Project Design Phase-I
Proposed Solution Template

Date	19 SEPTEMBER 2022
Team ID	PNT2022TMID16055
Project Name	CLASSIFICATION OF ARRHYTHMIA BY USING DEEP LEARNING WITH 2-D ECG SPECTRAL IMAGE REPRESENTATION
Maximum Marks	2 Marks

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Arrhythmia is a representative type of CVD that refers to any irregular change in normal heart rhythms. There are several types of arrhythmias that are present. To know the different types of arrhythmias, we use deep two-dimensional CNN with grayscale ECG images, so we developed a model with a web application
2.	Idea / Solution description	Deep learning algorithms are typically employed to identify CVDs to care for patients as quickly as possible, dramatically lowering mortality rates. We are developing a web application in which the user chooses the image to be categorized. The image is fed into the model that is being trained, and the cited class will be displayed on the webpage.
3.	Novelty / Uniqueness	Using this model, we can easily predict the classification of ECG into seven categories using deep two-dimensional CNN with grayscale ECG images.
4.	Social Impact / Customer Satisfaction	Heartbeats are known to deviate from their regular rhythm. A normal heartbeat varies with age, body size, activity, and emotions. Achieving ECG arrhythmia classification by using the proposed CNN-based method with 2-D spectrograms will improve social life.

5.	Business Model (Revenue Model)	An arrhythmia dataset from the MITBIH is used to ass ess our suggested methodology. Our 99.11% average classification accuracy is higher than earlier published results in classifying similar types of arrhythmias and represents the state-of-the-art in this field. In order to execute automatic ECG arrhythmia diagnosis, an efficient deep learning-based ECG classification system was created, which divides patient ECGs into three different cardiac states. By transferring a deep convolutional neural network that has already been trained, the high level of expertise and computing resources necessary for starting from scratch to train a deep convolutional neural network is not required.
6.	Scalability of the Solution	We can specify the different kinds of arrhythmias of a patient and their heart functioning. Also, prior knowledge of heart rates can be attained through web details. These results indicate that the prediction and classification of arrhythmia with 2-D ECG representation as spectrograms and the CNN model is a reliable operative technique in the diagnosis of CVDs.