Project proposal for ELE: 581

Name: Muhammad Enayetur Rahman
Student ID: 100635221
Data set: [Vertibral Column Data Set]

Total 7 attributes are:

1. Pelvic Incidence 2. Pelvic Tilt 3.Lumber Lordosis Angle 4.Sacral Slope 5. Pelvic Radius 6. Grade of spondylolisthesis (SL) 7.Decision

Here is the basic statistical summary for each attribute. Attribute 'Decision' would be my dependent attribute and it has the Binary labels: Abnormal (AB) and Normal (NO).

Pelvic.Incidence
Min. : 26.15
1st Qu.: 46.43
Median : 58.69
Mean : 60.50
3rd Qu.: 72.88
Max. : 129.83

Pelvic.Tilt
Min. :-6.55
1st Qu.:10.67
Median :16.36
Mean :17.54
3rd Qu.:22.12
Max. :49.43

Lumbar.Lordosis.Angle
Min. : 14.00
1st Qu.: 37.00
Median : 49.56
Mean : 51.93
3rd Qu.: 63.00
Max. : 125.74

Sacral.Slope
Min. : 13.37
1st Qu.: 33.35
Median : 42.41
Mean : 42.95
3rd Qu.: 52.69
Max. : 121.43

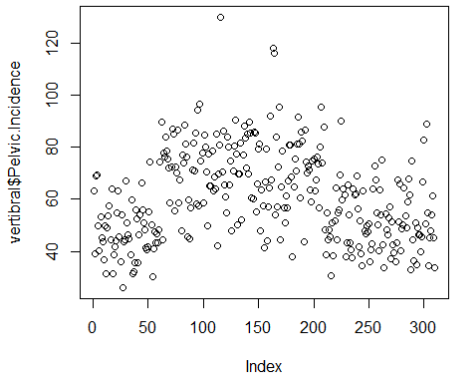
Pelvic.Radius
Min. : 70.08
1st Qu.:110.71
Median :118.27
Mean :117.92
3rd Qu.:125.47
Max. :163.07

Grade.of.SL
Min. :-11.06
1st Qu.:1.60
Median :11.77
Mean :26.30
3rd Qu.:41.28
Max. :418.54

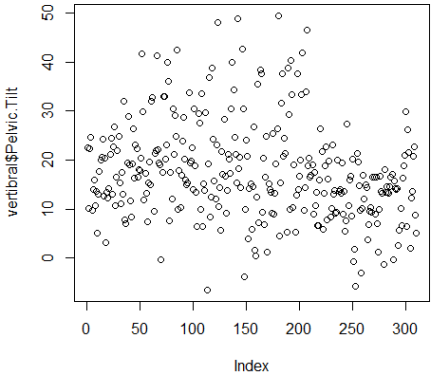
Decision
AB:210
NO:100

Graphs of each independent variable:

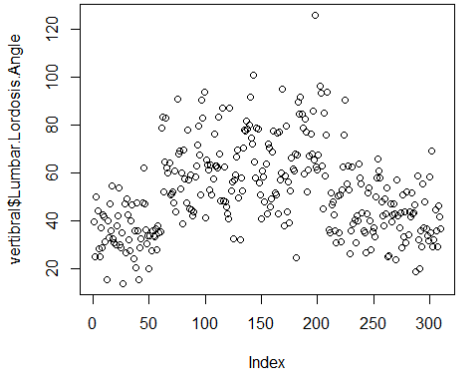
Attribute: Pelvic Incidence:



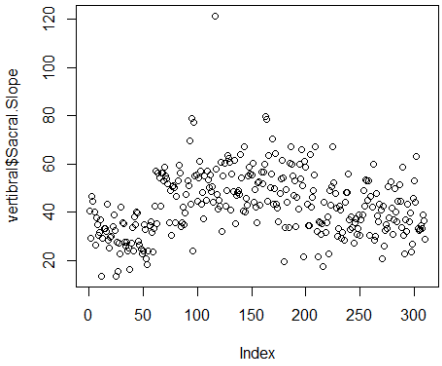
Pelvic Tilt



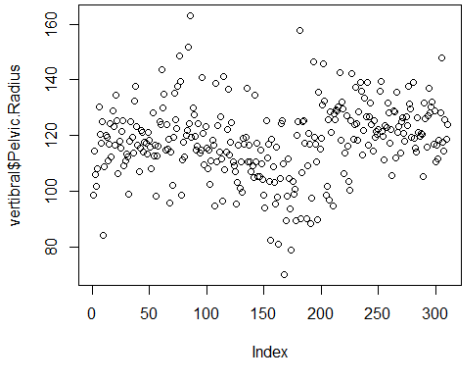
Lumbar Lordosis Angle



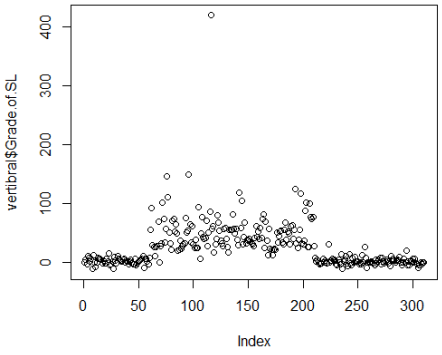
Sacral Slope



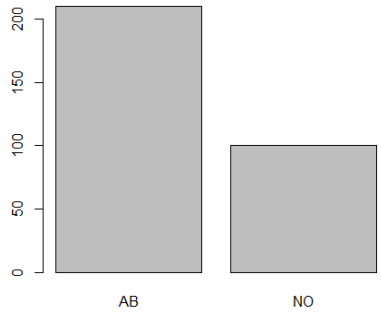
Pelvic Radius



'Grade of SL' Attribute:



Histogram of Dependent variable: **'Decision'**



Why using this data set?

While Model building in WEKA, it is used Classify screen with Sequential Minimal Optimization (SMO) and found the summary below:

Correctly Classified Instances	306	98.7097 %
Incorrectly Classified Instances	4	1.2903 %
Kappa statistic	0.9705	
Mean absolute error	0.0129	
Root mean squared error	0.1136	
Relative absolute error	2.9497 %	
Root relative squared error	24.2996 %	
Total Number of Instances	310	

Also, when constructing Support Vector Machine model of dependent variable '**Decision'** with *linear Kernel* in R studio it is found that the values predicted and the actual values for the 'Decision' attribute almost matched.