

**MACHINE LEARNING LABORATORY**  
(Effective from the academic year 2018 -2019)  
**SEMESTER – VI**

<b>Subject Code</b>	18AIL66	<b>CIE Marks</b>	40
<b>Number of Contact Hours/Week</b>	0:2:2	<b>SEE Marks</b>	60
<b>Total Number of Lab Contact Hours</b>		<b>Exam Hours</b>	3 Hrs

**Credits – 2**

**Course Learning Objectives:** This course will enable students to:

- Implement and evaluate ML algorithms in Python/Java programming language.

**Descriptions (if any):**

1. The programs can be implemented in either JAVA or Python.
2. Data sets can be taken from standard repository such as UCI

**Installation procedure of the required software must be demonstrated, carried out in groups and documented in the journal.**

**Programs List:**

1.	Implement and demonstrate the <b>FIND-S algorithm</b> for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file and show the output for test cases. Develop an interactive program by Comparing the result by implementing <b>LIST THEN ELIMINATE</b> algorithm.
2	For a given set of training data examples stored in a .CSV file, implement and demonstrate the <b>Candidate-Elimination</b> algorithm. Output a description of the set of all hypotheses consistent with the training examples.
3	Demonstrate Pre processing (Data Cleaning, Integration and Transformation) activity on suitable data: For example: Identify and Delete <b>Rows that Contain Duplicate Data</b> by considering an appropriate dataset. Identify and Delete <b>Columns That Contain a Single Value</b> by considering an appropriate dataset.
4	Demonstrate the working of the decision tree based <b>ID3 algorithm</b> . Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
5	Demonstrate the working of the Random forest <b>algorithm</b> . Use an appropriate data set for building and apply this knowledge to classify a new sample.
6	Implement the <b>naïve Bayesian classifier</b> for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
7	Assuming a set of documents that need to be classified, use the <b>naïve Bayesian Classifier</b> model to perform this task. Calculate the accuracy, precision, and recall for your data set.
8	Construct a <b>Bayesian network</b> considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set.
9	Demonstrate the working of EM algorithm to cluster a set of data stored in a .CSV file.
10	Demonstrate the working of SVM classifier for a suitable data set

<b>Laboratory Outcomes:</b> The student should be able to:
<ul style="list-style-type: none"> <li>• Implement and demonstration of ML algorithms.</li> <li>• Evaluation of 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>Subjected to change in accordance with university regulations</i>) <ul style="list-style-type: none"> <li>m) For laboratories having only one part – Procedure + Execution + Viva-Voce: 15+70+15 = 100 Marks</li> <li>n) 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>