

|  |
| --- |
| Heartbeat rate data Analysis |
|  |
| February 26  Mindmic  Authored by: Chetan Gupta |



|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |   C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\5631B41.tmp  Figure 1  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\ACA311E8.tmp  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  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\F989BFF7.tmp  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  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\6C0DE41D.tmp  Figure 4  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\D4976933.tmp  Figure 5  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\5A042CB9.tmp  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.  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\5465682F.tmp  Figure 7  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\2BC41115.tmp  Figure 8  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\FA4438EB.tmp  Figure 9  Now after creating dataset from mean and Standard deviation values, I also applied K means clustering in new dataset.  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\4BFF6D31.tmp  Figure 10  We also checked kmean clustering on original dataset.  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\A2F7DD0D.tmp  Figure 11  Finally, I have checked Nearest neighbor algorithm and Kmean clustering algorithm but it dosesnt provide appropriate solution through it.  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\2F02FFA3.tmp  Figure 12  Eigen values for checking elbow of the graph  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\AD9ABCA9.tmp  Figure 13  Eigen vector demonstration  C:\Users\chaet\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\AB04AD9F.tmp  Figure 14 |
|  |
|  |