import numpy as np  
import pandas as pd  
import matplotlib.pyplot as plt  
  
  
data = pd.read\_csv('E:\\机器学习\\机器学习作业\_数据/regress\_data1.csv')  
X = data.iloc[:, 0].values.reshape(-1, 1) *# 人口数据*y = data.iloc[:, 1].values.reshape(-1, 1) *# 收益数据*X\_b = np.hstack([np.ones((X.shape[0], 1)), X])  
  
theta = np.random.randn(X\_b.shape[1], 1)  
  
learning\_rate = 0.01  
iterations = 1000  
  
*# 梯度下降法*for iteration in range(iterations):  
  
 y\_pred = X\_b.dot(theta)  
  
  
 error = y\_pred - y  
  
  
 gradient = X\_b.T.dot(error) / len(X\_b)  
  
  
 theta -= learning\_rate \* gradient  
  
  
plt.scatter(X, y, color='blue')  
plt.plot(X, X\_b.dot(theta), color='red', linewidth=2)  
plt.xlabel('Population')  
plt.ylabel('Profit')  
plt.show()