

Detection of ECG Abnormalities using Deep Learning Approach

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Abstract. Now a days we see more people are dying because of heart attacks and cardiac arrest. The Electrocardiogram is mostly used for identifying the heart diseases and also, we can find the cardiovascular state of the person. The deep learning is an approach to study about the abnormalities present in an ECG cycle. In this project we discuss about two methods reduction of noise and detection of abnormalities. In this approach we use Convolutional neural networks which gives the accuracy between 75 to 85% and also this method can identify the minute changes in the given signal. This process is done using MIT-BIH database.

INTRODUCTION

The Electrocardiogram (ECG) is used to measure the electrical activity of the heart. There are some electrodes which are placed on the person's body to analyze the persons heartbeat. The heartbeat is recorded and then the classification is done. In an ECG we have three most important categories known as P, QRS complex and T peak. The P peak is used to define the Atrial depolarization which gives the result in atrial contraction. The Q, R, S combinedly named as QRS complex wave. It used to define the depolarization of the ventricles. The QRS complex interval lies between 0.08 to 0.10 seconds. The T peak is used to define the repolarization of the ventricles.

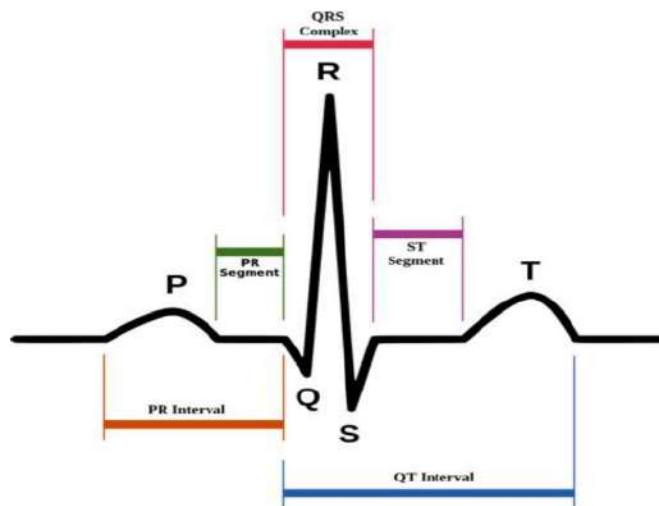


FIGURE 1. ECG signal

The PR interval lies between P and Q peaks. It is used to define the time period between the atrial and the ventricle. The ST segment lies between the S and T peak. It is used to define the time taken to travel from depolarization to repolarization. The QT interval lies between QRS complex and T peak. It is used to define the time taken to travel from ventricle to depolarization and also to repolarization.