

A Study on the Detection and Different Methods of Classification of Arrhythmia Utilizing ECG Signal



Arijita Das, Rudra Sankar Dhar, and Ujjwal Mondal

Abstract Diseases related to heart activity had been and will always be one of the most predominant reasons of concern. There are innumerable causes of such abnormalities in heart activity and symptoms are also many. Arrhythmia is one such abnormality which is mostly found in human beings nowadays. In the proposed work ECG signal database is used for the detection and classification of arrhythmia. After the detection the arrhythmia was also classified into different groups and their trend was also determined using the K-means clustering algorithm.

1 Introduction

Arrhythmia is heart disease related to the abnormality in the rhythm of its beat. The rate of heart beat can be too fast or too slow. This condition is termed as Arrhythmia. When the heart beats too fast then this condition is said to be tachycardia and when it is too slow this condition is said to be bradycardia. This type of abnormality can be nominal or worrisome depending on the extent of deviation of the heart beat from its usual rhythm [1, 2].

K-nearest neighbor is a very important machine learning algorithm. This algorithm predicts the similarity between the new case/data and available case/data and then puts the new cases which are mostly similar to the available categories into the category. This algorithm can also be used for data classification purpose [3, 4].

A. Das (✉) · R. S. Dhar

Department of Electronics and Communication Engineering, National Institute of Technology,
Aizawl, Mizoram, India
e-mail: arijita.ece.phd@nitmz.ac.in

A. Das

Department of Electrical Engineering, Institute of Engineering and Management, Kolkata, India

U. Mondal

Instrumentation Engineering, Department of Applied Physics, University of Calcutta, Kolkata,
India