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import numpy as np
import pandas as pd
df = pd.read_csv('HousingData.csv',na_values='NA')
df.head()
df.isna().sum()

df.describe()

for i in df.columns:
    mean_value = df[i].mean()
    df[i].fillna(mean_value, inplace=True)
df.isna().sum()

df.head()

from sklearn.model_selection import train_test_split

X = df.loc[:, df.columns != 'MEDV']
y = df.loc[:, df.columns == 'MEDV']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=123)
from sklearn.preprocessing import MinMaxScaler
mms = MinMaxScaler()
mms.fit(X_train)
X_train = mms.transform(X_train)
X_test = mms.transform(X_test)
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense

model = Sequential()

model.add(Dense(128, input_shape=(13, ), activation='relu', name='dense_1'))
model.add(Dense(64, activation='relu', name='dense_2'))
model.add(Dense(1, activation='linear', name='dense_output'))

model.compile(optimizer='adam', loss='mse', metrics=['mae'])
model.summary()

history = model.fit(X_train, y_train, epochs=100, validation_split=0.05, verbose = 1)

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)
```