Project Design Phase-I

Proposed Solution Template

Date : 24 September 2022

Team ID : PNT2022TMID00042

Project Name Project : Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation

Maximum Marks : 2 Marks

1. Problem Statement :-

The presented problem wants us to identify and classify the 6 major types of Arrhythmia 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

- ➢ 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.