Project Design Phase-I
Proposed Solution Template

Date	24 September 2022
Team ID	PNT2022TMID35787
Project Name	Project – Classification of Arrhythmia using Deep learning with 2D Spectral Image Representation
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To classify ECG signals and detect and classify the type of Arrhythmia if present.
2.	Idea / Solution description	To develop a lightweight CNN model to classify and detect types of Arrhythmia which can later be extended to hardware solutions.
3.	Novelty / Uniqueness	A hybrid model of CNN and LSTM is to be used along with RELU activation layers, and dropout layers on the frequency domain ECG signals. This lightweight model will hopefully take less detection time and can be extended to hardware applications.
4.	Social Impact / Customer Satisfaction	The proposed solution will enable fast real-time detection of arrhythmia, leading to faster diagnosis and treatment, making the patients feel secure, and preventing them from falling prey to critical conditions. It will also help diagnose and treat some of the major CVDs. It will transform the way diseases are diagnosed and eliminate the need for time-consuming manual labor.
5.	Business Model (Revenue Model)	The model will allow fast real-time detection which will eliminate the need for manual labour thus saving time and cost. In the future perhaps it could be integrated into hardware solutions like wearable devices and sold to the public.
6.	Scalability of the Solution	The lightweight algorithm can be extended to be implemented in hardware solutions possibly wearables.