ABSTRACT

Arrhythmia is a heart rhythm disorder, caused by a slow, fast and irregular heart rhythm. Arrhythmia is classified as serious because it can cause sudden death. However, the large number of cases of cardiac arrhythmias in Indonesia, is constrained by the limited number of subspecialists Arrhythmia Doctors. In general, the arrhythmia detection method analyzes the ECG (electrocardiogram) signal from the patient. This study proposes a classification algorithm study to detect AF and PVC arrhythmias based on Photoplethysmograph (PPG) signals. The accuracy value obtained is strongly influenced by the type of classification algorithm used. In addition, because the development of prototypes for detection is still a little developed, the authors developed a prototype for arrhythmias of Artial Fibrillation (AF), Premature Ventricular Contraction (PVC) using Photoplethysmograph (PPG) sensors and also Arduino-based electrocardiogram (EKG) to facilitate the labeling process data. In the simulation tool, normal human heart rate and arrhythmia sufferers will be sampled for arrhythmia signals. Arrhythmia detection stages are divided into three, namely pre-processing, fitur extraction, and classification. The method used in this final project is the classification of AF and PVC detection signals using the Naïve Bayes algorithm and the Decision tree. The performance test results show that the Decision Tree has advantages in accuracy, sensitivity, and also specificity. Decision Tree accuracy is 96.96%, sensitivity 91%, and specificity 96.65%. While the accuracy of Naïve Bayes is 88.48%, the sensitivity is 82.33%, and the specificity is 97.08%. The accuracy of the Decision Tree with K-Fold is 94.84%, the sensitivity is 91.33%, the specificity is 97.17%. Meanwhile, the accuracy of Naïve Bayes accuracy is 81.71%, sensitivity is 77%, and specificity is 89.6%.

Keywords : Arrythmia, PPG, Classifier, Naïve Bayes, Decision Tree