**Lab7: To Study and implement Cnn on Keras**

from keras.datasets import cifar10

import matplotlib.pyplot as plt

(x\_train, y\_train), (X\_test, y\_test) = cifar10.load\_data()

x\_train[0]

get\_ipython().magic('matplotlib inline')

plt.imshow(x\_train[3])

get\_ipython().magic('matplotlib inline')

plt.imshow(x\_train[4])

X\_train = X\_train.astype('float32')

X\_test = X\_test.astype('float32')

X\_train= X\_train/ 255

X\_test= X\_test/ 255

#create model

from keras.models import Sequential

from keras.layers import Conv2D

from keras.layers import Dropout

from keras.layers import MaxPooling2D

from keras.layers import Flatten

from keras.layers import Dense

from keras.utils import np\_utils

y\_train = np\_utils.to\_categorical(y\_train)

y\_test = np\_utils.to\_categorical(y\_test)

num\_classes = y\_test.shape[1]

model = Sequential()

model.add(Conv2D(32, (3, 3), input\_shape=(3, 32, 32), padding='same', activation='relu'))

model.add(Dropout(0.2))

model.add(Conv2D(32, (3, 3), activation='relu', padding='same'))

model.add(MaxPooling2D(pool\_size=(2, 2)))

model.add(Flatten())

model.add(Dense(512, activation='relu'))

model.add(Dropout(0.5))

model.add(Dense(num\_classes, activation='softmax'))

#complie model

epochs = 25

lrate = 0.01

decay= lrate/epochs