CLASSIFICATION OF ARRHYTHMIA BY USING DEEP LEARNING WITH 2-D ECG SPECTRAL IMAGE REPRESENTATION

LITERATURE SURVEY

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SNo	PAPER	AUTHOR	YEAR	DESCRIPTION
1.	Classification of Arrhythmia in Heartbeat Detection Using Deep Learning	Wusat Ullah,Imran Siddique , Rana Muhammad Zulqarnain ,Mohammad Mahtab Alam , Irfan Ahmad, and Usman Ahmad Raza.	2021	Aims to apply deep learning techniques on the publicly available dataset to classify arrhythmia. The system combines three different types of information: RR intervals, signal morphology, and higher-level statistical data. It is concluded that fuzzy-based technology is successful in the analysis of computerized ECG but needs more research
2.	Arrhythmia classification Techniques Using Deep Neural Network	Ali Haider Khan ,Muzammil Hussain ,and Muhammad Kamran Malik	2021	The automated screening of arrhythmia classification using ECG beats is developed for ages. The deep learning based automated Arrhythmia classification techniques are developed with high accuracy. The primary concerns that affect the success of the Developed arrhythmia detection systems are (i) manual features selection, (ii) techniques used for features extraction, and (iii) algorithm used for classification and the most important is the use of imbalanced data for classification.

3.	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation	Amin Ullah, Syed Anwar, Muhammad Bilal, Raja Majid Mehmood	2020	Proposal of two-dimensional (2-D) convolutional neural network (CNN) model for the classification of ECG signals into eight classes; namely, 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 one-dimensional ECG time series signals are transformed into 2-D spectrograms through short-time Fourier transform. The 2-D CNN model consisting of four convolutional layers and four pooling layers is designed for extracting robust features from the input spectrograms.
	A deep convolutional neural network model to classify heartbeats	Rajendra Acharya, Shu Lih Oh, Yuki Hagiwara, Jen Hong Tan, Muhammad Adam	2017	The basis of arrhythmia diagnosis is the identification of normal versus abnormal individual heart beats, and their correct classification into different diagnoses, based on ECG morphology. Heartbeats can be sub-divided into five categories namely non-ectopic, supraventricular ectopic, ventricular ectopic, fusion, and un-known beats. It is challenging and time-consuming to distinguish these heartbeats on ECG as these signals are typically corrupted by noise. We developed a 9-layer deep convolutional neural network (CNN) to automatically identify 5 different categories of heartbeats in ECG signals. Our experiment was conducted in original and noise attenuated sets of ECG signals derived from a publicly available database.
	. Cardiac arrhythmia detection using deep learning	Ali Isina, Selen Ozdalili	2017	An electrocardiogram is an important diagnostic tool for the assessment of cardiac arrhythmias in clinical routine. A deep learning framework previously trained on a general image data set is transferred to carry out automatic ECG arrhythmia diagnostics by classifying patient ECG's into corresponding cardiac conditions. Transferred deep convolutional neural network is used as a feature extractor and the extracted features are fed into a simple back propagation neural network to carry out the final classification.