Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

SCHOOL OF INFORMATION SCIENCES (SOIS)
SECOND SEMESTER ME - (BIG DATA AND DATA ANALYTICS)
DEGREE EXAMINATION - APRIL/MAY 2018
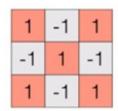### Friday, April 20, 2018
Time : 10.00 am to 1.00 pm
Machine Learning for Big Data [BDA 610]

Marks: 100   **Duration: 180 mins.**

Answer all the questions.

1) Explain about the different *types of learning* in Artificial Neural Networks. (10)

2) Develop a perceptron model for AND function with bipolar inputs and targets. The initial values of weights and bias are w1=w2=b=0, learning rate α = 1 and threshold θ=0. (10)

3) Write the steps in k-means clustering algorithm. Explain with suitable example about k-means clustering. (10)

4) What is Within Cluster Sum of Square (WCSS)? Write the use of WCSS in clustering. (6)

5) Write the strengths and weaknesses of K-means clustering (4)

6) With suitable diagram define the following terms (10)

   (a) Support vectors   (2 ½ Marks)

   (b) Maximum margin   (2 ½ Marks)

   (c) Maximum margin hyperplane   (2 ½ Marks) + (2 ½ Marks for the diagram)

7) If we define a point A (3, 4) in R^2, find the magnitude and direction of a vector X (5)

8) If we have two vectors x and y and there is an angle θ between them, find their dot product (5)

9) Show the convolutional, pooling and fully connected layers model for the image given below (12)

1	-1	1
-1	1	-1
1	-1	1

10)   Write a short note on Markov Property and Markov Decision Process   (8)

11)   What are convolutional neural networks (ConvNets)? Write the difference between artificial neural networks and ConvNets.   (10)

12)   What is Deep Learning? Explain any four applications of deep learning.   (10)

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