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Middleware based Framework for the Classification of Cardiac Arrhythmia Diseases by Analyzing Big Data

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Abstract: - Heart disease is a leading disease that causes death. One of the major heart diseases is Cardiac Arrhythmia. There are different types in Arrhythmia diseases such as Tachycardia, Bradycardia, Premature Ventricular Contractions and Premature Atrial Contractions etc. ECG is an important clinical tool for diagnosing and monitoring of the heart disorder. For a single patient, ECG is taken at some random intervals. Single reading of ECG contains 279 attributes, had many readings at random intervals are taken leading to huge data. A large database is needed to store this data. Hence, this is referred as big data. The analysis of this big data is a tedious process. So, computer based automatic system is needed for the detection of heart abnormalities and classification of ECG signals by analyzing the Big data. It is proposed to develop an automated system for the classification of various types of cardiac arrhythmias by analyzing the ECG big data, which is a very complex process. The proposed system includes data collection, pre-processing, attribute selection, rules formation and classification. In data collection, data is collected from the repository. In preprocessing, the missing values in the dataset are replaced by mean values. Attribute selection process selects the attributes that are of most important. In Rule formation, rules are formed based on the rule weights. In classification process, the classification of the various types of arrhythmia is done. In real time, this proposed system will be helpful for the clinical diagnosis of cardiac arrhythmias such as Tachycardia, Bradycardia, Coronary Artery Disease(CAD), Atrial Fibrillation and Atrial Flutter.

Keywords: -BigData,Electrocardiogram,Arrhythmia,Tachycardia,Bradycardia,Atrial,Fibrillation,Flutter;