## B211038- Srushti Gavale

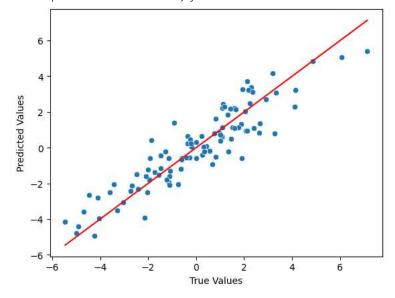
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Boston house price
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# Importing libraries
import numpy as np
import pandas as pd
import tensorflow as tf
from sklearn.model selection import train test split
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import r2_score
# Loading the Boston Housing dataset
boston_dataset = pd.read_csv('Boston.csv')
boston = pd.DataFrame(boston_dataset, columns=boston_dataset.columns)
boston['MEDV'] = boston_dataset['medv']
boston_dataset.shape
     (506, 16)
print(boston_dataset.head(5))
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print(np.shape(boston_dataset))
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print(boston_dataset.describe())
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# Split the data into training and testing sets
X = boston.drop('MEDV', axis=1)
Y = boston['MEDV']
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.2, random_state=1)
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# Scale the data
scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)
# Define the model
model = tf.keras.models.Sequential([
 tf.keras.layers.Dense(64, activation='relu', input_shape=(X_train.shape[1],)),
 tf.keras.layers.Dense(64, activation='relu'),
 tf.keras.layers.Dense(1)
1)
# Compile the model
model.compile(optimizer='adam', loss='mse')
# Train the model
history = model.fit(X_train_scaled, Y_train, validation_data=(X_test_scaled, Y_test), epochs=100)
  Epoch 1/100
  Epoch 2/100
  13/13 [=====
           Epoch 3/100
  Epoch 4/100
  Epoch 5/100
  Epoch 6/100
  Epoch 7/100
  Epoch 8/100
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           Epoch 9/100
  Epoch 10/100
  Epoch 11/100
  13/13 [======
            ==========] - 0s 4ms/step - loss: 19.9854 - val_loss: 18.1820
  Epoch 12/100
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              =========] - 0s 4ms/step - loss: 17.1946 - val_loss: 15.7325
  Epoch 13/100
  Epoch 14/100
  13/13 [======
             ========== ] - 0s 4ms/step - loss: 13.4463 - val loss: 12.7971
  Epoch 15/100
  Epoch 16/100
  13/13 [==============] - 0s 4ms/step - loss: 11.1735 - val_loss: 10.7977
  Epoch 17/100
  Epoch 18/100
  13/13 [============== ] - 0s 4ms/step - loss: 9.5420 - val_loss: 9.5540
  Epoch 19/100
  13/13 [============] - 0s 4ms/step - loss: 8.9082 - val_loss: 9.0734
  Epoch 20/100
  Fnoch 21/100
  13/13 [=============== ] - 0s 4ms/step - loss: 7.7903 - val_loss: 8.1594
  Epoch 22/100
  13/13 [=====
              =========] - 0s 4ms/step - loss: 7.3412 - val_loss: 7.7143
  Epoch 23/100
  13/13 [=================== ] - 0s 4ms/step - loss: 6.9347 - val_loss: 7.3838
  Epoch 24/100
  13/13 [======
          Epoch 25/100
  Epoch 26/100
  Epoch 27/100
  13/13 [===========] - 0s 4ms/step - loss: 5.6786 - val_loss: 6.1964
  Epoch 28/100
  13/13 [============== ] - 0s 4ms/step - loss: 5.3824 - val_loss: 5.9290
  Epoch 29/100
  13/13 [===============] - 0s 3ms/step - loss: 5.1993 - val_loss: 5.7668
# Evaluate the model
Y pred = model.predict(X test scaled)
r2 = r2_score(Y_test, Y_pred)
print("R^2 score:", r2)
```

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4/4 [=======] - 0s 2ms/step
    R^2 score: 0.987125595222069
import numpy as np
import seaborn as sns
# Generate some sample data
X = np.random.normal(0, 1, 100)
Y = 2 * X + np.random.normal(0, 1, 100)
# Fit a linear regression model
model = np.polyfit(X, Y, 1)
# Make predictions on the training data
Y_pred = np.polyval(model, X)
# Add axis labels
plt.xlabel('True Values')
plt.ylabel('Predicted Values')
# Create a scatter plot of predicted vs true values
sns.scatterplot(np.squeeze(Y), np.squeeze(Y_pred))
# Add a diagonal line to show perfect correlation
\verb|sns.lineplot(np.squeeze(Y), np.squeeze(Y), color='red')|\\
```

C:\Users\D\_COMP\_RSL-14\anaconda3\lib\site-packages\seaborn\\_decorators.py:36: FutureWarning: Pass the following variables a
warnings.warn(
C:\Users\D\_COMP\_RSL-14\anaconda3\lib\site-packages\seaborn\\_decorators.py:36: FutureWarning: Pass the following variables a
warnings.warn(
<AxesSubplot:xlabel='True Values', ylabel='Predicted Values'>



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