Abstract

Arrhythmias are disorders of the heart rhythm. Symptoms this can be felt when the heart beats faster than normal or when the heart beats slower than normal. Arrhythmias have different types, one of which is atrial fibrillation (AF) and premature ventricular contraction (PVC). In today's medical world, there are many methods used to detect AF and PVC types of arrhythmias. The most common method used to detect arrhythmias is by using the ECG method. Meanwhile, the application of PPG to detect arrhythmias is still very minimal, because the classification process for PPG signals is still relatively difficult. PPG is a method used to determine the condition of the cardiovascular system by measuring changes in blood volume in skin tissue. In order to detect AF and PVC-type arrhythmias in PPG signals, a classification system is needed. In this study, three classification algorithm methods will be compared, namely, neural network with backpropagation, learning vector quantization (LVQ), and random forest (RF). The test results show that the best classification algorithm of the three proposed algorithms is the neural network algorithm with backpropagation (BPNN) which produces an accuracy of 95%. With accuracy on AF, PVC and Normal signals of 96%, 96% and 99%. Meanwhile, the random forest (RF) algorithm is in second place and the learning vector quantization (LVQ) algorithm is in the last order.

Keywords: arrhythmia, PPG, AF, PVC, classification algorithm.