Exam.Code:0920
Sub. Code: 6813

1058

B.E. (Computer Science and Engineering)
Eighth Semester
Elective – IV
CS-802C: Machine Learning and Computational Intelligence

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) How classification performance can be assessed?

b) Compare linear regression versus regularized regression.

c) Define term 'mixture' in a Gaussian mixture model.

d) Differentiate between Machine learning and Deep learning.

e) What is convolution layer in deep neural networks (5x2)

UNIT – I

II. a) What is training in machine learning? How do you choose an algorithm for a classification problem and regression problem? Give a reason why we would like the test set to be different from the training set.

b) How svm can perform multiclass classification. (6,4)

III. a) How to Perform Feature Selection with Machine Learning Data. Discuss any two method of feature selection in machine learning.

b) Write briefly case study of polynomial Regression. (6,4)

IV. a) What is a support vector in a support vector machine? What would a diagram look like for a support vector machine that has overfit the data?

b) Explain why the XOR function over two Boolean variables cannot be represented by a single perceptron. (5,5)

P.T.O.

UNIT – II

V. a) Given d-dimensional feature vectors whose distribution is modelled by a mixture of multi-variate Gaussians, how many unknowns in all have to be estimated if we are doing a maximum likelihood estimate of the parameters of the distribution?

b) Discuss briefly expectation maximization algorithm with suitable example? (5,5)

VI. a) Draw a decision tree for following dataset:-

Name	Hair	Height	Weight	Location	Class
A	Blonde	Average	Light	No	Yes
B	Blonde	Tall	Average	Yes	No
C	Brown	Short	Average	Yes	No
D	Blonde	Short	Average	No	Yes
E	Red	Average	Heavy	No	Yes
F	Brown	Tall	Heavy	No	No
G	Brown	Average	Heavy	No	No
H	Blonde	Short	Light	Yes	No

b) Write short note on following:-
i) Online learning ii) Active learning c)Bagging and boosting (5,5)

VII. a) Apply K-means algorithm on given data for K 3. Use C_1 (2), C_2 (16) and C_3 (38) as initial cluster centers.
Data: 2,4,6,3,31,12,15,16,38,35,14,21,23,25,30.

b) What is Association rule? What are the Applications of Association rule mining? Define support and confidence in Association rule mining. (6,4)

x-x-x