



CENTRE FOR ADVANCED STUDIES

(In campus Institution of AKTU)

Dr. A. P. J. Abdul Kalam Technical University, Lucknow

Online Workshop on Artificial Intelligence: Machine Learning and Deep Learning



"Gain hands-on experience in solving real-life problems using machine learning and deep learning"

Free Registration-Limited Seats

- **Eligibility:** B.Tech-CSE/IT/ECE (3rd & 4th year students)
- **5 Students** nominated from each Government Engineering Institute Affiliated to AKTU (by 25th Nov 2021).
- Pre-requisites for attending the workshop is basic knowledge of python Programming.

Convener

Prof. M. K. Dutta

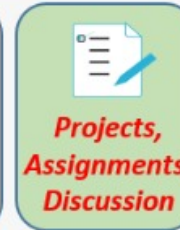
Director, Centre for Advanced Studies
Dr. A. P. J. Abdul Kalam Technical University,
Lucknow, U.P.



Highlights



Course
Completion
Certificate



Projects,
Assignments,
Discussion



Experts led
Training



20 hours
Online
training



Contents for Workshop

- ✓ Machine Learning, Supervised and Unsupervised learning.
- ✓ Design and Analysis of different Machine Learning methods
- ✓ Deep Learning and applications of DL in Computer Vision and Time Series.
- ✓ Current Research and Role of AI, Deep Learning in Time series Signals- 1D signals
- ✓ Different CNN models and their Architecture.
- ✓ Developed AI based Projects demonstration
- ✓ Hands-on sessions and live demonstration,
- ✓ Discussion Sessions.

Duration: 5 Days: 6th December to 10th December 2021

(Online Timings: 3 PM to 7 PM)

"Curiosity, confidence, and perseverance are good traits for any student looking to break into an emerging field, and AI is no exception."



<p>Day 1</p>	<p>Introduction to Machine learning: <i>Basic Paradigm, Classification and clustering, classifier surfaces, feature engineering, measuring distances between features, statistical coefficient and confusion matrix, training errors</i></p>	<p>Hands-on Session 1- <i>Installation of programming software and IDE, Introduction to Google Colab, Basic Programming on Python, Introduction to Training resources, Import packages and loading of datasets</i></p>
<p>Day 2</p>	<p>Supervised Learning: <i>Classification, Support Vector Machines (SVM), Linear and Non-linear SVMs, Kernels, Decision tree, Entropy and Information Gain, Random Forest Classifier, Naïve Bayes</i></p>	<p>Hands-on Session 2- <i>Machine Learning , Supervised Learning, Support Vector Machines and Naïve Classifier</i></p>
<p>Day 3</p>	<p>Introduction to Deep Learning: <i>Perceptron model, Activation function, Loss Function, Building Neural Networks with perceptron, Binary Cross Entropy loss, loss optimization, Gradient decent, Learning rate, Over fitting, Dropouts</i></p>	<p>Hands-on Session 3- <i>Machine Learning Classifiers, Creating CNN models from scratch, Compiling of CNN models, Training and Testing, Plotting of curves</i></p>
<p>Day 4</p>	<p>Deep Learning in Computer Vision: <i>Features Extraction, Feature Representation, Fully Connected Neural Network, Convolution on Images, Convolution Layer and Feature Maps, Pooling and Activation Function (ReLU), CNNs Applications</i></p>	<p>Hands-on Session 4- <i>Deep learning training and architecture, feature extraction, Models training with some pertained models, Object Detection, Image Augmentation</i></p>
<p>Day 5</p>	<p>Deep Learning in Time Series Signals: <i>Signals, Filtering, Augmentation, 1D Signal Processing, Features extraction, Convolution and Pooling in 1D signals, Classifications using CNN</i></p>	<p>Hands-on Session 5- <i>Signal acquisition, signal filtering, Augmentation, Feature Extraction 1-D signals, Training and classification of 1D signals using CNN.</i></p>