```
#Nile Pallavi Roll NO: 4217 Div:B
# DL Practical NO.1

import pandas as pd
import numpy as np

df = pd.read_csv(r'C:\Users\Pallavi Nile\Downloads\DL\pact_1\Boston_Housing_Data.csv')
print(df)

print("Shape of X:")
X = df.drop("medv", axis=1).values
print(X.shape)

print("Shape of y:")
y = df["medv"].values
print(y.shape)

# Set the random seed for reproducibility
np.random.seed(42)

# Split the data into training and testing sets
test_size = 0.2  # Percentage of data to be used for testing
num_test_samples = int(test_size * len(df))

# Shuffle the indices of the data randomly
shuffled_indices = np.random.permutation(len(df))

# Split the indices into training and test sets
test_indices = shuffled_indices[:num_test_samples]
train_indices = shuffled_indices[num_test_samples:]

# Split the features and target variable based on the indices
X_train = X[train_indices]
X_test = X[test_indices]
y_train = y[train_indices]
y_test = y[test_indices]

print("Shape of X_train:", X_train.shape)
print("Shape of X_test:", X_test.shape)
print("Shape of y_train:", y_train.shape)
print("Shape of y_test:", y_test.shape)
```

```
#Data preprocessing

mean=X_train.mean(axis=0)
std=X_train.std(axis=0)
X_train=(X_train-mean)/std
X_test=(X_test-mean)/std
print(X_train[0])
print(y_train[0])

#building model
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
model=Sequential()
model.add(Dense(128,activation='relu',input_shape=(X_train[0].shape)))
model.add(Dense(64,activation='relu'))
model.add(Dense(1,activation='linear'))
model.compile(optimizer='adam', loss='mse', metrics=['mae'])
print(model.summary())



#training our model

model.fit(X_train, y_train, epochs=100, batch_size=1, verbose=1,validation_data=(X_test, y_test))
print(X_test[8])

#Testing our Model

test_input=[[-0.395866  , -0.49954771 , 0.26756998, -0.27771867, -1.01383089 ,-0.0421327,
 -0.84072005 , 0.32578231, -0.50700864, -0.03630072,  0.17125245 , 0.29430897,
 -0.49453011]]
print("Actual Output :",y_test[8])
print("Predicted Output :",model.predict(test_input))

 #model evaluation
mse_nn,mae_nn=model.evaluate(X_test,y_test)
print('Mean squared error on test data :',mse_nn)
print('Mean absolute error on test data :',mae_nn)
from sklearn.metrics import r2_score
y_dl=model.predict(X_test)
r2=r2_score(y_test,y_dl)
print('R2 Score :',r2)
```

Output:

```
crim    zn  indus  chas    nox  ...  tax  ptratio      b  lstat  medv
0   0.00632  18.0   2.31     0  0.538  ...  296     15.3  396.90   4.98  24.0
1   0.02731   0.0   7.07     0  0.469  ...  242     17.8  396.90   9.14  21.6
2   0.02729   0.0   7.07     0  0.469  ...  242     17.8  392.83   4.03  34.7
3   0.03237   0.0   2.18     0  0.458  ...  222     18.7  394.63   2.94  33.4
4   0.06905   0.0   2.18     0  0.458  ...  222     18.7  396.90   5.33  36.2
..      ...   ...    ...   ...    ...  ...  ...      ...     ...    ...   ...
501  0.06263   0.0  11.93     0  0.573  ...  273     21.0  391.99   9.67  22.4
502  0.04527   0.0  11.93     0  0.573  ...  273     21.0  396.90   9.08  20.6
503  0.06076   0.0  11.93     0  0.573  ...  273     21.0  396.90   5.64  23.9
504  0.10959   0.0  11.93     0  0.573  ...  273     21.0  393.45   6.48  22.0
505  0.04741   0.0  11.93     0  0.573  ...  273     21.0  396.90   7.88  11.9

[506 rows x 14 columns]
Shape of X:
(506, 13)
Shape of y:
(506,)
Shape of X_train: (405, 13)
Shape of X_test: (101, 13)
Shape of y_train: (405,)
Shape of y_test: (101,)
[-0.395866   -0.49954771  0.26756998 -0.27771867 -1.01383089 -0.0421327
 -0.84072005  0.32578231 -0.50700864 -0.03630072  0.17125245  0.29430897
 -0.49453011]
21.4
Model: "sequential_10"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 dense_28 (Dense)            (None, 128)               1792

 dense_29 (Dense)            (None, 64)                8256

 dense_30 (Dense)            (None, 1)                 65

=================================================================
Total params: 10,113
Trainable params: 10,113
```

Non-trainable params: 0

_____

None

Epoch 1/100

405/405 [==============================] - 1s 2ms/step - loss: 131.9694 - mae: 7.6868 - val_loss: 23.2772 - val_mae: 3.1643

Epoch 2/100

405/405 [==============================] - 1s 1ms/step - loss: 20.3213 - mae: 3.0870 - val_loss: 18.0007 - val_mae: 2.8652

Epoch 3/100

405/405 [==============================] - 1s 1ms/step - loss: 16.0820 - mae: 2.8830 - val_loss: 15.3380 - val_mae: 2.5316

Epoch 4/100

405/405 [==============================] - 1s 1ms/step - loss: 14.1997 - mae: 2.6933 - val_loss: 13.7441 - val_mae: 2.4574

Epoch 5/100

405/405 [==============================] - 1s 1ms/step - loss: 13.6563 - mae: 2.6144 - val_loss: 13.6630 - val_mae: 2.3891

Epoch 6/100

405/405 [==============================] - 1s 1ms/step - loss: 11.9183 - mae: 2.4655 - val_loss: 12.9116 - val_mae: 2.3726

Epoch 7/100

405/405 [==============================] - 1s 1ms/step - loss: 12.1821 - mae: 2.5067 - val_loss: 13.0036 - val_mae: 2.4194

Epoch 8/100

405/405 [==============================] - 1s 1ms/step - loss: 11.1841 - mae: 2.4717 - val_loss: 14.4589 - val_mae: 2.6005

Epoch 9/100

405/405 [==============================] - 1s 1ms/step - loss: 10.7131 - mae: 2.3939 - val_loss: 11.9493 - val_mae: 2.2703

Epoch 10/100

405/405 [==============================] - 1s 1ms/step - loss: 9.7527 - mae: 2.3094 - val_loss: 12.7310 - val_mae: 2.4561

Epoch 11/100

405/405 [==============================] - 1s 1ms/step - loss: 9.6041 - mae: 2.3094 - val_loss: 13.2768 - val_mae: 2.5256

Epoch 12/100

405/405 [==============================] - 1s 1ms/step - loss: 9.2582 - mae: 2.3332 - val_loss: 13.4592 - val_mae: 2.4178

Epoch 13/100

405/405 [==============================] - 1s 1ms/step - loss: 9.2426 - mae: 2.2480 - val_loss: 12.5691 - val_mae: 2.4292

Epoch 14/100
405/405 [==============================] - 1s 1ms/step - loss: 8.3951 - mae: 2.1531 - val_loss: 11.9299 - val_mae: 2.2402
Epoch 15/100
405/405 [==============================] - 1s 2ms/step - loss: 8.2520 - mae: 2.1126 - val_loss: 13.0701 - val_mae: 2.4060
Epoch 16/100
405/405 [==============================] - 1s 1ms/step - loss: 8.0935 - mae: 2.1551 - val_loss: 12.3728 - val_mae: 2.3272
Epoch 17/100
405/405 [==============================] - 1s 1ms/step - loss: 7.5124 - mae: 2.0854 - val_loss: 12.7399 - val_mae: 2.3531
Epoch 18/100
405/405 [==============================] - 1s 1ms/step - loss: 7.5126 - mae: 2.0528 - val_loss: 13.3957 - val_mae: 2.2906
Epoch 19/100
405/405 [==============================] - 1s 1ms/step - loss: 6.9238 - mae: 2.0088 - val_loss: 13.4070 - val_mae: 2.4391
Epoch 20/100
405/405 [==============================] - 1s 1ms/step - loss: 6.8276 - mae: 2.0280 - val_loss: 12.3925 - val_mae: 2.3334
Epoch 21/100
405/405 [==============================] - 1s 1ms/step - loss: 6.7970 - mae: 1.9785 - val_loss: 13.7717 - val_mae: 2.5497
Epoch 22/100
405/405 [==============================] - 1s 1ms/step - loss: 6.6257 - mae: 1.9875 - val_loss: 12.3755 - val_mae: 2.3525
Epoch 23/100
405/405 [==============================] - 1s 1ms/step - loss: 6.1608 - mae: 1.9382 - val_loss: 11.6934 - val_mae: 2.2718
Epoch 24/100
405/405 [==============================] - 1s 1ms/step - loss: 6.0773 - mae: 1.9229 - val_loss: 13.6853 - val_mae: 2.4924
Epoch 25/100
405/405 [==============================] - 1s 1ms/step - loss: 6.2665 - mae: 1.9089 - val_loss: 12.2459 - val_mae: 2.4337
Epoch 26/100
405/405 [==============================] - 1s 1ms/step - loss: 5.9866 - mae: 1.8763 - val_loss: 11.4314 - val_mae: 2.2453
Epoch 27/100
405/405 [==============================] - 1s 1ms/step - loss: 5.9049 - mae: 1.8171 - val_loss: 11.2346 - val_mae: 2.1282

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Epoch 28/100
405/405 [==============================] - 1s 1ms/step - loss: 6.1705 - mae: 1.8980 - val_loss: 10.8513 - val_mae: 2.1821
Epoch 29/100
405/405 [==============================] - 1s 1ms/step - loss: 5.3383 - mae: 1.7492 - val_loss: 12.6256 - val_mae: 2.3391
Epoch 30/100
405/405 [==============================] - 1s 1ms/step - loss: 5.5110 - mae: 1.8034 - val_loss: 12.6019 - val_mae: 2.5013
Epoch 31/100
405/405 [==============================] - 1s 1ms/step - loss: 5.6895 - mae: 1.7772 - val_loss: 10.7513 - val_mae: 2.1376
Epoch 32/100
405/405 [==============================] - 1s 1ms/step - loss: 5.3270 - mae: 1.7627 - val_loss: 11.8629 - val_mae: 2.2704
Epoch 33/100
405/405 [==============================] - 1s 1ms/step - loss: 5.4483 - mae: 1.7627 - val_loss: 11.2606 - val_mae: 2.1566
Epoch 34/100
405/405 [==============================] - 1s 1ms/step - loss: 5.0249 - mae: 1.7200 - val_loss: 10.9003 - val_mae: 2.1400
Epoch 35/100
405/405 [==============================] - 1s 1ms/step - loss: 4.9463 - mae: 1.6451 - val_loss: 10.4056 - val_mae: 2.0512
Epoch 36/100
405/405 [==============================] - 1s 2ms/step - loss: 4.5831 - mae: 1.6284 - val_loss: 10.2521 - val_mae: 2.1242
Epoch 37/100
405/405 [==============================] - 1s 2ms/step - loss: 4.4603 - mae: 1.6002 - val_loss: 10.7677 - val_mae: 2.1620
Epoch 38/100
405/405 [==============================] - 1s 2ms/step - loss: 4.4700 - mae: 1.6421 - val_loss: 10.7208 - val_mae: 2.1212
Epoch 39/100
405/405 [==============================] - 1s 1ms/step - loss: 4.3356 - mae: 1.5848 - val_loss: 13.5537 - val_mae: 2.6014
Epoch 40/100
405/405 [==============================] - 1s 1ms/step - loss: 4.5014 - mae: 1.6023 - val_loss: 10.7915 - val_mae: 2.0444
Epoch 41/100
405/405 [==============================] - 1s 1ms/step - loss: 4.7389 - mae: 1.6668 - val_loss: 11.2216 - val_mae: 2.2934
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Epoch 42/100
405/405 [==============================] - 1s 1ms/step - loss: 4.3529 - mae: 1.5532 - val_loss: 13.6586 - val_mae: 2.5355
Epoch 43/100
405/405 [==============================] - 1s 1ms/step - loss: 4.7267 - mae: 1.6801 - val_loss: 10.0980 - val_mae: 2.0130
Epoch 44/100
405/405 [==============================] - 1s 1ms/step - loss: 4.0055 - mae: 1.5279 - val_loss: 11.0452 - val_mae: 2.1923
Epoch 45/100
405/405 [==============================] - 1s 1ms/step - loss: 4.8441 - mae: 1.6669 - val_loss: 10.5468 - val_mae: 1.9689
Epoch 46/100
405/405 [==============================] - 1s 1ms/step - loss: 4.2151 - mae: 1.5774 - val_loss: 10.9348 - val_mae: 2.2068
Epoch 47/100
405/405 [==============================] - 1s 1ms/step - loss: 4.2922 - mae: 1.5638 - val_loss: 11.4779 - val_mae: 2.2920
Epoch 48/100
405/405 [==============================] - 1s 1ms/step - loss: 3.6515 - mae: 1.4587 - val_loss: 10.5481 - val_mae: 2.1221
Epoch 49/100
405/405 [==============================] - 1s 1ms/step - loss: 3.3489 - mae: 1.3714 - val_loss: 11.4757 - val_mae: 2.1562
Epoch 50/100
405/405 [==============================] - 1s 1ms/step - loss: 4.0256 - mae: 1.5022 - val_loss: 11.6842 - val_mae: 2.1417
Epoch 51/100
405/405 [==============================] - 1s 1ms/step - loss: 3.3893 - mae: 1.3968 - val_loss: 10.7627 - val_mae: 2.1765
Epoch 52/100
405/405 [==============================] - 1s 1ms/step - loss: 3.8956 - mae: 1.4359 - val_loss: 10.8663 - val_mae: 2.2566
Epoch 53/100
405/405 [==============================] - 1s 1ms/step - loss: 3.7817 - mae: 1.4491 - val_loss: 12.3847 - val_mae: 2.4174
Epoch 54/100
405/405 [==============================] - 1s 1ms/step - loss: 3.6936 - mae: 1.4608 - val_loss: 10.8442 - val_mae: 2.0744
Epoch 55/100
405/405 [==============================] - 1s 1ms/step - loss: 3.8502 - mae: 1.4222 - val_loss: 11.3007 - val_mae: 2.2329
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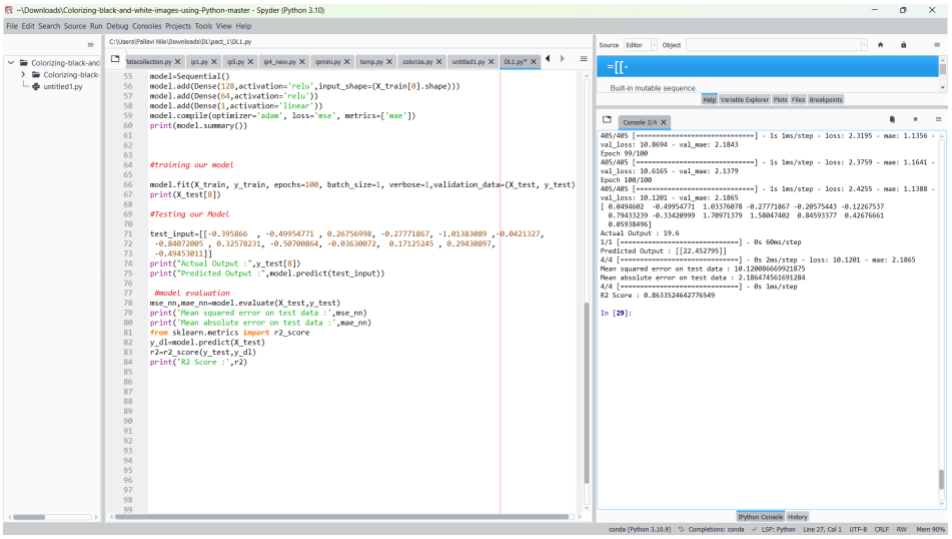
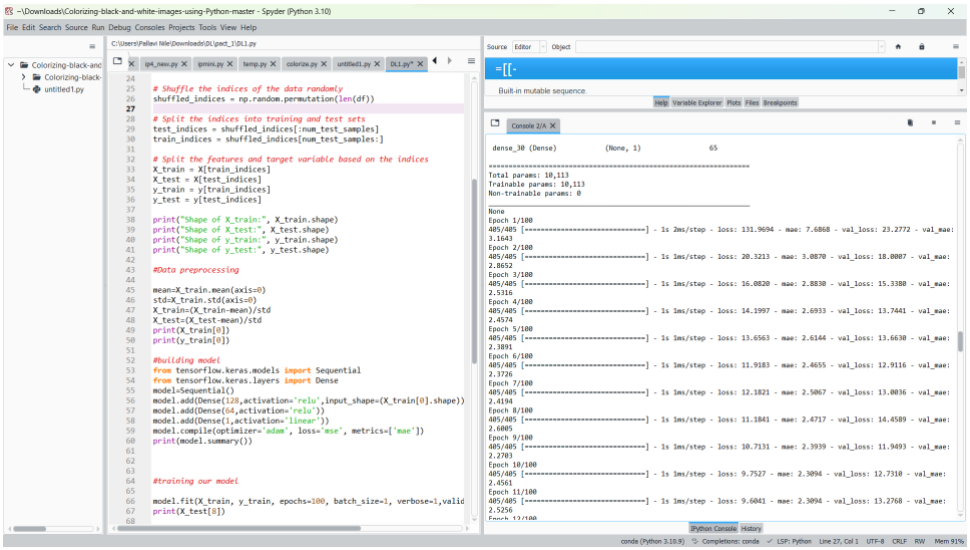
Epoch 56/100
405/405 [==============================] - 1s 1ms/step - loss: 3.7814 - mae: 1.4599 - val_loss: 11.2870 - val_mae: 2.3081
Epoch 57/100
405/405 [==============================] - 1s 1ms/step - loss: 3.3710 - mae: 1.4046 - val_loss: 10.9141 - val_mae: 2.0836
Epoch 58/100
405/405 [==============================] - 1s 1ms/step - loss: 3.6419 - mae: 1.4324 - val_loss: 11.0506 - val_mae: 2.3588
Epoch 59/100
405/405 [==============================] - 1s 1ms/step - loss: 3.4211 - mae: 1.3690 - val_loss: 10.1135 - val_mae: 2.0520
Epoch 60/100
405/405 [==============================] - 1s 1ms/step - loss: 3.4310 - mae: 1.4082 - val_loss: 11.8353 - val_mae: 2.1743
Epoch 61/100
405/405 [==============================] - 1s 1ms/step - loss: 3.3805 - mae: 1.3818 - val_loss: 12.6161 - val_mae: 2.4017
Epoch 62/100
405/405 [==============================] - 1s 1ms/step - loss: 3.2174 - mae: 1.3312 - val_loss: 10.0526 - val_mae: 2.2038
Epoch 63/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0071 - mae: 1.3008 - val_loss: 10.4478 - val_mae: 2.1736
Epoch 64/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0988 - mae: 1.3416 - val_loss: 10.3429 - val_mae: 2.0281
Epoch 65/100
405/405 [==============================] - 1s 1ms/step - loss: 3.4175 - mae: 1.3802 - val_loss: 12.4171 - val_mae: 2.4823
Epoch 66/100
405/405 [==============================] - 1s 1ms/step - loss: 3.3607 - mae: 1.3539 - val_loss: 10.6548 - val_mae: 2.1394
Epoch 67/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0866 - mae: 1.3118 - val_loss: 11.4328 - val_mae: 2.2975
Epoch 68/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0616 - mae: 1.2770 - val_loss: 13.8675 - val_mae: 2.4276
Epoch 69/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0182 - mae: 1.2975 - val_loss: 11.7308 - val_mae: 2.1988

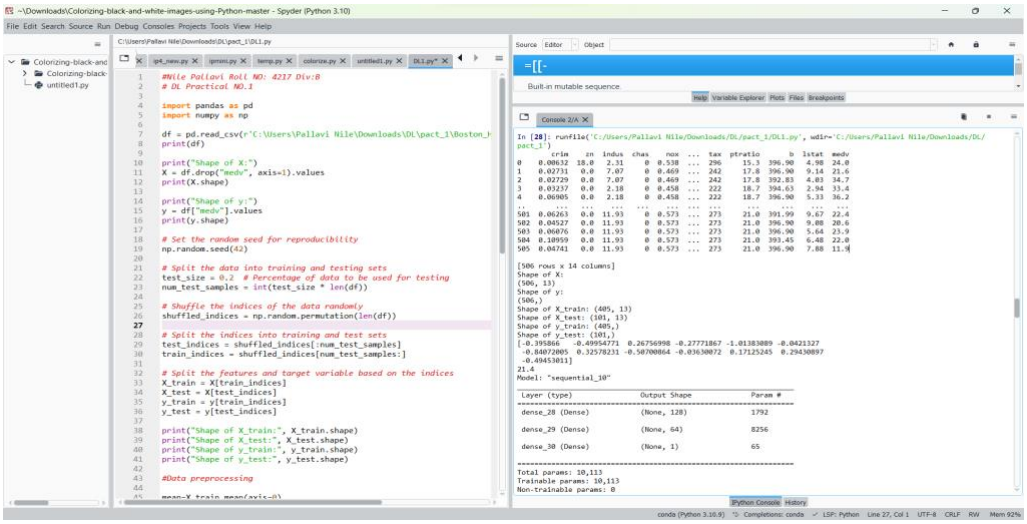
Epoch 70/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0972 - mae: 1.3418 - val_loss: 10.3175 - val_mae: 2.1612
Epoch 71/100
405/405 [==============================] - 1s 1ms/step - loss: 2.9455 - mae: 1.2727 - val_loss: 10.4521 - val_mae: 2.1601
Epoch 72/100
405/405 [==============================] - 1s 1ms/step - loss: 2.7348 - mae: 1.2413 - val_loss: 9.8982 - val_mae: 2.0186
Epoch 73/100
405/405 [==============================] - 1s 1ms/step - loss: 3.1025 - mae: 1.3526 - val_loss: 10.3144 - val_mae: 2.1408
Epoch 74/100
405/405 [==============================] - 1s 1ms/step - loss: 2.9083 - mae: 1.2865 - val_loss: 11.1949 - val_mae: 2.2077
Epoch 75/100
405/405 [==============================] - 1s 1ms/step - loss: 2.9698 - mae: 1.2642 - val_loss: 11.1746 - val_mae: 2.3780
Epoch 76/100
405/405 [==============================] - 1s 1ms/step - loss: 2.6385 - mae: 1.2211 - val_loss: 11.3594 - val_mae: 2.2316
Epoch 77/100
405/405 [==============================] - 1s 1ms/step - loss: 2.4980 - mae: 1.1867 - val_loss: 10.8848 - val_mae: 2.2254
Epoch 78/100
405/405 [==============================] - 1s 1ms/step - loss: 2.5195 - mae: 1.1846 - val_loss: 10.7358 - val_mae: 2.1499
Epoch 79/100
405/405 [==============================] - 1s 1ms/step - loss: 2.9154 - mae: 1.2707 - val_loss: 12.6326 - val_mae: 2.3690
Epoch 80/100
405/405 [==============================] - 1s 1ms/step - loss: 2.5097 - mae: 1.1776 - val_loss: 11.4425 - val_mae: 2.3022
Epoch 81/100
405/405 [==============================] - 1s 1ms/step - loss: 2.6592 - mae: 1.2059 - val_loss: 11.3584 - val_mae: 2.2487
Epoch 82/100
405/405 [==============================] - 1s 1ms/step - loss: 2.6194 - mae: 1.2351 - val_loss: 10.3772 - val_mae: 2.1942
Epoch 83/100
405/405 [==============================] - 1s 1ms/step - loss: 2.5899 - mae: 1.2102 - val_loss: 9.9613 - val_mae: 1.9894

Epoch 84/100
405/405 [==============================] - 1s 1ms/step - loss: 2.9611 - mae: 1.2933 - val_loss: 11.4531 - val_mae: 2.2179
Epoch 85/100
405/405 [==============================] - 1s 1ms/step - loss: 2.3555 - mae: 1.1617 - val_loss: 11.4880 - val_mae: 2.1919
Epoch 86/100
405/405 [==============================] - 1s 1ms/step - loss: 3.0024 - mae: 1.2981 - val_loss: 11.3684 - val_mae: 2.2743
Epoch 87/100
405/405 [==============================] - 1s 1ms/step - loss: 2.7357 - mae: 1.2221 - val_loss: 11.1201 - val_mae: 2.2172
Epoch 88/100
405/405 [==============================] - 1s 1ms/step - loss: 2.4083 - mae: 1.1566 - val_loss: 11.0137 - val_mae: 2.2381
Epoch 89/100
405/405 [==============================] - 1s 1ms/step - loss: 2.2354 - mae: 1.1169 - val_loss: 9.8410 - val_mae: 2.1405
Epoch 90/100
405/405 [==============================] - 1s 1ms/step - loss: 2.6332 - mae: 1.2512 - val_loss: 10.4604 - val_mae: 2.0903
Epoch 91/100
405/405 [==============================] - 1s 1ms/step - loss: 2.2639 - mae: 1.1138 - val_loss: 10.7505 - val_mae: 2.0973
Epoch 92/100
405/405 [==============================] - 1s 1ms/step - loss: 2.7683 - mae: 1.2271 - val_loss: 9.6680 - val_mae: 2.0408
Epoch 93/100
405/405 [==============================] - 1s 1ms/step - loss: 2.2436 - mae: 1.1091 - val_loss: 12.4192 - val_mae: 2.3987
Epoch 94/100
405/405 [==============================] - 1s 1ms/step - loss: 2.2074 - mae: 1.0994 - val_loss: 10.4986 - val_mae: 2.2612
Epoch 95/100
405/405 [==============================] - 1s 1ms/step - loss: 2.7602 - mae: 1.2375 - val_loss: 9.7729 - val_mae: 2.0761
Epoch 96/100
405/405 [==============================] - 1s 1ms/step - loss: 2.5559 - mae: 1.1601 - val_loss: 9.4099 - val_mae: 1.9973
Epoch 97/100
405/405 [==============================] - 1s 1ms/step - loss: 2.0664 - mae: 1.0761 - val_loss: 9.8013 - val_mae: 2.0054

Epoch 98/100
405/405 [==============================] - 1s 1ms/step - loss: 2.3195 - mae: 1.1356 - val_loss: 10.8694 - val_mae: 2.1843
Epoch 99/100
405/405 [==============================] - 1s 1ms/step - loss: 2.3759 - mae: 1.1641 - val_loss: 10.6165 - val_mae: 2.1379
Epoch 100/100
405/405 [==============================] - 1s 1ms/step - loss: 2.4255 - mae: 1.1388 - val_loss: 10.1201 - val_mae: 2.1865
[0.0494602 -0.49954771 1.03376078 -0.27771867 -0.20575443 -0.12267537
  0.79433239 -0.33420999 1.70971379 1.58047402 0.84593377 0.42676661
  0.05938496]
Actual Output : 19.6
1/1 [==============================] - 0s 60ms/step
Predicted Output : [[22.452795]]
4/4 [==============================] - 0s 2ms/step - loss: 10.1201 - mae: 2.1865
Mean squared error on test data : 10.120086669921875
Mean absolute error on test data : 2.186474561691284
4/4 [==============================] - 0s 1ms/step
R2 Score : 0.8633524642776549




~\Downloads\Colorizing-black-and-white-images-using-Python-master - Spyder (Python 3.10)
File Edit Search Source Run Debug Consoles Projects Tools View Help
Colorizing-black-and-white-images-using-Python-master
Colorizing-black-and-white-images-using-Python-master
untitled1.py
# Shuffle the indices of the data randomly
shuffled_indices = np.random.permutation(len(df))
# Split the indices into training and test sets
test_indices = shuffled_indices[:num_test_samples]
train_indices = shuffled_indices[num_test_samples:]
# Split the features and target variable based on the indices
X_train = X[train_indices]
X_test = X[test_indices]
y_train = y[train_indices]
y_test = y[test_indices]
print("Shape of X_train:", X_train.shape)
print("Shape of X_test:", X_test.shape)
print("Shape of y_train:", y_train.shape)
print("Shape of y_test:", y_test.shape)
#Data preprocessing
mean=X_train.mean(axis=0)
std=X_train.std(axis=0)
X_train=(X_train-mean)/std
X_test=(X_test-mean)/std
print(X_train[0])
print(y_train[0])
#building model
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
model=Sequential()
model.add(Dense(128,activation='relu',input_shape=(X_train[0].shape))
model.add(Dense(64,activation='relu'))
model.add(Dense(1,activation='linear'))
model.compile(optimizer='adam', loss='mse', metrics=['mae'])
print(model.summary())
#training our model
model.fit(X_train, y_train, epochs=100, batch_size=1, verbose=1,valid
print(X_test[0])
dense_30 (Dense) (None, 1) 65
Total params: 10,113
Trainable params: 10,113
Non-trainable params: 0
None
Epoch 1/100
405/405 [==========] - 1s 2ms/step - loss: 131.9694 - mae: 7.6868 - val_loss: 23.2772 - val_mae: 3.1643
Epoch 2/100
405/405 [==========] - 1s 1ms/step - loss: 20.3213 - mae: 3.0870 - val_loss: 18.0007 - val_mae: 2.8652
Epoch 3/100
405/405 [==========] - 1s 1ms/step - loss: 16.0820 - mae: 2.8830 - val_loss: 15.3380 - val_mae: 2.5316
Epoch 4/100
405/405 [==========] - 1s 1ms/step - loss: 14.1997 - mae: 2.6933 - val_loss: 13.7441 - val_mae: 2.4574
Epoch 5/100
405/405 [==========] - 1s 1ms/step - loss: 13.6563 - mae: 2.6144 - val_loss: 13.6630 - val_mae: 2.3891
Epoch 6/100
405/405 [==========] - 1s 1ms/step - loss: 11.9183 - mae: 2.4655 - val_loss: 12.9116 - val_mae: 2.3726
Epoch 7/100
405/405 [==========] - 1s 1ms/step - loss: 12.1821 - mae: 2.5067 - val_loss: 13.0036 - val_mae: 2.4194
Epoch 8/100
405/405 [==========] - 1s 1ms/step - loss: 11.1841 - mae: 2.4717 - val_loss: 14.4589 - val_mae: 2.6005
Epoch 9/100
405/405 [==========] - 1s 1ms/step - loss: 10.7131 - mae: 2.3939 - val_loss: 11.9493 - val_mae: 2.2703
Epoch 10/100
405/405 [==========] - 1s 1ms/step - loss: 9.7527 - mae: 2.3094 - val_loss: 12.7310 - val_mae: 2.4561
Epoch 11/100
405/405 [==========] - 1s 1ms/step - loss: 9.6041 - mae: 2.3094 - val_loss: 13.2768 - val_mae: 2.5256


~\Downloads\Colorizing-black-and-white-images-using-Python-master - Spyder (Python 3.10)
#Nile Pallavi Roll NO: 4217 Div:B
# DL Practical NO.1
import pandas as pd
import numpy as np
df = pd.read_csv(r'C:\Users\Pallavi Nile\Downloads\DL\pact_1\Boston_h
print(df)
print("Shape of X:")
X = df.drop("medv", axis=1).values
print(X.shape)
print("Shape of y:")
y = df["medv"].values
print(y.shape)
# Set the random seed for reproducibility
np.random.seed(42)
# Split the data into training and testing sets
test_size = 0.2 # Percentage of data to be used for testing
num_test_samples = int(test_size * len(df))
# Shuffle the indices of the data randomly
shuffled_indices = np.random.permutation(len(df))
# Split the indices into training and test sets
test_indices = shuffled_indices[:num_test_samples]
train_indices = shuffled_indices[num_test_samples:]
# Split the features and target variable based on the indices
X_train = X[train_indices]
X_test = X[test_indices]
y_train = y[train_indices]
y_test = y[test_indices]
print("Shape of X_train:", X_train.shape)
print("Shape of X_test:", X_test.shape)
print("Shape of y_train:", y_train.shape)
print("Shape of y_test:", y_test.shape)
#Data preprocessing
In [28]: runfile('C:/Users/Pallavi Nile/Downloads/DL/pact_1/DL1.py', wdir='C:/Users/Pallavi Nile/Downloads/DL/pact_1')
crim zn indus chas nox ... tax ptratio b lstat medv
0 0.00632 18.0 2.31 0 0.538 ... 296 15.3 396.90 4.98 24.0
1 0.02731 0.0 7.07 0 0.469 ... 242 17.8 396.90 9.14 21.6
2 0.02729 0.0 7.07 0 0.469 ... 242 17.8 392.83 4.03 34.7
3 0.03237 0.0 2.18 0 0.458 ... 222 18.7 394.63 2.94 33.4
4 0.06905 0.0 2.18 0 0.458 ... 222 18.7 396.90 5.33 36.2
.. ..
501 0.06263 0.0 11.93 0 0.573 ... 273 21.0 391.99 9.67 22.4
502 0.04527 0.0 11.93 0 0.573 ... 273 21.0 396.90 9.08 20.6
503 0.06076 0.0 11.93 0 0.573 ... 273 21.0 396.90 5.64 23.9
504 0.10959 0.0 11.93 0 0.573 ... 273 21.0 393.45 6.48 22.0
505 0.04741 0.0 11.93 0 0.573 ... 273 21.0 396.90 7.88 11.9
[506 rows x 14 columns]
Shape of X:
(506, 13)
Shape of y:
(506,)
Shape of X_train: (405, 13)
Shape of X_test: (101, 13)
Shape of y_train: (405,)
Shape of y_test: (101,)
[-0.395866 -0.49954771 0.26756998 -0.27771867 -1.01383089 -0.0421327
-0.84072005 0.32578231 -0.50700864 -0.03630072 0.17125245 0.29430897
-0.49453011]
21.4
Model: "sequential_10"
Layer (type) Output Shape Param #
dense_28 (Dense) (None, 128) 1792
dense_29 (Dense) (None, 64) 8256
dense_30 (Dense) (None, 1) 65
Total params: 10,113
Trainable params: 10,113
Non-trainable params: 0