

* Picture shown above have 10 load profiles. (data will be provided in excel file)
* I want to extract the abnormal heat load profile (profile D).
* I want to develop an algorithm named peak analysis by using coding language.
* At first a baseline is drawn at the center of the load profile (at zero value on x-axis) as shown in below picture



* After this position of peaks in the upward and downward direction is noted.
* On the basis of the position noted for all 10 profiles, K-clustering method or any other outlier method is utilized to separate out this abnormal profile.

**I try this code: (because of time shortage , unable to finish it, you can modify it too or take help if you want)**

import matplotlib.pyplot as plt

from scipy.misc import electrocardiogram

from scipy.signal import find\_peaks

import numpy as np

import random

#1.generate data

data = []

for i in range(168):

ran = random.randint(1, 300)

data.append(ran)

print(ran, end=' ')

#1.1 seperate data

n = 6

split\_data = [data[i:i+n] for i in range(0,len(data),n)]

#Analog data

split\_data

#1.2 find peak of each hour

peak\_true\_value = []

peak\_index = []

for part\_split in range(len(split\_data)):

peaks, \_ = find\_peaks(split\_data[part\_split])

index\_list = [j + part\_split\*6 for j in peaks.tolist()]

true\_value = [split\_data[part\_split][j] for j in peaks.tolist()]

peak\_true\_value = peak\_true\_value + true\_value

peak\_index = peak\_index + index\_list

plt.plot(data)

arr\_peak\_true\_value = np.array(peak\_true\_value)

arr\_peak\_index = np.array(peak\_index)

plt.plot(arr\_peak\_index, arr\_peak\_true\_value, "\*")

plt.savefig('./first.png')

plt.show()