Abstract

An electrocardiogram (ECG) provides information about individual cardiac health. Aside from directly analyzing the ECG signals, researchers and doctors also extract other indirect measurements from the ECG signals and one of the most popular measurements is heart rate variability (HRV). Heart Rate Variability (HRV) measurements analyze how the RR intervals of an ECG signal, which show the variation between consecutive heartbeats, change over time. Heart rate (HR) is a non-stationary signal and its variation may contain indicators of current disease, or warnings about impending cardiac diseases. Hence, HR variation analysis (instantaneous HR against time axis) has become a popular noninvasive tool for assessing the activities of the autonomic nervous system. Computer based analytical tools for in-depth study of data over daylong intervals can be very useful in diagnostics [2]. Therefore, in this paper two non-linear techniques Poincaré and Recurrence Quantification Analysis are implemented by using Matlab for HRV analysis. Three parameters SD1, SD2 and % REC are taken into consideration for doing the comparison between both the techniques.
Heart Variability Analysis by using Non-Linear Techniques and their Comparison

References

- N Jafarnia Dabanloo, S Parvaneh, AM Nasrabadi. Utilizing Occurrence Sequence of Heart Rate’s Phase Space Points in order to Discriminate Heart Arrhythmia. Proceedings of the 17th Iranian Conference of Biomedical Engineering; (ICBME2010), 3-4 November 2010.

Index Terms

Computer Science Bio-medical Sciences

Keywords

ECG HRV Poincare Recurrence RQA SD1 SD2 % REC