Abstract

Arrhythmia is a symptom of an electrical heart rhythm disorder, this disorder causes the heart to work normally, such as a slow or fast heart beat, premature ventricular arrhythmias (PVC) and atrial fibrillation (AF). In recent years, there have been many methods that can detect PAC, PVC and AF using ECG signals but PPG signals, but current research uses ECG signals more than Photoplethysmography (PPG) signals. The stages of arrhythmia detection are divided into three, namely pre-processing, feature extraction, and classification. The accuracy value obtained greatly affects the type of classification algorithm used. And the development of prototypes to detect arrhythmias based on Photoplethysmography (PPG) signals is still rare. Therefore, the selection of the right feature extraction is very important because it has a large effect and has good accuracy results for detecting this disease because feature extraction can determine the final result during classification. Therefore , the feature extraction algorithm used is Discrete Wavelet Transform and RR Interval . The test results show that the best feature extraction algorithm of the two proposed algorithms is the Discrete Wavelet Transform Algorithm with an accuracy of 98.5%, F1-Score of 98.5%, specificity of 98.5% and sensitivity of 99%. In addition, the developed prototype can detect Premature Ventricular Contractio (PVC) and Atrial Fibrillation (AF).

Keywords: .Arthmias, PVC, AF, Algorithms, PPG, Classification