

Isodata algorithm requires a set of initial parameters to be set by the user & the user can alter those parameters after each iteration. The parameters include a set of initial clusters, K (number of samples in each cluster), θ_0 , θ_L , θ_C etc.

h) True, as structural and relationship information are difficult to represent as feature vectors.

i) False,

K-means is not a density dependent clustering algorithm.

The classification of a point depends only on the distance from the cluster centres.

j)

k) True,

The ~~the~~ type of decision region formed by a single-layer

Perceptron is a hyperplane, thus it cannot ~~solve~~ solve ~~exclusive~~ or problems. It can only solve problems that are linearly ~~sepe~~ separable.

2.

b) Meri

i) E

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d)

2.

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6) Merits of Naive Bayesian classifier :-

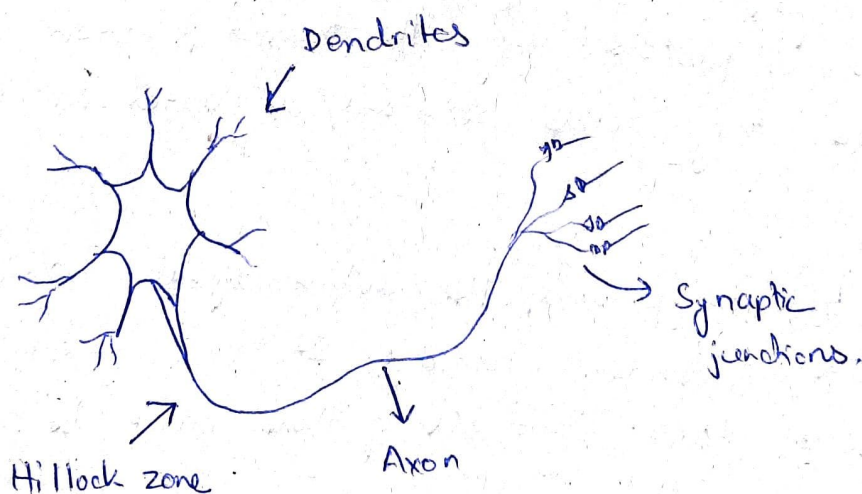
- i) Easy to implement.
- ii) It provides ~~good~~ ~~result~~ satisfactory results in most cases.
- iii) Can solve multi-class prediction problems.

Demerits of Naive Bayesian classifier :-

- i) It ~~assumes~~ ~~assumes~~ conditional independence of resultant classes which may not be valid for real life problems.
- ii) Dependencies among variables cannot be modeled by it.
- iii) Algorithm faces '0-probability' problem, It requires each conditional probability to be non-zero.

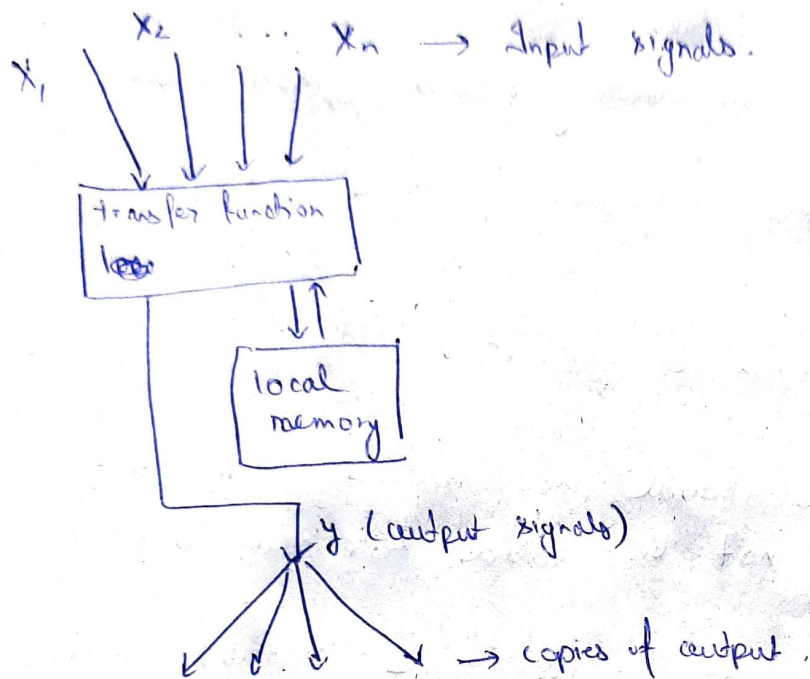
2

d)



Biological neurone :-

- Electric impulses propagate along the axon activating the synaptic junctions.
- Synaptic junctions produces further excitations which travel along the dendrites towards the next neurone.

Artificial neurone:

- It receives multiple data from outside world just like the dendrites.
- The input data is processed using the transfer function ~~which~~ which may access ~~and~~ and/or alter ~~the~~ local memory.
- The transfer function provides the output signal which is carried to the outside world. It can ~~generate~~ be sent to different places but all of them must be the same signal.