Automatic Detection of Abnormalities In ECG Signals: A MATLAB Study

Abstract:

The Electrocardiogram (ECG) is a diagnostic tool that measures and records the electrical activity of the heart. Interpretation of the ECG signal allows diagnosis of a wide range of heart conditions. These conditions can vary from minor to life threatening. In this paper real ECG records provided by the MIT-BIH Arrhythmia Database are used to build an efficient mechanism for detecting abnormalities in the ECG records. Prior to the detection, selected filters are used to eliminate any interference while maintaining the useful information within the signal. Detection of Heartbeat-related abnormalities of other heart diseases such as AV blockage and Ventricular Fibrillation is implemented. Results of ECG signal preprocessing and abnormality detection demonstrate the suitability of the selected filtering techniques and the efficiency of the detection mechanisms.