Project Design Phase-I
Proposed Solution Template

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Project Members	Harish , Bharath Veerakumar S, Gowthaman, Manimaran
Project Name	Project – Classification of Arrhythmia by using Deep learning with 2-D ECG Spectral Image Representation.
Project Mentors	Industry Mentor - Shanthi Faculty Mentor – Vanitha Veerasamy

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The presented problem wants us to identify and classify the types of Arrhythmias provided in the dataset using spectral images of the Electrocardiogram that are employed for prediction of cardiovascular diseases.
2.	Idea / Solution description	The given dataset for this problem initially undergoes various data pre-processing steps to identify various forms of noise in the dataset and denoise them to make the data suitable for training a deep learning model. We will employ 2-Dimensional Convolutional Neural Network Model to carry out this classification.
3.	Novelty / Uniqueness	• Deploys the model to a mobile application by assigning all heavy pre-processing to the cloud through an API. • Usage of cloud-based ML-training services. • Proposed solution will be deployed in the cloud making it easily accessible over the internet to people across the globe. • Provide well detailed instructions or point the user to well-equipped hospitals to get good treatment.
4.	Social Impact / Customer Satisfaction	• Promotes Simplicity. • Promotes Self-Diagnosis. • Requires minimal effort and time. • Proposed solution abides by privacy laws and no private information of user is stored. • Delivers highly accurate results(classification of arrhythmia) in a short span of time.

5.	Business Model (Revenue Model)	• Our business model primarily covers the expense we incur by deploying the service in cloud platforms. • Primary consumers of our proposed service are hospitals who seek immediate consultation or use our service as a reference. • Our service can be used by anybody who has access to internet services. • Most of the competing products do not offer a Revenue is generated from Corporate Editions which has a monthly subscription, whereas the Community Edition is free for individuals. • Users who would like to not travel to hospitals to get an ECG or get a self-diagnosis can rent/buy an ECG Machine through our service which will be the secondary source of income.
6.	Scalability of the Solution	• Increasing the dataset used for model training will in turn increase the application's scalability. • Making the model more reliable will lead to hospitals using this application, this also eliminates human error. • More powerful Cloud Instances for Concurrent use of the application. • Periodically expanding the dataset and updating the model to increase scalability and reliability. • Cloud services guarantee high availability so there is very little probability that the service will face serious down times.