

ABSTRACT (English)

Arrhythmia is a symptom of a disturbance in the rhythm or heart rate. Atrial Fibrillation (AF) is a type of arrhythmia that occurs when the normal sinus node pacemaker cannot control the heart rhythm because of rapid activity in different areas within the atria. In the AF detection method, there are three stages that must be carried out, namely pre-processing, feature extraction, and classification. Using feature extraction algorithms in the AF detection process is important because the algorithm affects the result of the entire detection process. So, it is necessary to be selective in choosing the algorithm used in feature extraction so that it can produce appropriate features for AF detection. Several existing studies use feature extraction algorithms that produce RR-interval characteristics to detect AF, but there are still other features that can be extracted from electrocardiogram (ECG) signals. This research proposes a feature extraction method based on the characteristics of AF signals that have irregular rhythms and the appearance of fibrillation waves (f-waves). This method produces 13 features and six scenarios that can be used to detect AF. The scenario was then tested using an ensemble learning algorithm. The test results show that the Ada Boost Classifier ensemble learning algorithm with scenario 1 can have the best accuracy, sensitivity, and specificity results with values of 96.37%, 97.39%, and 95.43% respectively.

Keywords: ECG, atrial fibrillation, arrhythmia, feature extraction