

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LABORATORY (Effective from the academic year 2018 -2019) SEMESTER – VII			
Course Code	18CSL76	CIE Marks	40
Number of Contact Hours/Week	0:0:2	SEE Marks	60
Total Number of Lab Contact Hours	36	Exam Hours	03
Credits – 2			
<b>Course Learning Objectives:</b> This course (18CSL76) will enable students to:			
<ul style="list-style-type: none"><li>Implement and evaluate AI and ML algorithms in and Python programming language.</li></ul>			
<b>Descriptions (if any):</b>			
<b>Installation procedure of the required software must be demonstrated, carried out in groups and documented in the journal.</b>			
<b>Programs List:</b>			
1.	Implement A* Search algorithm.		
2.	Implement AO* Search algorithm.		
3.	For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.		
4.	Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.		
5.	Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.		
6.	Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.		
7.	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.		
8.	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.		
9.	Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs		
<b>Laboratory Outcomes:</b> The student should be able to:			
<ul style="list-style-type: none"><li>Implement and demonstrate AI and ML algorithms.</li><li>Evaluate different algorithms.</li></ul>			
<b>Conduct of Practical Examination:</b>			
<ul style="list-style-type: none"><li>Experiment distribution<ul style="list-style-type: none"><li>For laboratories having only one part: Students are allowed to pick one experiment from the lot with equal opportunity.</li><li>For laboratories having PART A and PART B: Students are allowed to pick one experiment from PART A and one experiment from PART B, with equal opportunity.</li></ul></li><li>Change of experiment is allowed only once and marks allotted for procedure to be made zero of the changed part only.</li><li>Marks Distribution (<i>Courseed to change in accordance with university regulations</i>)<ul style="list-style-type: none"><li>q) For laboratories having only one part – Procedure + Execution + Viva-Voce: 15+70+15 = 100 Marks</li><li>r) For laboratories having PART A and PART B<ul style="list-style-type: none"><li>i. Part A – Procedure + Execution + Viva = 6 + 28 + 6 = 40 Marks</li><li>ii. Part B – Procedure + Execution + Viva = 9 + 42 + 9 = 60 Marks</li></ul></li></ul></li></ul>			