Indian Institute of Information Technology Vadodara

Subject Code & Name: TE 4 Machine Learning

List of Simulation based Experiment

Q1. Given the data set of 150 number of Iris flowers.
   a) Cluster these flowers using K-means clustering technique. Interpret the results of simulation use two stopping criteria.
  b) Cluster these flowers using Hierarchical clustering technique.

Q2. Minimize: i) RasenBerok function.
                ii) Sphere function.
 Using the constraint given i) using GA(Binary and real) ii) using DE-1 iii) using DE-2. Compare and interpret the results

Q3. Identity the following system using LMS learning rule

System	Number of Coefficient			
1	0.2	0.7	0.2	
2	0.3	0.4	0.1	0.8

a) Obtain the convergence characteristics
b) Study the effects of (small, medium, large)
c) Compare the actual and estimated coefficient
d) Compute the average effect of estimation

Q4. Simulate problem no 3 using RLS algorithm.

Q5. Use data from finance.org. Develop an adaptive model for exchange prediction of 1 day ahead and 5 days ahead for:
i) 1 US Dollar to Rupees &
ii) 1 US Dollar to British pound.
using
   a) Sequential training.
   b) Batch processing.
   c) Sequential feature

Choose the window size appropriately. Choose normalized actual value, mean and variance as the features. 80% of features are used for training and remaining 20% of features are used for testing/ validation. Compare and interpret all the results. Use LMS / RLS based learning.

Q6. Develop a simple adaptive classifier over (i) X-OR dataset (ii) IRIS dataset using:
i) LMS Algorithm
ii) RLS Algorithm