Heartbeat rate data Analysis

FEBRUARY 26

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Logo Name

Heartbeat Data Analysis
Tools Used

Scipy, Numpy, Seaborn, Matplotlib, Sklearn, Pandas,

Data Import

I have used A00003.mat file for my analysis, it's a dictionary which have values for heartbeat from ECG. Data is described as

count	18000
mean	-6.78917
std	149.181
min	-1041
0.25	-36
0.5	20
0.75	57
max	520

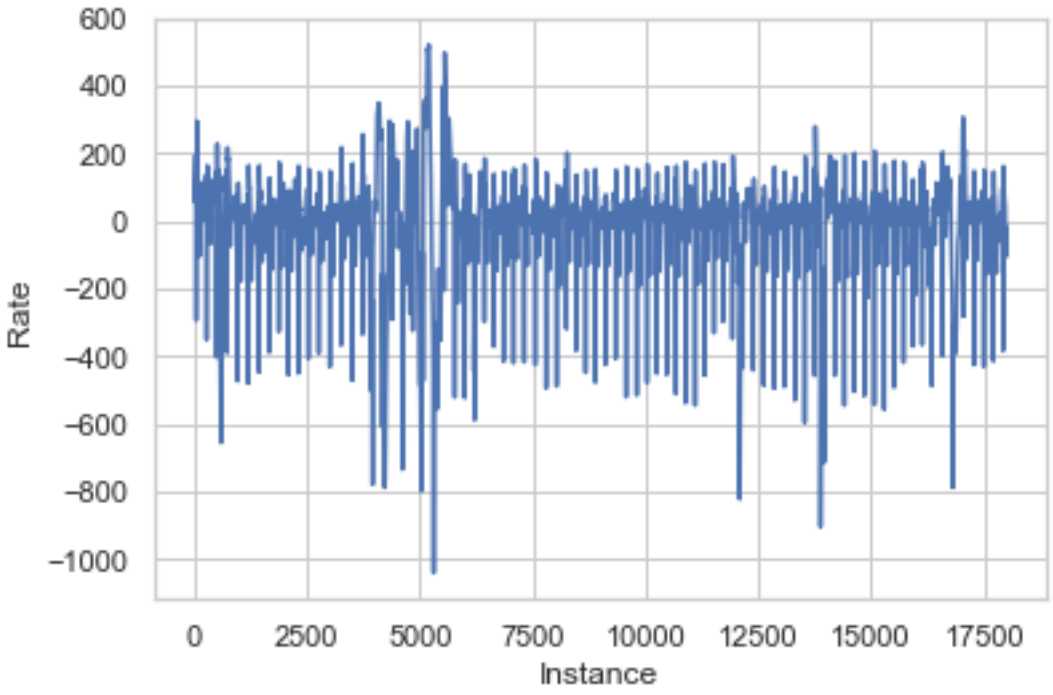

Figure 1

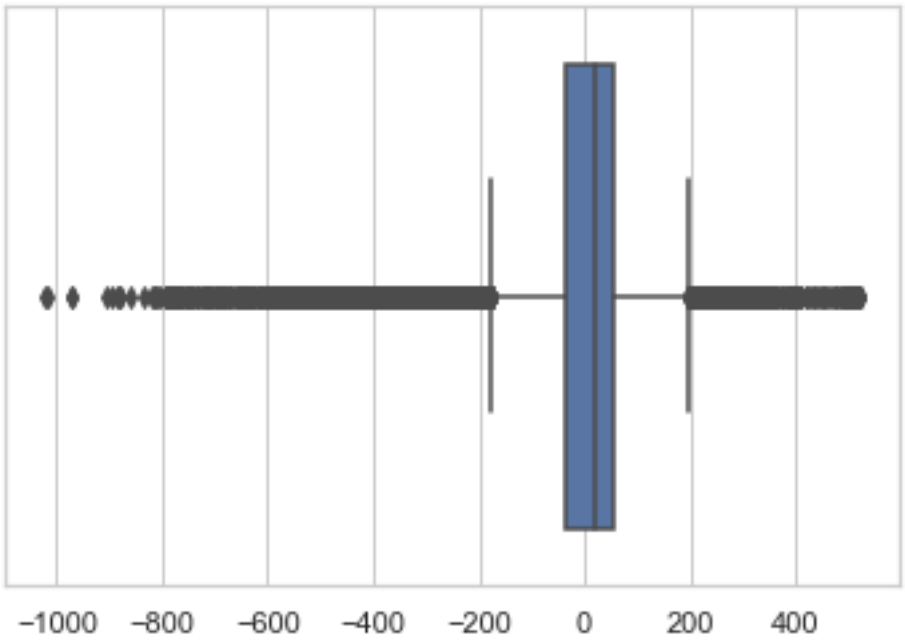

Figure 2

In these graphs we can clearly see the outliers and bad values which be eliminated from the data sets.

First method: -
Smoothing technique

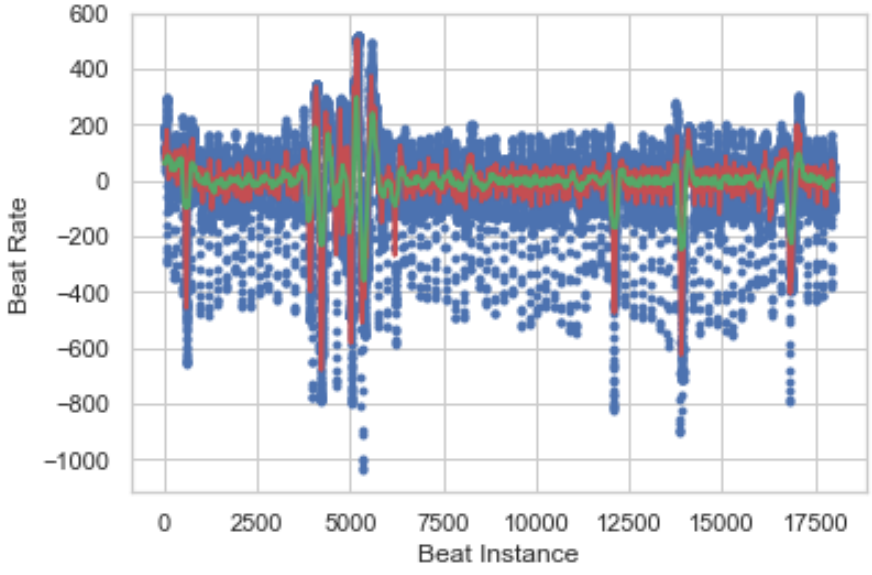

Figure 3

We can see the graph clearly the green line shows appropriate beat from the data.
So using Zscore and setting up threshold, we removed the outliers as shown in graph 1

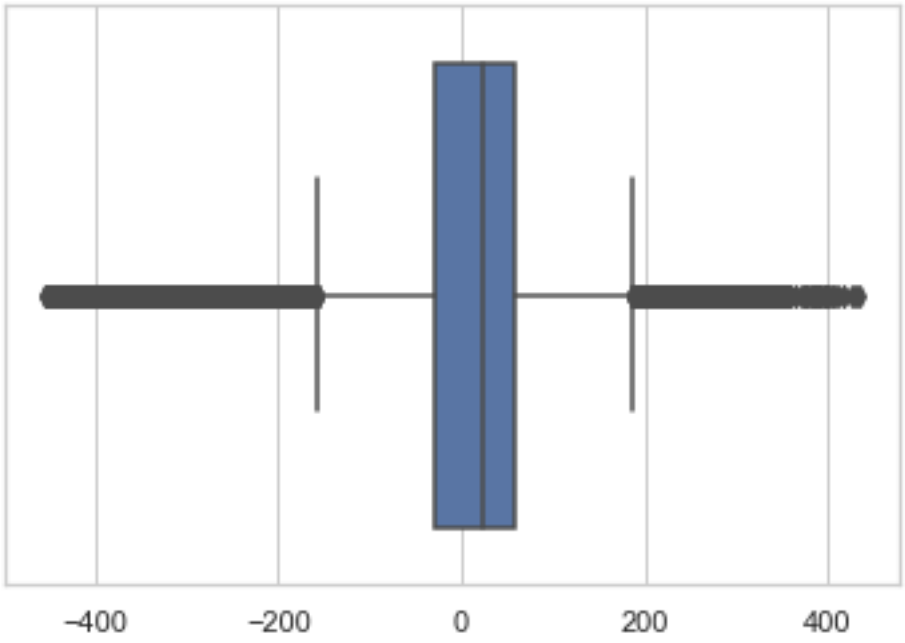

Figure 4

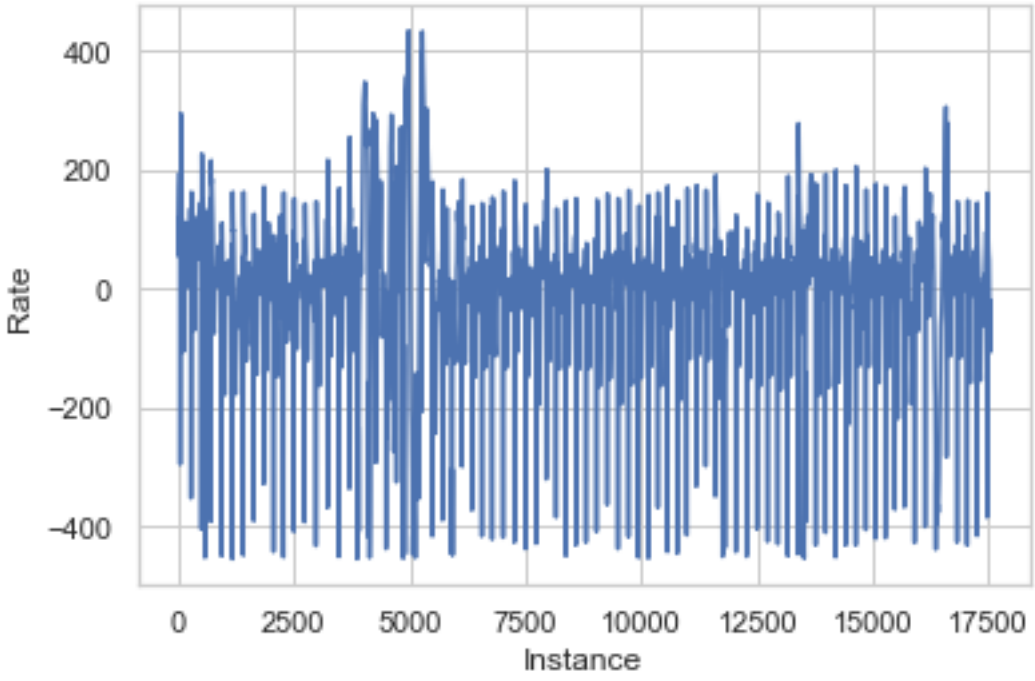

Figure 5

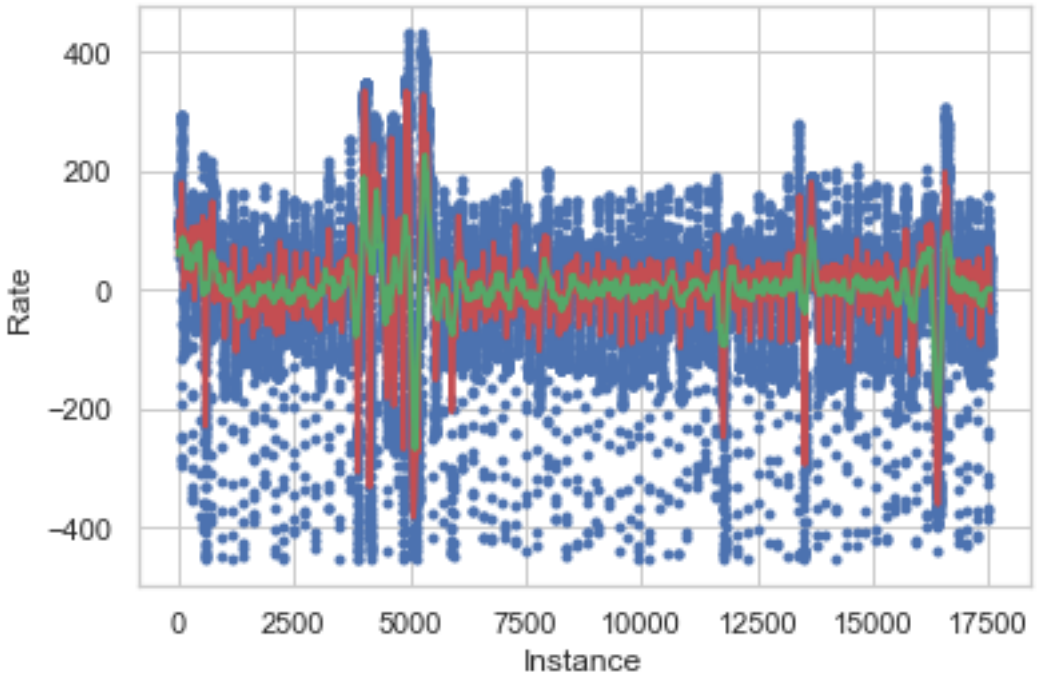

Figure 6

In the graph we can clearly see that values greater than 500 is adjusted.

Now I have tried another method to clean up the data, using mean and value adjusting us standard deviation.

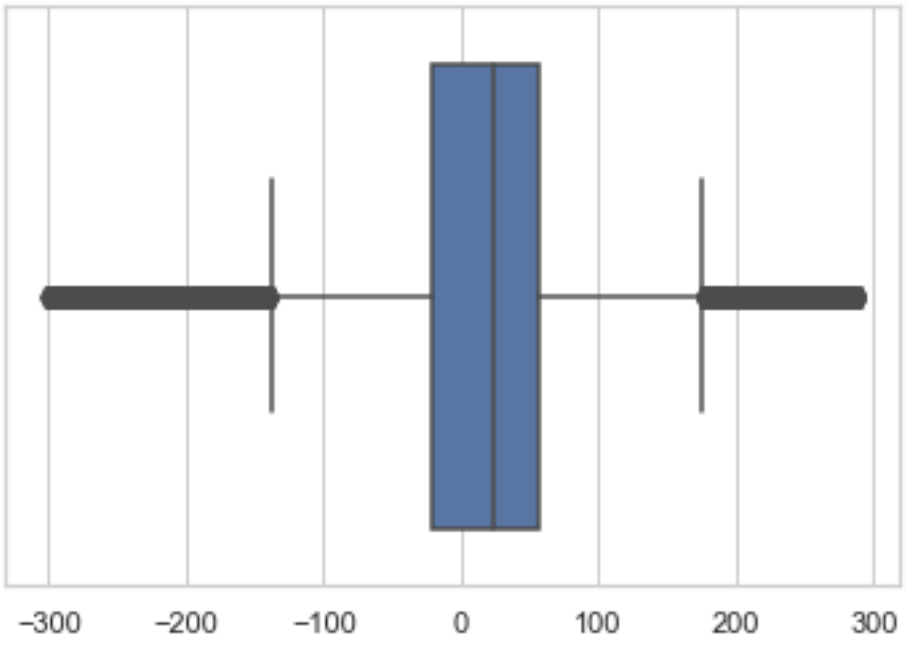

Figure 7

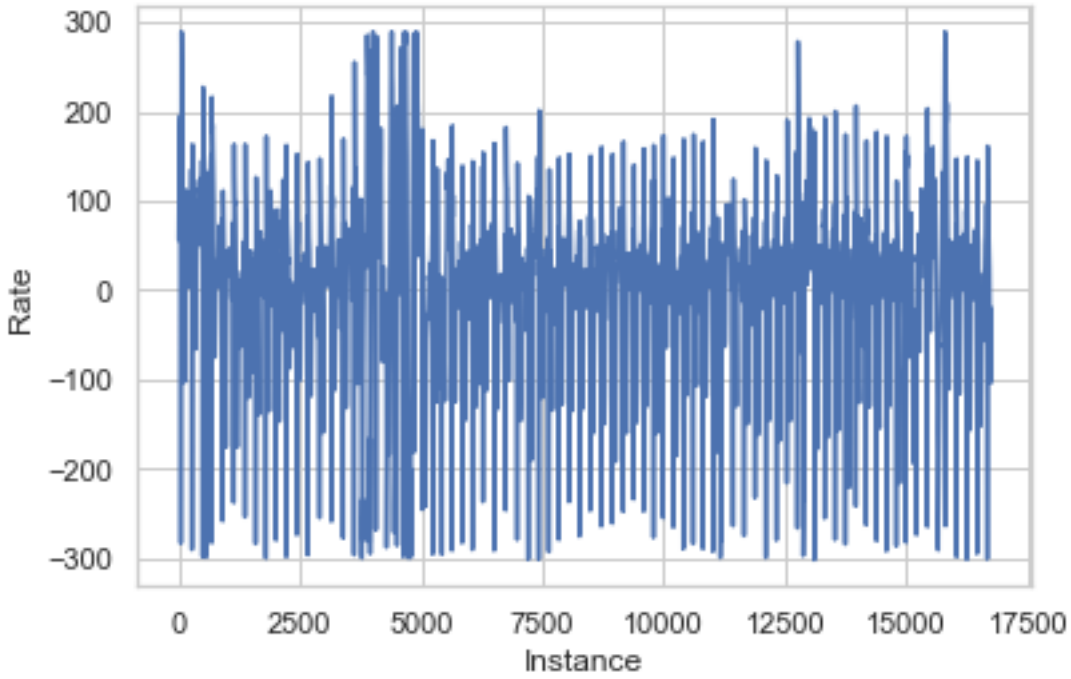

Figure 8

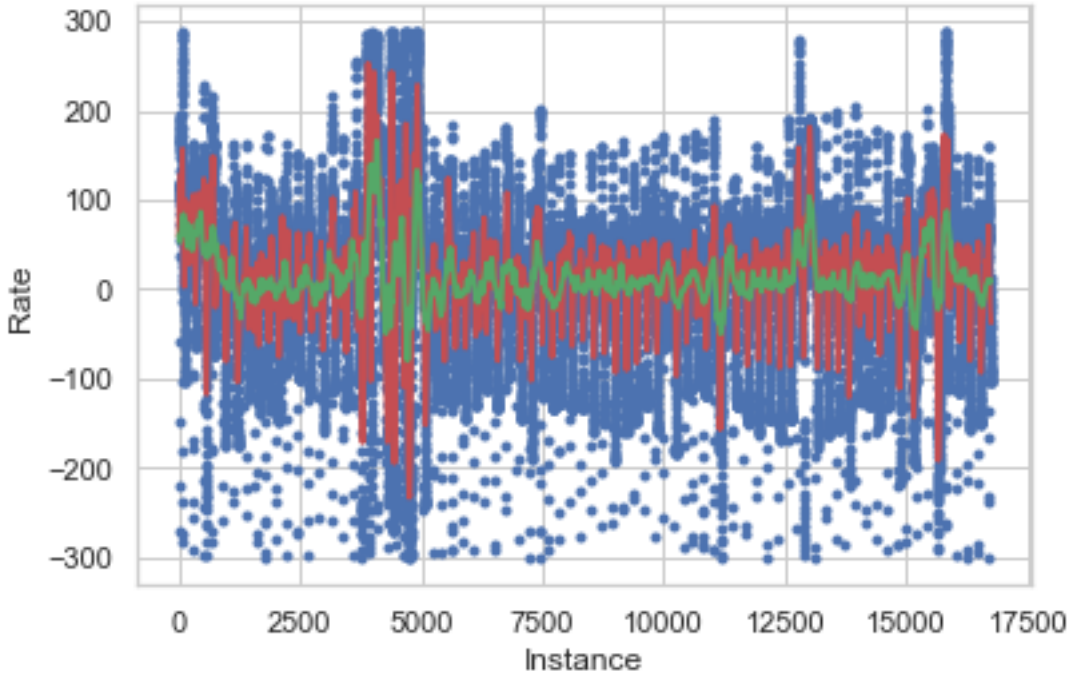

Figure 9

Now after creating dataset from mean and Standard deviation values, I also applied K means clustering in new dataset.

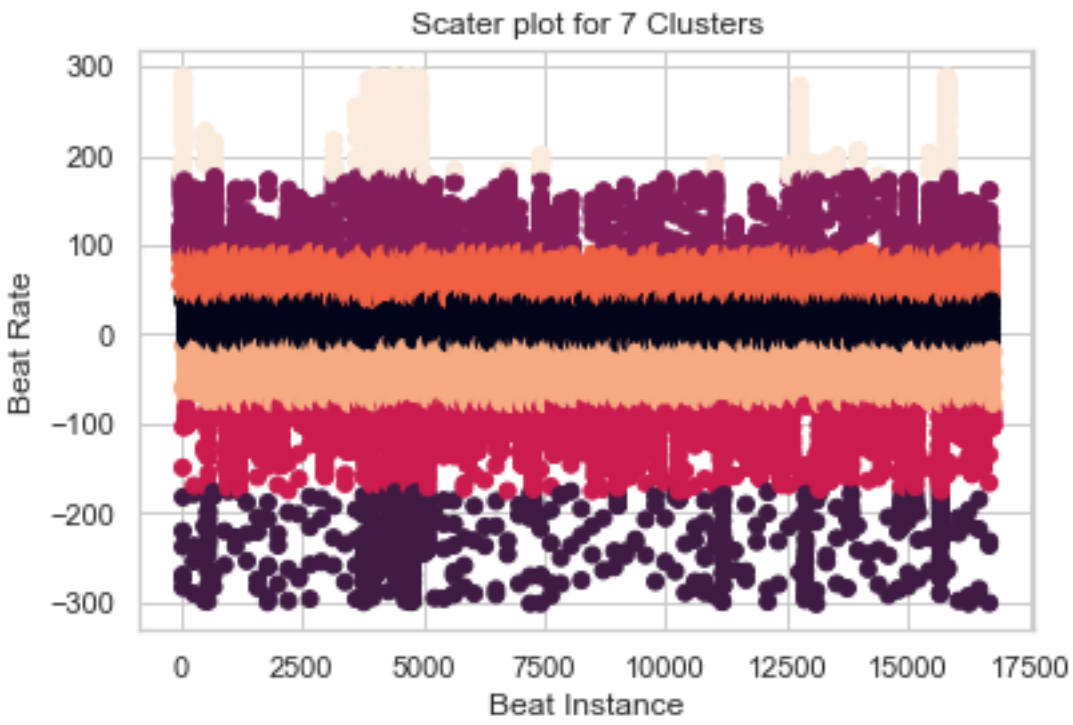

Figure 10

We also checked kmean clustering on original dataset.

Figure 11

Finally, I have checked Nearest neighbor algorithm and Kmean clustering algorithm but it dosesnt provide appropriate solution through it.

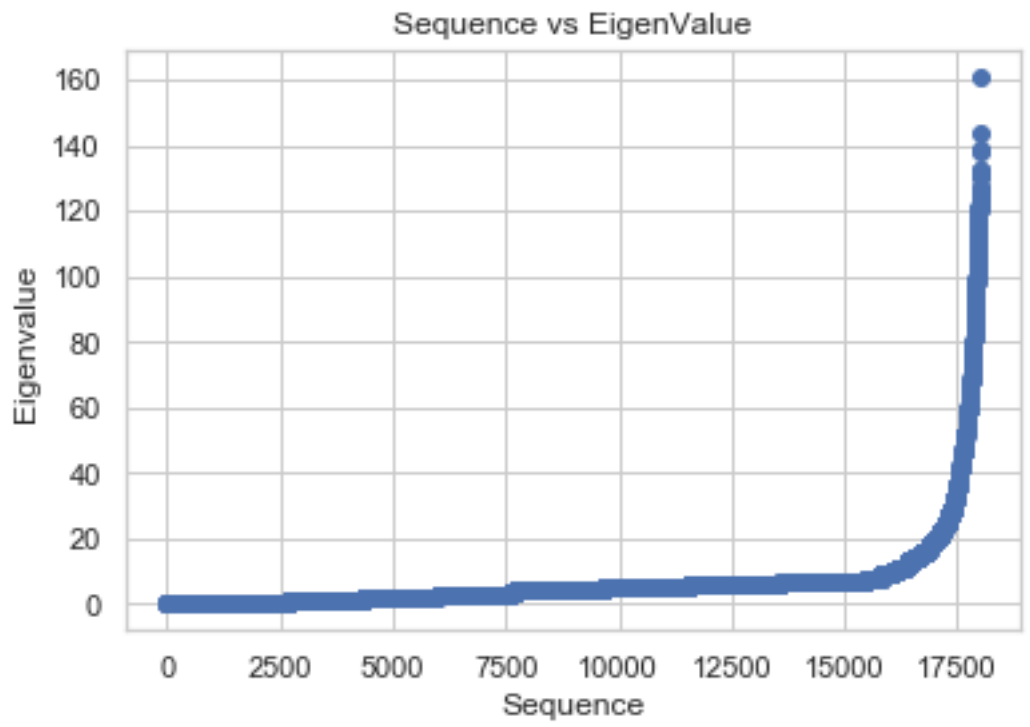

Figure 12

Eigen values for checking elbow of the graph

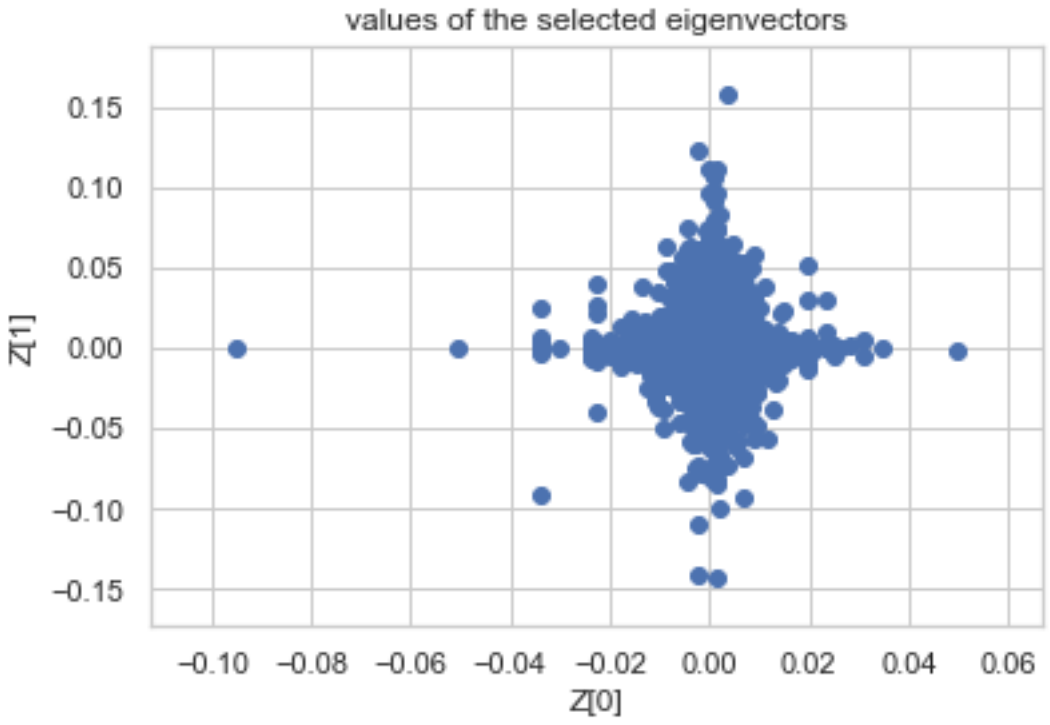

Figure 13

Eigen vector demonstration

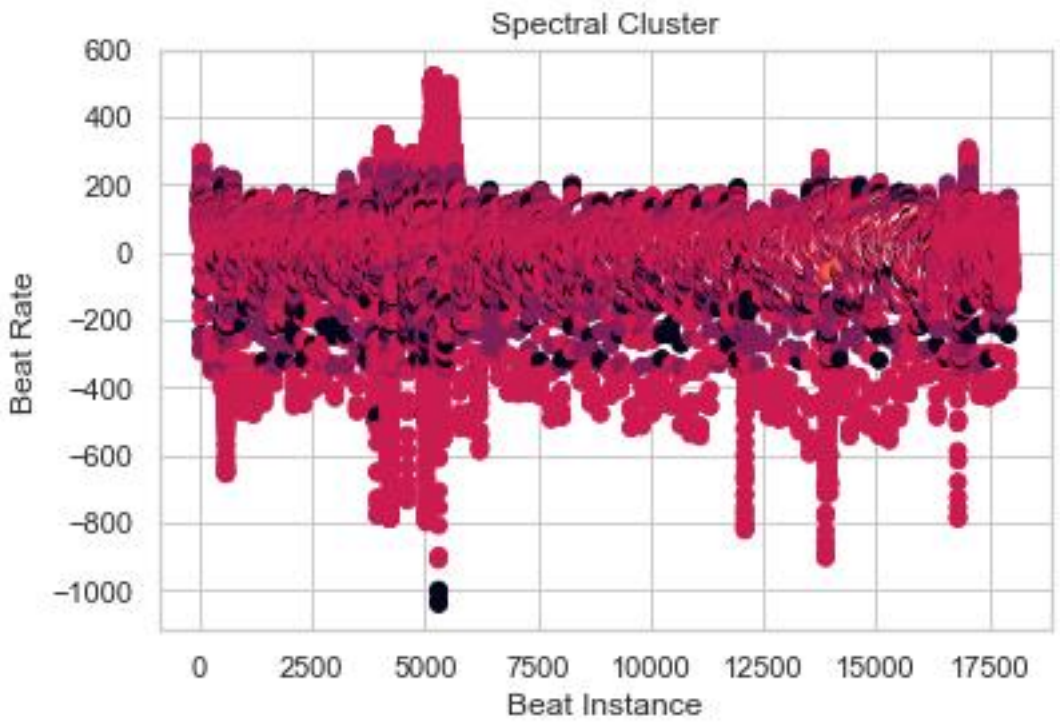
Spectral Cluster
600
400
200
0
−200
−400
−600
−800
−1000
Beat Rate
0
2500
5000
7500
10000
12500
15000
17500
Beat Instance

Figure 14