AI LAB 12

IMPLEMENTATION OF DEEP LEARNING – KERAS-MODEL

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WORKING PRINCIPLE:

Keras is a deep learning algorithm toll that wraps the efficient numerical computation libraries Theano and TensorFlow and allows you to define and train neural network models in just a few lines of code.

The steps to be followed are:

1. Load Data.
2. Define Keras Model.
3. Compile Keras Model.
4. Fit Keras Model.
5. Evaluate Keras Model.
6. Tie It All Together.
7. Make Predictions

SOURCE CODE:

```
# first neural network with keras make predictions
from numpy import loadtxt
from keras.models import Sequential
from keras.layers import Dense
# load the dataset
```

```
dataset = loadtxt('pima-indians-diabetes.csv', delimiter=',')
# split into input (X) and output (y) variables
X = dataset[:,0:8]
y = dataset[:,8]
# define the keras model
model = Sequential()
model.add(Dense(12, input_dim=8, activation='relu'))
model.add(Dense(8, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
# compile the keras model
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])
# fit the keras model on the dataset
model.fit(X, y, epochs=150, batch_size=10,verbose=0)
# evaluate the keras model
_, accuracy = model.evaluate(X, y)
print('Accuracy: %.2f' % (accuracy*100))
# make class predictions with the model
predictions = (model.predict(X) > 0.5).astype(int)
# summarize the first 5 cases
for i in range(5):
        print('%s => %d (expected %d)' % (X[i].tolist(), predictions[i], y[i]))
```

OUTPUT:

In [1]:
```
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```

```
24/24 [==============================] - 0s 1ms/step - loss: 0.4583 - accuracy: 0.7891
Accuracy: 78.91
[6.0, 148.0, 72.0, 35.0, 0.0, 33.6, 0.627, 50.0] => 1 (expected 1)
[1.0, 85.0, 66.0, 29.0, 0.0, 26.6, 0.351, 31.0] => 0 (expected 0)
[8.0, 183.0, 64.0, 0.0, 0.0, 23.3, 0.672, 32.0] => 1 (expected 1)
[1.0, 89.0, 66.0, 23.0, 94.0, 28.1, 0.167, 21.0] => 0 (expected 0)
[0.0, 137.0, 40.0, 35.0, 168.0, 43.1, 2.288, 33.0] => 1 (expected 1)
```

RESULT: Hence, the implementation of Keras-Model was successfully done.