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

Subject Code	18AIL66	**CIE Marks**	40
Number of Contact Hours/Week	0:2:2	**SEE Marks**	60
Total Number of Lab Contact Hours		**Exam Hours**	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 demonstratethe**FIND-Salgorithm** 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 Compareing the result by implementing **LIST THEN ELIMINATE** algorithm.
2	For a given set of training data examples stored in a .CSV file, implement and demonstrate the **Candidate-Elimination**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 **Rows that Contain Duplicate Data** by considering an appropriate dataset. Identify and Delete **Columns That Contain a Single Value** by considering an appropriate dataset.
4	Demonstrate the working of the decision tree based **ID3 algorithm**. Use an appropriate data set for building the decision tree and apply this knowledge toclassify a new sample.
5	Demonstrate the working of the Random forest **algorithm**. Use an appropriate data set for building and apply this knowledge toclassify a new sample.
6	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	Assuming a set of documents that need to be classified, use the **naive Bayesian Classifier** model to perform this task. Calculate the accuracy, precision, and recall for your data set.
8	Construct a**Bayesian network** 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

Laboratory Outcomes: The student should be able to:

- Implement and demonstration of ML algorithms.
- Evaluation of different algorithms.

Conduct of Practical Examination:

- Experiment distribution
  - For laboratories having only one part: Students are allowed to pick one experiment from the lot with equal opportunity.
  - 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.
- Change of experiment is allowed only once and marks allotted for procedure to be made zero of the changed part only.
- Marks Distribution *(Subjected to change in accordance with university regulations)*

m) For laboratories having only one part – Procedure + Execution + Viva-Voce: 15+70+15 = 100 Marks

n) For laboratories having PART A and PART B

i. Part A – Procedure + Execution + Viva = 6 + 28 + 6 = 40 Marks

ii. Part B – Procedure + Execution + Viva = 9 + 42 + 9 = 60 Marks