

Roll Number:

Seat Number:

# **Vivekanand Education Society's Institute of Technology**

An Autonomous Institute Affiliated to University of Mumbai  
Hashu Advani Memorial Complex, Collector Colony, Chembur East, Mumbai - 400074.



**Department of Artificial Intelligence and Data Science**

## **CERTIFICATE**

Certified that \_\_\_\_\_ of Class \_\_\_\_ has  
satisfactorily completed a course of the necessary experiments/ assignments  
in \_\_\_\_\_ under my supervision in  
V.E.S. Institute of Technology in year 2023-24

Lab Teacher

Subject Teacher

Principal

Head of Department

# AI and Data Science Department

Student Name

Roll Number:

Class: D16 AD

A.Y: 2023-24(ODD SEM)

# Deep Learning Lab

<b>Prerequisite:</b> Python Programming, Engineering Mathematics	
<b>Lab Objectives:</b>	
1	To implement basic neural network models for simulating logic gates.
2	To implement various training algorithms for feedforward neural networks.
3	To design deep learning models for supervised, unsupervised and sequence learning.
<b>Lab Outcomes:</b> At the end of the course, the students will be able to	
1	Implement basic neural network models to learn logic functions.
2	Design and train feedforward neural networks using various learning algorithms.
3	Build and train deep learning models such as Auto encoders, CNNs, RNN, LSTM etc.

## LO/PO Mapping

[illegible]

## Index

Sr No	List of Experiments	LO's	DOP	DOS
1	<b>Perceptron and Libraries of DL</b> 1) Implement Multilayer Perceptron algorithm to simulate XOR gate. 2) To explore python libraries for deep learning e.g. Theano, TensorFlow etc.	LO1		
2.	<b>Neural Network and its optimization</b> 3) Apply any of the following learning algorithms to learn the parameters of the supervised single layer feed forward neural network. <ul style="list-style-type: none"> <li>○ Stochastic Gradient Descent</li> <li>○ Mini Batch Gradient Descent</li> <li>○ Momentum GD</li> <li>○ Nestorev GD</li> <li>○ Adagrad GD</li> <li>○ Adam Learning GD</li> </ul> 4) Implement a backpropagation algorithm to train a DNN with at least 2 hidden layers. 5) Design and implement a fully connected deep neural network with at least 2 hidden layers for a classification application. Use appropriate Learning Algorithm, output function and loss function.	LO1, LO2		
3	<b>AE</b> 6) Design the architecture and implement the autoencoder model for Image Compression. 7) Design the architecture and implement the autoencoder model for Image denoising.	LO3		
4	<b>CNN</b> 8) Design and implement a CNN model for digit recognition application. 9) Design and implement a CNN model for image classification	LO3		
5	<b>Sequence Model</b> 10) Design and implement LSTM for Sentiment Analysis. 11) Design and implement GRU for classification on text data. 12) Design and implement RNN for classification of temporal data	LO2 LO3		