PUNE INSTITUTE OF COMPUTER TECHNOLOGY

DHANKAWADI, PUNE –43

SCHEDULE OF LAB EXPERIMENTS

ACADEMIC YEAR: 2020- 2021

Department: Computer Engineering
Class: B.E.
Subject: Laboratory Practice III (410254)

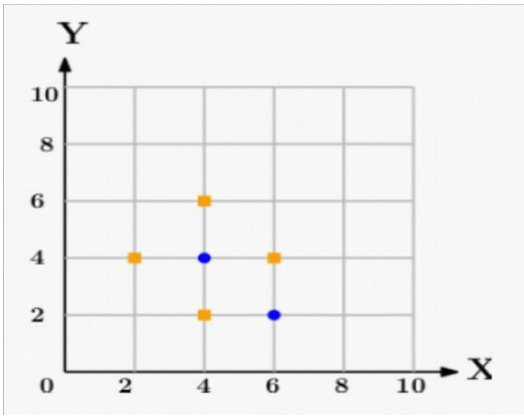
Date: 15/01/2021
Semester: II
Examination scheme:TW-50, PR-50

<table>
<tr><th>LAB EXP. NO</th><th>PROBLEM STATEMENT
(Any 04 assignments Machine Learning and Information & Cyber Security AND Mini- project per course)</th><th>Last date for performance</th></tr>
<tr><td>GROUP A</td><td>Based on Machine Learning (410250)</td><td></td></tr>
<tr><td>1</td><td>Assignment on Linear Regression:
The following table shows the results of a recently conducted study on the correlation of the number of hours spent driving with the risk of developing acute backache. Find the equation of the best fit line for this data,

<table>
<tr><th>Number of hours spent driving (x)</th><th>Risk score on a scale 0-100 (y)</th></tr>
<tr><td>10</td><td>95</td></tr>
<tr><td>9</td><td>80</td></tr>
<tr><td>2</td><td>10</td></tr>
<tr><td>15</td><td>50</td></tr>
<tr><td>10</td><td>45</td></tr>
<tr><td>16</td><td>98</td></tr>
<tr><td>11</td><td>38</td></tr>
<tr><td>16</td><td>93</td></tr>
</table></td><td>29/01/2021</td></tr>
<tr><td>2</td><td>Assignment on Decision Tree Classifier:
A dataset collected in a cosmetics shop showing details of customers and whether they responded to a special offer to buy a new lipstick is shown in table below. Use this dataset to build a decision tree, with Buys as the target variable, to help in</td><td>12/02/2021</td></tr>
</table>

	buying lipsticks in the future. Find the root node of decision tree. According to the decision tree you have made from previous training data set, what is the decision for the test data: [Age < 21, Income = Low, Gender = Female, Marital Status = Married]?	

ID	Age	Income	Gender	Marital Status	Buys
1	< 21	High	Male	Single	No
2	< 21	High	Male	Married	No
3	21-35	High	Male	Single	Yes
4	>35	Medium	Male	Single	Yes
5	>35	Low	Female	Single	Yes
6	>35	Low	Female	Married	No
7	21-35	Low	Female	Married	Yes
8	< 21	Medium	Male	Single	No
9	<21	Low	Female	Married	Yes
10	> 35	Medium	Female	Single	Yes
11	< 21	Medium	Female	Married	Yes
12	21-35	Medium	Male	Married	Yes
13	21-35	High	Female	Single	Yes
14	> 35	Medium	Male	Married	No

3	**Assignment on k-NN Classification:** In the following diagram let blue circles indicate positive examples and orange squares indicate negative examples. We want to use k-NN algorithm for classifying the points. If k=3, find the class of the point (6,6). Extend the same example for Distance-Weighted k-NN and Locally weighted Averaging  	**26/02/2021**
4	**Assignment on K-Means Clustering:** We have given a collection of 8 points. P1=[0.1,0.6] ,P2=[0.15,0.71], P3=[0.08,0.9] P4=[0.16, 0.85], P5=[0.2,0.3],	**12/03/2021**

	P6=[0.25,0.5], P7=[0.24,0.1], P8=[0.3,0.2]. Perform the k-mean clustering with initial centroids as m1=P1 = Cluster#1=C1 and m2=P8=cluster#2=C2. Answer the following 1] Which cluster does P6 belong to? 2] What is the population of cluster around m2? 3] What is updated value of m1 and m2?	
5	**Mini-Project 1 on Genetic Algorithm:** Apply the Genetic Algorithm for optimization on a dataset obtained from UCI ML repository. For Example: IRIS Dataset or Travelling Salesman Problem or KDD Dataset.	**26/03/2021**
6	**Mini-Project 2 on SVM:** Apply the Support vector machine for classification on a dataset obtained from UCI ML repository. For Example: Fruits Classification or Soil Classification or Leaf Disease Classification.	**26/03/2021**
7	**Mini-Project 3 on PCA:** Apply the Principal Component Analysis for feature reduction on any Company Stock Market Dataset.	**26/03/2021**
GROUP B	**Based on Information and Cyber Security (410251)**	
1	Implementation of S-DES	**05/02/2021**
2	Implementation of S-AES	**19/02/2021**
3	Implementation of Diffie-Hellman key exchange	**05/03/2021**
4	Implementation of RSA	**19/03/2021**
5	Implementation of ECC algorithm	**19/02/2021**
6	**Mini Project 1:** SQL Injection attacks and Cross -Site Scripting attacks are the two most common attacks on web application. Develop a new policy-based Proxy Agent, which classifies the request	**02/04/2021**

	as a scripted request or query-based request, and then, detects the respective type of attack, if any in the request. It should detect both SQL injection attack as well as the Cross-Site Scripting attacks.	
7	**Mini Project 2:** This task is to demonstrate insecure and secured website. Develop a web site and demonstrate how the contents of the site can be changed by the attackers if it is http based and not secured. You can also add payment gateway and demonstrate how money transactions can be hacked by the hackers. Then support your website having https with SSL and demonstrate how secured website is.	**02/04/2021**

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