

Experiment No.: 10**Aim**

Programs on feedforward network to classify any standard dataset available in the public domain

CO4

Implement convolutional neural network algorithm using Keras framework.

Procedure

```
from tensorflow import keras

print('Tensorflow/keras : %s' % keras.__version__)

from keras.models import Sequential

from keras import Input
from keras.layers import Dense
import pandas as pd

print('pandas : %s' % pd.__version__)

import numpy as np

print('numpy : %s' % np.__version__)

import sklearn

print('sklearn : %s' % sklearn.__version__)

from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report
import plotly
import plotly.express as px
import plotly.graph_objects as go

print('plotly : %s' % plotly.__version__)
```

```

pd.options.display.max_columns = 50

df = pd.read_csv('weatherAUS.csv', encoding='utf-8')

df = df[pd.isnull(df['RainTomorrow']) == False]

# df=df.fillna(df.mean())

df['RainTodayFlag'] = df['RainToday'].apply(lambda x: 1 if x == 'Yes' else 0)

df['RainTomorrowFlag'] = df['RainTomorrow'].apply(lambda x: 1 if x == 'Yes' else 0)

print(df)

X = df[['Humidity3pm']]

Y = df['RainTomorrowFlag'].values

X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.2, random_state=0)

model = Sequential(name="Model-with-One-Input")

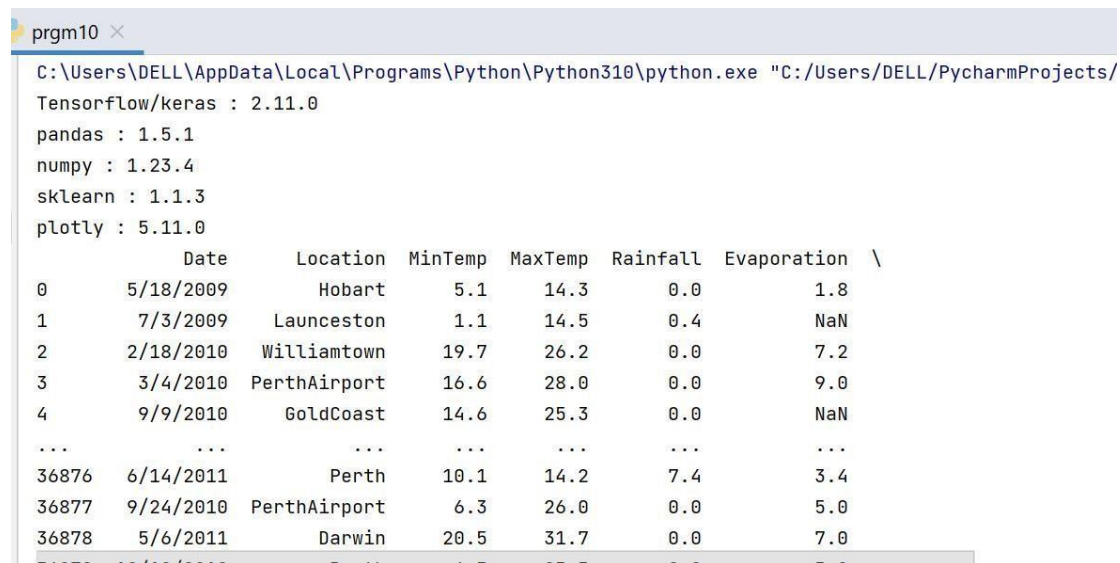
model.add(Input(shape=(1,), name='Input-Layer'))

model.add(Dense(2, activation='softplus', name='Hidden-Layer'))

model.add(Dense(1, activation='sigmoid', name='Output-Layer'))

```

Output Screenshot



```

C:\Users\DELL\AppData\Local\Programs\Python\Python310\python.exe "C:/Users/DELL/PycharmProjects/
Tensorflow/keras : 2.11.0
pandas : 1.5.1
numpy : 1.23.4
sklearn : 1.1.3
plotly : 5.11.0

```

	Date	Location	MinTemp	MaxTemp	Rainfall	Evaporation
0	5/18/2009	Hobart	5.1	14.3	0.0	1.8
1	7/3/2009	Launceston	1.1	14.5	0.4	NaN
2	2/18/2010	Williamstown	19.7	26.2	0.0	7.2
3	3/4/2010	PerthAirport	16.6	28.0	0.0	9.0
4	9/9/2010	GoldCoast	14.6	25.3	0.0	NaN
...
36876	6/14/2011	Perth	10.1	14.2	7.4	3.4
36877	9/24/2010	PerthAirport	6.3	26.0	0.0	5.0
36878	5/6/2011	Darwin	20.5	31.7	0.0	7.0

Result

The program was executed and the result was successfully obtained. Thus CO4 was obtained.