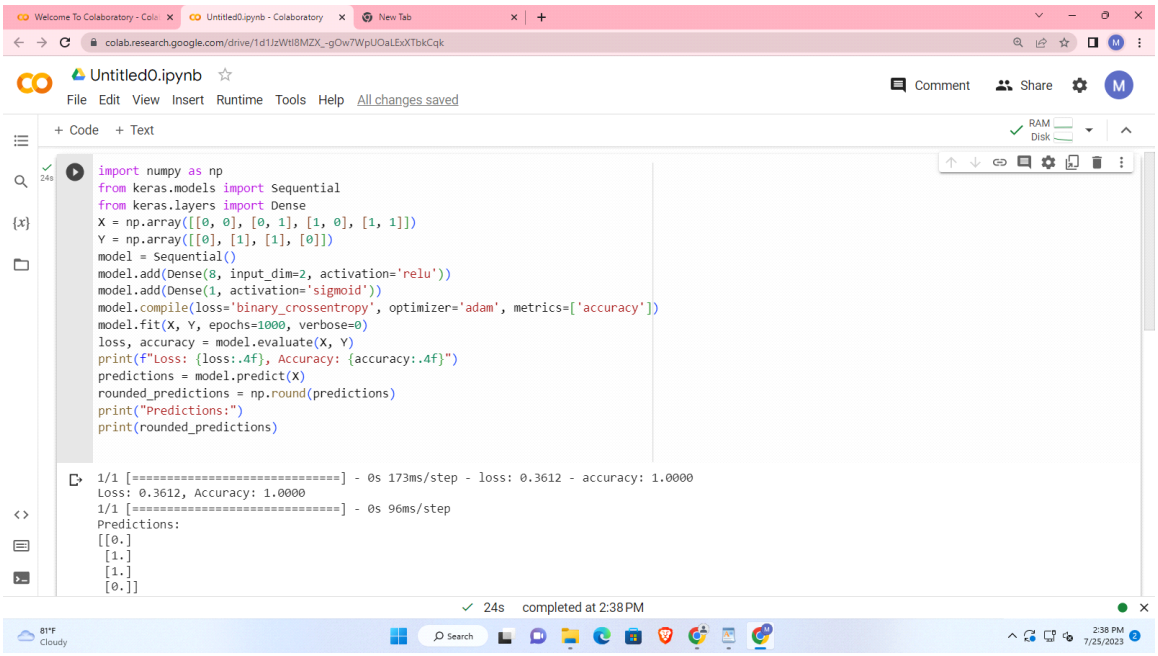
Name:Aman S Mishra
Roll No: 35
CSE (DS)
Deep Learning Exp1

Implementation of XOR in Deep learning using python

Code:

```
import numpy as np
from keras.models import Sequential
from keras.layers import Dense
X = np.array([[0, 0], [0, 1], [1, 0], [1, 1]])
Y = np.array([[0], [1], [1], [0]])
model = Sequential()
model.add(Dense(8, input_dim=2, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])
model.fit(X, Y, epochs=1000, verbose=0)
loss, accuracy = model.evaluate(X, Y)
print(f"Loss: {loss:.4f}, Accuracy: {accuracy:.4f}")
predictions = model.predict(X)
rounded_predictions = np.round(predictions)
print("Predictions:")
print(rounded_predictions)
```

Output:


Welcome To Colaboratory - Colab
Untitled0.ipynb - Colaboratory
New Tab
colab.research.google.com/drive/1d1JzWtl8MZX_-gOw7WpUOaLExXTbkCqk
Untitled0.ipynb
File Edit View Insert Runtime Tools Help All changes saved
Comment
Share
M
+ Code + Text
RAM
Disk
import numpy as np
from keras.models import Sequential
from keras.layers import Dense
X = np.array([[0, 0], [0, 1], [1, 0], [1, 1]])
Y = np.array([[0], [1], [1], [0]])
model = Sequential()
model.add(Dense(8, input_dim=2, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])
model.fit(X, Y, epochs=1000, verbose=0)
loss, accuracy = model.evaluate(X, Y)
print(f"Loss: {loss:.4f}, Accuracy: {accuracy:.4f}")
predictions = model.predict(X)
rounded_predictions = np.round(predictions)
print("Predictions:")
print(rounded_predictions)
1/1 [==============================] - 0s 173ms/step - loss: 0.3612 - accuracy: 1.0000
Loss: 0.3612, Accuracy: 1.0000
1/1 [==============================] - 0s 96ms/step
Predictions:
[[0.]
[1.]
[1.]
[0.]]
24s completed at 2:38 PM
81°F
Cloudy
Search
2:38 PM
7/25/2023