

# (B.TECH) Semester-VII AY 2023-24

**DL Lab Assignment No. 07**

|  |  |
| --- | --- |
| **Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **PRN No.: \_\_\_\_\_\_\_\_\_\_\_\_** |
| **Date: (Perform) \_\_\_\_\_ & (Submitted)\_\_\_\_\_\_** | **Faculty:** |

**Problem Statement:** Implement a Convolution Neural Network (CNN) for image dataset using Python.

**Objectives:**

1. To understand the architecture and working of Convolution Neural Network
2. To implement the Convolution Neural Network

**Theory:** (describe the following)

* Applications of Convolution Neural Network (CNN)
* Architecture of Convolution Neural Network (CNN)
* Description about Image Dataset Used (e.g. MNIST dataset)

# Operations to be performed:

1. Import the required Python libraries and dataset
2. Normalizing dataset (reshaping training and testing images)
3. Build the model

Identifying model requirement (number of convolution layers pooling layers, fully connected layers, size of filters/kernel used, activation function used)

1. Compile the model

Optimize the model to adjust the weights to minimize the losses (which optimizer to be used) Identifying optimizer and loss function.

1. Train the model with Image dataset
2. Predict/Test the model
3. Model performance visualization in terms of accuracy and loss

# Program code: (paste your program code)

**Output: (paste output screen & graphs plotted)**

# FAQs:

* 1. What is the difference between a regular neural network and Convolutional neural network?
  2. What is the need of striding and padding in a Convolutional neural network?
  3. Explain any two regularization techniques used in deep neural networks to avoid overfitting problems of training models?

# Conclusion:

The architecture of Convolutional Neural Network was studied and the implementation of CNN was performed successfully.