**Lab 6: To study and implement Artificial Neural Network using Keras**

Keras is a powerful easy-to-use Python library for developing and evaluating deep learning models.It wraps the efficient numerical computation libraries Theano and TensorFlow and allows you to define and train neural network models in a few short lines of code. Install Keras by using the following command:

>pip install keras

**Lab Tasks:**

1. Initialize the random number generator

fromkeras.models import Sequential

fromkeras.layers import Dense

importnumpy

# fix random seed for reproducibility

numpy.random.seed(7)

1. Load the data

# load pimaindians dataset

dataset = numpy.loadtxt("pima-indians-diabetes.csv", delimiter=",")

# split into input (X) and output (Y) variables

X = dataset[:,0:8]

Y = dataset[:,8]

Now create a model:

# create model

model = Sequential()

model.add(Dense(12, input\_dim=8, activation='relu'))

model.add(Dense(8, activation='relu'))

model.add(Dense(1, activation='sigmoid'))

1. Compile the model

model.compile(loss='binary\_crossentropy', optimizer='adam', metrics=['accuracy'])

1. Fit the model

model.fit(X, Y, epochs=150, batch\_size=10)

1. Evaluate the model

scores = model.evaluate(X, Y)

print("\n%s: %.2f%%" % (model.metrics\_names[1], scores[1]\*100))

1. Perform Predictions

predictions = model.predict(X)

# round predictions

rounded = [round(x[0]) for x in predictions]

print(rounded)