Project Design Phase-I
Proposed Solution Template

Date	01/10/2022
Team ID	PNT2022TMID52879
Project Name	CLASSIFICATION OF ARRHYTHMIA BY USING DEEP LEARNING WITH 2-D ECG SPECTRAL IMAGE REPRESENTATION

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Arrhythmia is a leading cause of cardiovascular disease, with a high fatality rate worldwide. The manual process is error-prone and time-consuming. They require a prolonged recording and monitoring of more than one day. This lengthens and complicates cardiologists' interpretation of ECG charts.
2.	Idea / Solution description	Deploy a model that classifies different types of arrhythmia using deep two-dimensional CNN with grayscale ECG images which is time efficient and less prone to errors. The 2-D CNN model consisting of four convolutional layers and four pooling layers is designed for extracting robust features from the input spectrograms
3.	Novelty / Uniqueness	The CNN classifier is optimized to classify eight different types of ECG beats as follows: normal beat (NOR), premature ventricular contraction beat (PVC), paced beat (PAB), right bundle branch block beat (RBB), left bundle branch block beat (LBB), atrial premature contraction beat (APC), ventricular flutter wave beat (VFW), and ventricular escape beat (VEB) .
4.	Social Impact / Customer Satisfaction	The trained model will have high accuracy and also as the time required to analyze the data and give the results is less, the customer satisfaction will be high.
5.	Business Model (Revenue Model)	The model can be deployed in testing centers and hospitals. There can be a 10% fee collected from the total revenue being generated from the use of this model.

6.	Scalability of the Solution	This project can be further made to improve on the speed and accuracy of the classification and identification of other diseases from the ECG like cardiomyopathy and coronary heart disease.