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Reference Paper Title :

Detection of Atypical Elements by Transforming Task to Supervised Form

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INTRODUCTION AND OUR UNDERSTANDING

In this paper the atypical elements considered are outliers. First an average of normal kernel functions for each element is calculated. These take care of the f(x) values for each element x. After this the qr value that acts as a threshold is calculated using these function values. According to this value, the elements that have a value less than it are labelled as atypical elements and those greater as typical elements. This takes care of the first 4 steps of implementation specified in our first report.
 Usually the number of atypical elements are very less compared to the number of Typical elements. The ratio considered here is 5:95. Hence, so as to be able to get a good classification technique, we have to increase the number of atypical elements so as to let the model learn the pattern more efficiently. Hence we use the Von Neumann method to extend the population. More elements are created based on the characteristics of the already known atypical elements. After this the classification algorithm of decision trees is applied so as to specify the distribution.

WORK DONE TILL NOW

Executed the entire mathematical model defined in the paper i.e. the first 6 steps specified in the first report. We have used random variables.The function we created :
ML(mean 1, variance 1, mean 2, variance 2,no. of samples 1, no. of samples 2, dimensionality of elements, smoothing parameter)
Since we are creating random variables we require the information for the means and variances of the typical and atypical elements respectively.
An example: ML(0,1,7,1,100,5,1,1)
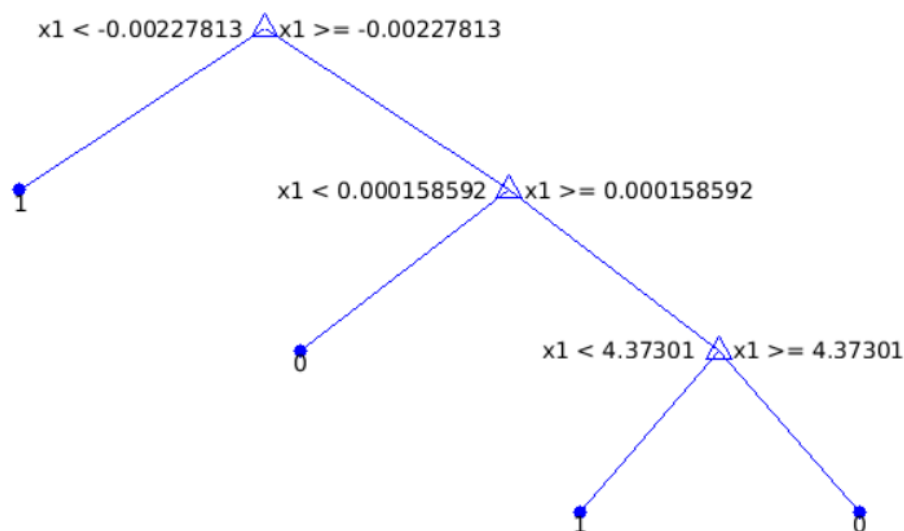
DISTRIBUTION OF WORK

The mathematical model was made by Shreyas.
The extension of population and the application of the decision tree was done by Hridaya.

WORK WE PLAN TO DO NEXT

We plan to look for an actual dataset that already consists of atypical elements so that we can test if this model works well for it or not. We also plan to incorporate the formula to obtain the smoothing factor instead of assuming it to be 1.