Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation

INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of human death, with over 17 million people known to lose their lives annually due to CVDs . According to the World Heart Federation,three-fourths of the total CVD deaths are among the middle and low-income segments of the society.A classification model to identify CVDs at their early stage could effectively reduce the mortalityrate by providing a timely treatment . One of the common sources of CVDs is cardiac arrhythmia,where heartbeats are known to deviate from their regular beating pattern. A normal heartbeatvaries with age, body size, activity, and emotions. In cases where the heartbeat feels too fast orslow, the condition is known as palpitations. An arrhythmia does not necessarily mean that theheart is beating too fast or slow, it indicates that the heart is following an irregular beating pattern.It could mean that the heart is beating too fast—tachycardia (more than 100 beats per minute (bpm)), or slow—bradycardia (less than 60 bpm), skipping a beat, or in extreme cases, cardiac arrest. Some other common types of abnormal heart rhythms include atrial fibrillation, atrial flutter, and ventricular fibrillation. These deviations could be classified into various subclasses and represent different types of cardiac arrhythmia

LITERATURE SURVEY

Here, we will take a look at all the previous solutions, attempts and implementations to the Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation or anything that is atleast vaguely related to it. The adoption of features specifically switched the extraction of features manually and this approach could help in examining the cardiac patient efficiently by the doctors. As a result the accuracy rate was 93.6% approximately

EXISTING SOLUTION

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The website also offers the ability for users to sign up to the so said website and record their progress, manage profiles, left bundle branch block beat (LBB), right bundle branch block beat (RBB), pre-mature ventricular contraction beat (PVC), atrial premature contraction beat (APC) are included in the analysis.

S.NO	PAPER TITLE	AUTHOR	MONTH/ YEAR	METHOD/ IMLEMENTATION TECHNIQUES	RESOURCE LINK
1	Cardiovascular disease as a leading cause of death	Mc.Namara, K,Alzubaidi, H.Jackson.	Augest,2019	1. 1) common CVD risk factors, established CVDs, health promotion, and common CV events; 2) pharmacist and pharmacy services (clinical or community); and 3) terms that describe a review of existing	Cardiovascular disease as a leading cause of death: how are pharmacist | IPRP (dovepress.com)

				literature. Specific search terms used are outlined	
2	Arrhythmia Classification of ECG Signals Using Hybrid Features. Comput. Math. Methods Med	Anwar,S. M.Gul, M. Majid, M. Alnowami	Nov ,2018	2. 1.Performances of most of the methods have been tested only on smaller data sets, and there is a need to verify their performance on larger databases. 3. 2.Selected classes of arrhythmia have been evaluated, and there is a need to test all arrhythmia classes 4. 3.The classification accuracy on sparsely occurring arrhythmia classes is not good	Arrhythmia Classification of ECG Signals Using Hybrid Features (hindawi.com)
3	Smart Heart Monitoring: Early Prediction of Heart Problems Through Predictive Analysis of ECG Signals.	Chen, J.Valehi, A.Razi	Augest,2019	1. Overview of the Proposed Method 2. Utilized ECG Dataset 3. ECG Signal Processing 4. Classification Framework	Smart Heart Monitoring: Early Prediction of Heart Problems Through Predictive Analysis of ECG Signals | IEEE Journals & Magazine | IEEE Xplore