Course Name : Unsupervised Learning Lab

Course Code : TE7761

Faculty : Engineering

Course Credit : 1

Course Level : 2

Sub-Committee (Specialization) : Computer Science

Learning Objectives :

1. Explain and implement various types of learnings, ML and related theories like distance measures and data types using data mining tools
2. Describe theories, concepts and algorithms related to dimensionality reduction and implement them to compare the difference
3. Explain various standard clustering algorithms, implement them using various datasets
4. Discuss advanced clustering algorithms, implement using dimensionality reduction, distance measures and datasets to get comparative analysis
5. Apply and understand the various deep learning based unsupervised algorithms

Books Recommended :

Book	Author	Publisher
Data Mining, Practical Machine Learning Tools and Techniques	5. Ian H Witten, Eibe Frank, Mark A Hall	Elsevier, 3rd Edition
Machine Learning A Probabilistic Perspective	Kevin P Murphy	MIT Press, August 2012.

Course Outline :

Sr. No.	Topic	Actual Teaching Hours	Contact Hours Equivalence
1	**Implement the dimentionality reduction techniques and compare their outcomes. (PCA, LDA, t-SNE, MDS, SVD etc)**	**10**	**5**
2	**Execute various unsupervised clustering algorithms using various distance measures and datasets to produce comparative analysis.**	**8**	**4**
3	**Simple implementation of autoencoders**	**4**	**2**
4	**Implementation of incremental clustering algorithms DBSCAN, COBWEB, EM etc., and perform comparative analysis to recommend best suitable algorithm for dataset from specific domain.**	**8**	**4**
	Total	**30**	**15**

Pre Requisites :

1. Machine Learning Concepts

Evaluation :

A) Continuous Assessment (75 marks)

Quiz

Assignment

Class test

Viva

B) End Semester Examination: N.A

Pedagogy :

1. Online Video lectures
2. Webinars
3. Online activities

Expert :

Dr Rahee Walambe,Associate Professor,SIT