ABSTRACT

Early recognition and detection of cardiovascular disease is crucial in saving the patient's life. One of these early symptoms are arrhythmia, a condition where there is an unusual rhythm or rate in the heartbeat, and one of the common types of arrhythmia is premature atrial contraction (PAC). PAC is considered benign and does not possess any harm to the patients. However, PAC could be a precursor of more serious heart problems. This research developed a PAC detection algorithm using python, all the data recordings used for testing and validation were obtained from PhysioBank MIT-BIH Arrhythmia database. The detection method of PAC utilized the interval between the detected R peaks or also known as the RR interval. A PAC beat would have a very different RR interval compared to the other normal beats RR interval, with shorter interval before the PAC beat and prolonged RR interval after the PAC beats. The algorithm calculate the difference between the consecutive R peak (R_i) and the following R peak (R_{i+1}). This was to get the RR intervals $(R_{i+1} - R_i)$ from the detected peaks. Each detection had a time frame of 30 seconds of the recording. From the RR intervals that had been calculated, the mean of RR intervals was calculated with mean function to get the mean of the RR intervals data (R_a). Our method of detection was by calculating the difference between the detected RR intervals in seconds with the mean of RR intervals in the time frame. After the number was subtracted, a threshold was set to detect which beat was normal and which were PACs. In this research all beats with intervals higher than 30 were detected as PACs, while beats with intervals lower than 30 were classified as normal beats.