

ABSTRACT

Arrhythmia is a heart rhythm disorder that refers to any disturbance in the frequency, regularity, location of origin or conduction of the electrical impulses of the heart. Arrhythmia disease can also have several types, namely, Atrial Fibrillation (AF), Premature Ventricular Contraction (PVC), Premature Atrial Contraction (PAC), and Ventricular Tachycardia (VT)/Ventricular Fibrillation (VF). For now, generally arrhythmia detection methods use Electrodiagram (ECG) signals, as well as prototype development and the available literature uses Electrocardiogram (EKG) signals, while literature and prototype development using Photoplethysmogram (PPG) signals are still rarely done, especially discussing feature extraction. In this study, the authors studied a feature extraction algorithm to detect AF and PVC arrhythmias based on Photoplethysmogram (PPG) signals. This study develops a prototype of a signal recording device using an Arduino-based PPG sensor. The prototype recording device will be used to record normal human heartbeats and patients with arrhythmias. The arrhythmia detection stage has three stages, namely pre-processing, followed by feature extraction, and classification. The features that will be extracted in this research are Statistical features, Shannon Entropy features, and Time Domain Features. The results of the testing in this study Statistical algorithm has an accuracy of 85.7%, Shannon Entropy algorithm has an accuracy of 85.7%, and Time Domain Features has an accuracy of 89.3%. In this study, the Time Domain Features algorithm has the best algorithm performance.

Keywords: arrhythmia, Photoplethysmogram (PPG), Feature Extraction