

Open Course Title: Machine Learning simplified using Python and Deep learning using MATLAB

Target Students from Branches: ECE/TCE/EEE/

The total duration of the course: 25 Hours.

No. of Lecture hours: 08

No. of hands-on /Practical: 17

Abstract

Machine learning is about the ability of machines to form rules automatically and make decisions by exposing the machine to input data. It is very relevant in the current scenario since the information related tasks are getting increasingly complex and the data is of exponential order. This course will give an insight into the concepts of Machine Learning (ML) and Deep Learning (DL). This course is open to students of any streams who have a basic knowledge of 10th grade Mathematics. In this course, the different types of learning such as supervised and unsupervised learning will be explained with the help of algorithms which are used for preprocessing, extraction and classification of data. These topics will be taught using Python.

This course will also cover how to build deep learning models using MATLAB without having to be an expert. Participants will learn how to work with standard models such as Caffe, TensorFlow-Keras, Alexnet etc. Participants will also learn to create, modify, and analyze complex deep neural network architectures using MATLAB apps and visualization tools.

Open Course Details

At the end of the course, the participants will be able to

CO1: Understand the basics of Machine Learning and Deep Learning.

CO2: Explore the modern tools used for developing machine learning and deep learning algorithms.

CO3: Apply the mathematical concepts for machine learning and deep learning algorithms.

CO4: Analyse the standard ML models and DL models for statistical and computer vision applications

Schedule

Day 1:12/02/2019			
Time	Topics	Resource Person Details	CO-PO Mapping
9.00 am - 10.30 am	Introduction to machine Learning	Saneesh Cleatus T	CO1, PO1
11.00 am - 1.00 pm	Fundamentals of learning : Neural networks.	Rashmi N	CO2, PO1
2.00 pm – 4.30 pm	Tools used in machine learning	Saneesh Cleatus T Sabina Rahaman	CO2, PO6
Day 2:13/02/2019			
Time	Topics	Resource Person Details	CO-PO Mapping
9.00 am - 10.30 am	Deep learning models: Tensorflow	Aron Joseph Mathew, Data Analyst, FundsIndia	CO1, PO6
11.00 am - 1.00 pm	Deep learning models Contd. Tensorflow		CO2, PO6
2.00 pm – 4.30 pm	Matlab and Machine learning	Thaygaraj T/Saneesh CT	CO2, PO6
Day 3:14/02/2019			
Time	Topics	Resource Person Details	CO-PO Mapping
9.00 am - 10.30 am	Introduction to Deep Learning using MATLAB	Saneesh Cleatus T	CO1, PO6
11.00 am - 1.00 pm	Deep NN architectures using MATLAB apps and visualization tools.	Saneesh Cleatus T Sabina Rahaman	CO2, PO6
2.00 pm – 4.30 pm	Deep learning models Caffe	Asha H V, Saneesh C T Advanced Analytics Wing, Boston Consulting Group	CO4, PO6, PO9
Day 4:15/02/2019			
Time	Topics	Resource Person Details	CO-PO Mapping
9.00 am - 10.30 am	Things solvable by deep learning approaches? Scale of deep learning	Ramesh Aravind Ravi, ML Fellow @ fellowship.ai Formerly with Endurance International Group.	CO3, PO1
11.00 am - 1.00 pm	Structuring of ML problem and Pytorch		CO3, PO6, PO9
2.00 pm – 4.30 pm	Applications of Pytorch, Transfer learning, Generative adversarial networks, Reinforcement learning		CO, PO6
Day 4:16/02/2019			
Time	Topics	Resource Person	CO-PO Mapping
9.00 am – 12.00 pm	Unsupervised learning and clustering methods hands-on (TY)	Thaygaraj T	CO4, PO6,PO9
12.00 pm – 2.00 pm	Unsupervised learning and clustering methods hands-on contd. (TY)	Thaygaraj T Saneesh Cleatus T	CO4, PO6,PO9
2.00 pm – 4.00 pm	How to continue machine learning and deep learning works. Live projects opportunities Feedback and conclusion	Thaygaraj / Saneesh/ Rashmi/ Sabina	PO12