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from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.model_selection import train_test_split
import numpy as np
import random
import pandas as pd

# read the data into a Pandas Data Frame

data = pd.read_csv("https://archive.ics.uci.edu/ml/machine-
learning-databases/cpu-performance/machine.data", header=None)

# label the columns of the Data Frame
data.columns=["vendor", "Model", "MYCT", "MMIN", "MMAX", "CACH", \
    "CHMIN", "CHMAX", "PRP", "ERP"]

# select the x and y values

xvals=data["PRP"]
yvals=data["ERP"]

# Shuffle indices for test/train split

xtrain,xtest,ytrain,ytest=\
    train_test_split(np.array(xvals).reshape(-1,1), \
        np.array(yvals))

# perform the regression using TRAIN set
# and print the fit values

r=LinearRegression().fit(xtrain, ytrain)
print("intercept=",r.intercept_[0], "slope=",r.coef_[0,0])

# make a prediction using TEST data and print basic metrics

P=r.predict(xtest)
MSE = mean_squared_error(ytest,P)
R2=r2_score(ytest,P)
print("MSE=",MSE, "R2=",R2)

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