International Winter School- Manipal University Jaipur [IWSMUJ]-2023

[Hybrid Mode]

Course/Project Overview

Name of Course/Project- Machine Learning with Python

Name of instructor: Dr. Manoj Kumar Sharma, Dr. Ruchika Mehta
Session: Jan.-Feb. 2023
Language of instruction: English
Number of contact hours: 36
Credit awarded: 03

Objective of Course/Project

This course is to develop necessary skills of the participants to understand and implement AI/machine learning algorithms from the scratch and provide a hands-on training with python libraries.

Syllabus:

- ➢ Neural networks
- ➢ k-nearest Neighbour Classifier
- ➢ k-mean Clustering
- ➢ Optimization techniques
- ➢ BP Algorithm
- ➢ CNN, ResNet
- ➢ Neural Networks from Scratch in Python
- ➢ Neural Network in Python using NumyPy
- ➢ Neural Networks with Scikit
- ➢ Machine Learning with Scikit and Python
- ➢ Naive Bayes Classifier
- ➢ Introduction into Text Classification using machine learning/deep learning

Organization of Course

Total contact hrs 36		
1st week:	10 hrs (classes)	2 hrs (self-study/project)
2nd week:	10 hrs (classes)	2 hrs (Mid-term exam/assessment/discussion)
3rd week:	10 hrs (classes)	2 hrs
4th week:	6 hrs (Classes)	2hrs (End term exam)

Mode of lectures: Hybrid mode lecture/videos/case study/ discussion/ workshop/ hands-on

Course/Project Plan

Lecture no.	Topic	Lecture mode	Instructor
L: 1-3	Introduction to AI and Neural Network	Hybrid	Dr. Manoj Kumar Sharma
L: 4-5	k-nearest Neighbour Classifier, k-mean Clustering	Hybrid	Dr. Ruchika Mehta
L: 6-7	Optimization techniques	Hybrid	Dr. Ruchika Mehta
L: 8-9	BP Algorithm	Hybrid	Dr. Manoj Kumar Sharma
L: 10-11	Neural Networks from Scratch in Python	Hybrid	Dr. Manoj Kumar Sharma
L:12-13	CNN with practical implementation	Hybrid	Dr. Manoj Kumar Sharma
L:14-15	ResNet with practical implementation	Hybrid	Dr. Manoj Kumar Sharma
L: 15-19	Neural Network in Python using NumyPy	Hybrid	Dr. Manoj Kumar Sharma
L:20-21	Neural Networks with Scikit	Hybrid	Dr. Manoj Kumar Sharma
L: 22-25	Naive Bayes Classifier	Hybrid	Dr. Ruchika Mehta
L: 26-30	Introduction into Text Classification using machine learning/deep learning	Hybrid	Dr. Manoj Kumar Sharma
L: 31-34	Introduction into Text Classification using machine learning/deep learning	Hybrid	Dr. Manoj Kumar Sharma
L: 35-36	Introduction into Text Classification using machine learning/deep learning	Hybrid	Dr. Manoj Kumar Sharma

Brief profile of the instructor(s)

Dr Manoj Kumar Sharma

He is working as Associate Professor – Senior Scale in Department of Computer and Communication Engineering. He has 16 years of teaching and research experience. His expertise is in Image processing, Handwriting recognition using Machine Learning / Deep Learning algorithms.

Dr Ruchika Mehta

She earned her Ph.D. degree from Department of Mathematics, University of Rajasthan (India). She has 19 years of teaching and research experience. Presently She is working as Associate Professor in Department of Mathematics & Statistics, Manipal University Jaipur, Jaipur. Her research interest includes Fluid Dynamics, Computational Fluid Dynamics, Heat and Mass Transfer and Numerical Methods.