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import pandas as pd
import numpy as np
import tensorflow as tf
from tensorflow import keras
from tensorflow.keras import layers, models
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler

df = pd.read_csv("diabetes1.csv")

x = df.iloc[:,0:8]
y = df["Outcome"]

obj = StandardScaler()

x_ = obj.fit_transform(x)
Xtrain, Xtest, Ytrain, Ytest = train_test_split(x_, y, test_size=0.1)

model = models.Sequential()
model.add(layers.Dense(100, activation="relu"))
model.add(layers.Dense(75, activation="relu"))
model.add(layers.Dense(50, activation="relu"))
model.add(layers.Dense(25, activation="relu"))
model.add(layers.Dense(12, activation="relu"))
model.add(layers.Dense(8, activation="relu"))
model.add(layers.Dense(1, activation="sigmoid"))

model.compile(optimizer="adam", loss="binary_crossentropy", metrics=["accuracy"])

history = model.fit(Xtrain, Ytrain, epochs=50, validation_data=(Xtest, Ytest))

Epoch 1/50
22/22 [=====] - 1s 12ms/step - loss: 0.6462 - accuracy: 0.
Epoch 2/50
22/22 [=====] - 0s 4ms/step - loss: 0.5391 - accuracy: 0.
Epoch 3/50
22/22 [=====] - 0s 4ms/step - loss: 0.5017 - accuracy: 0.
Epoch 4/50
22/22 [=====] - 0s 5ms/step - loss: 0.4899 - accuracy: 0.
Epoch 5/50
22/22 [=====] - 0s 5ms/step - loss: 0.4740 - accuracy: 0.
Epoch 6/50
22/22 [=====] - 0s 5ms/step - loss: 0.4525 - accuracy: 0.
Epoch 7/50
22/22 [=====] - 0s 4ms/step - loss: 0.4360 - accuracy: 0.
Epoch 8/50
22/22 [=====] - 0s 4ms/step - loss: 0.4240 - accuracy: 0.
Epoch 9/50
22/22 [=====] - 0s 4ms/step - loss: 0.4059 - accuracy: 0.
Epoch 10/50

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22/22 [=====] - 0s 4ms/step - loss: 0.4039 - accuracy: 0.8
Epoch 11/50
22/22 [=====] - 0s 4ms/step - loss: 0.3855 - accuracy: 0.8
Epoch 12/50
22/22 [=====] - 0s 4ms/step - loss: 0.3841 - accuracy: 0.8
Epoch 13/50
22/22 [=====] - 0s 5ms/step - loss: 0.3735 - accuracy: 0.8
Epoch 14/50
22/22 [=====] - 0s 4ms/step - loss: 0.3594 - accuracy: 0.8
Epoch 15/50
22/22 [=====] - 0s 5ms/step - loss: 0.3510 - accuracy: 0.8
Epoch 16/50
22/22 [=====] - 0s 5ms/step - loss: 0.3378 - accuracy: 0.8
Epoch 17/50
22/22 [=====] - 0s 4ms/step - loss: 0.3306 - accuracy: 0.8
Epoch 18/50
22/22 [=====] - 0s 4ms/step - loss: 0.3112 - accuracy: 0.8
Epoch 19/50
22/22 [=====] - 0s 4ms/step - loss: 0.3075 - accuracy: 0.8
Epoch 20/50
22/22 [=====] - 0s 4ms/step - loss: 0.3014 - accuracy: 0.8
Epoch 21/50
22/22 [=====] - 0s 4ms/step - loss: 0.3026 - accuracy: 0.8
Epoch 22/50
22/22 [=====] - 0s 5ms/step - loss: 0.2802 - accuracy: 0.8
Epoch 23/50
22/22 [=====] - 0s 5ms/step - loss: 0.2560 - accuracy: 0.8
Epoch 24/50
22/22 [=====] - 0s 4ms/step - loss: 0.2571 - accuracy: 0.8
Epoch 25/50
22/22 [=====] - 0s 4ms/step - loss: 0.2541 - accuracy: 0.8
Epoch 26/50
22/22 [=====] - 0s 5ms/step - loss: 0.2564 - accuracy: 0.8
Epoch 27/50
22/22 [=====] - 0s 5ms/step - loss: 0.2116 - accuracy: 0.8
Epoch 28/50
22/22 [=====] - 0s 4ms/step - loss: 0.2054 - accuracy: 0.8
Epoch 29/50

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```
result = model.evaluate(Xtest, Ytest)
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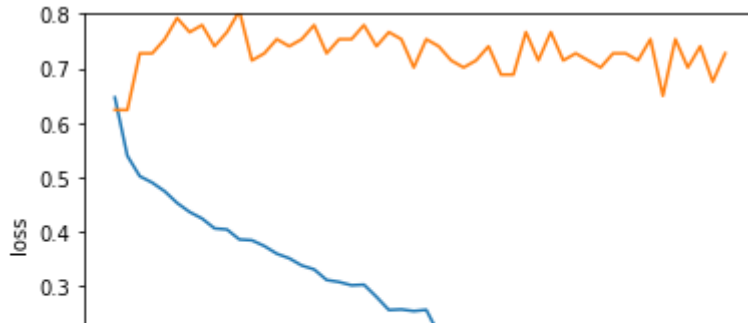
```
3/3 [=====] - 0s 4ms/step - loss: 1.1750 - accuracy: 0.7273
```

```

import matplotlib.pyplot as plt
plt.plot(history.history['loss'], label='loss')
plt.plot(history.history['val_accuracy'], label='val_accuracy')
plt.xlabel('Epoch')
plt.ylabel('loss')
plt.ylim([0, 0.8])
plt.legend(loc='lower left')

```

<matplotlib.legend.Legend at 0x7f39e74662d0>



```
test_loss, test_acc = model.evaluate(Xtest, Ytest, verbose=2)
plt.xlabel('Epoch')
plt.ylabel('Accuracy')
plt.ylim(0.6,1)
plt.plot(history.history['accuracy'], label='accuracy')
```

3/3 - 0s - loss: 1.1750 - accuracy: 0.7273 - 19ms/epoch - 6ms/step
[<matplotlib.lines.Line2D at 0x7f39e5753850>]

