

Branch Name:	Artificial Intelligence & Data Science
Program Code:	ET108
Course Name:	Advanced Machine Learning Practical
Course Code:	2ET1080404P
Pre-requisite:	Basic Machine Learning knowledge

Course Objectives:

Upon completion of this course the students will be able to

1. Implement a neural network for an application.
2. Implement probabilistic discriminative and generative algorithms for an application and analyze the results.
3. Implement typical clustering algorithms for different types of applications.
4. Design and implement an HMM for a sequence model type of application.
5. Identify applications suitable for different types of machine learning with suitable justification.

Teaching and Examination Scheme:

Teaching and Examination Scheme.														
Credit	Teaching Scheme Hours per week				Evaluation Scheme(Marks)									
					Theory(Marks)				Practical(Marks)				Total (Marks)	
	SEE		CCA		SEE		CCA							
	L	T	P	Total	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
1	-	-	2	2	-	-	-	-	10	25	10	25	50	

Sr. No	Detail of Practical	Content Hours
1	Introduction about basic machine learning techniques.	02
2	Implement Bayesian Neural Networks for Supervised Learning.	02
3	Write a program to implement K-Nearest Neighbors(KNN).	02
4	Write a program to implement Support Vector Machine(SVM).	02
5	Write a program to implement Decision Tree Classification.	02
6	Write a program to implement Random Forest Classification.	02
7	Write a program to implement Single Player Game.	02
8	Write a program to Implement A*Algorithm.	02
9	Write a program to solve N-Queens problem.	02
10	Write a program to solve 8 puzzle problem.	02
11	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.	02
12	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.	02
13	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.	02