**LITERATURE SURVEY**

**Introduction**

The term "arrhythmia" refers to any change from the normal sequence of electrical impulses. The electrical impulses may happen too fast, too slowly, or erratically – causing the heart to beat too fast, too slowly, or erratically. When the heart doesn't beat properly, it can't pump blood effectively. When the heart doesn't pump blood effectively, the lungs, brain and all other organs can't work properly and may shut down or be damaged.

**Use case**

The aim of this paper is to develop such a computer aided diagnostic system which assists expert cardiologists by

providing intelligent, cost effective and time saving ECG arrhythmia diagnostics

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This model serves as a cost-effective, time saving and an intelligent way to diagnose arrythmia disease. Deep learning proved to be an efficient automatic cardiac arrhythmia detection method while eliminating the burden of training a deep convolutional neural network from scratch providing an easily applicable technique. Normal/healthy ECG waveform.

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| **Topic** | **Authors** | **Published**  **Year** | **Abstract** |
| Classiﬁcation of Arrhythmia by Using Deep Learning  with 2-D ECG Spectral Image Representation | Amin Ullah,Syed Muhammad Anwar,Muhammad Billal,Raja Mehmood | 2020 | In this study they have proposed a two-dimensional(2D) convolutional neural network (CNN) model for the classification of ECG signals into the eight classes. The eight classes are the normal beat, premature ventricular contraction beat, paced beat, right bundle branch block beat, left bundle branch block beat, atrial premature contraction beat, ventricular flutter wave beat and ventricular escape beat. The proposed CNN classifier was implemented in Python with the open-source library Tensor Flow which was developed by Google for deep learning. This research paper uses only a single-lead ECG signal. |
| Cardiac Arrhythmia Detection from 2D ECG Images by Using Deep Learning Technique | E. Izci, M. A. Ozdemir, M. Degirmenci and A. Akan | 2019 | In this research paper, they proposed a deep learning approach using convolutional neural network for classifying the five different types of arrythmia disease. They segmented the heartbeats out of the ECG radio signals and all the images are converted into grayscale images. They implemented novel preprocessing, extraction and selection. They achieved an accuracy of 97.52% |
| Cyberbullying Detection Using Machine Learning | Aaminah Ali, Adeel M.Syed | 2020 | In this study they used numeric data for training, So the text was first converted into the numerical form using a label encoder. After that, the dataset divided into 80% training set, and 20% test and then classification algorithms were applied. The algorithms were used in classification are SVM, naïve Bayes, Random Forest and then an ensemble approach. The ensemble approach was a hybrid model, In this approach, a soft voting criterion was used. Which predicts the class label utilizing the maximum sum of the predicted probabilities. |
| Social Media Cyberbullying Detection using Machine Learning | John Hani , Mohamed Nashaat , Mostafa Ahmed | 2019 | In this research paper, they have proposed an approach to detect cyberbullying using machine learning techniques. And they evaluated their model on two classifiers SVM and neural network and they used TFIDF and sentiment analysis algorithms for features extraction. The dataset has been taken from Kaggle. Thus, a larger cyberbullying data is needed to improve the performance. Hence, deep learning techniques will be suitable in the larger data as they are proven to outperform machine learning approaches over larger size data. |