

**Project Design Phase-II**  
**Solution Requirements (Functional & Non-functional)**

Date	05 November 2022
Team ID	PNT2022TMID10109
Project Name	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation
Maximum Marks	4 Marks

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The proposed model is a web application that can be used on a computer or mobile phones with internet connectivity.
NFR-2	<b>Security</b>	Unique account creation using phone number or Gmail and verification of password.
NFR-3	<b>Reliability</b>	Since it uses an optimised algorithm, it is capable of processing large datasets as well as able to handle several user requests simultaneously.
NFR-4	<b>Performance</b>	It achieves 99.61% specificity, 99.11% average accuracy and 98.59% positive predictive value (precision)
NFR-5	<b>Availability</b>	Since the 1-D ECG data is converted to 2-D spectral images, it increases the versatility of the model making it's processing fast and available to a number of users at a time.

NFR-6	Scalability	The experimental setup consisted of an eighth-generation ASUS server with 32GB internal RAM, 500 GB external SSD hard drive with the addition of internal hard drive, and NVIDIA 1080
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**Functional Requirements:**

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Gmail. Registration through Phone number.
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Login using password created during registration.
FR-4	Uploading ECG data	Registered user should be able to upload ECG reports on the application for analysis
FR-5	Sensing of abnormality	The trained ECG model should be able to identify arrhythmic heart beats and alert users for the abnormality.
FR-6	Informing the type of arrhythmia	Further the model should accurately classify the kind of arrhythmia in order to carry out the appropriate treatment rapidly .

**Non-functional Requirements:**

		GPU with 11 GB memory. Thus with the help of these hardwares, we achieve enhanced scalability.
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