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

Date	03 October 2022
Team ID	PNT2022TMID39864
Project Name	Project - Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	• Registration through Form • Registration through Gmail • Registration through User ID and Password • Registration through sign in process • Registration through LinkedIN • Registration through Phone number • Registration through OTP
FR-2	User Confirmation	• Confirmation via Email • Confirmation via OTP • Confirmation via Message • Confirmation via Call • Confirmation via Face Detection • Confirmation via Image Identification • Confirmation via Captcha • Confirmation via Fingerprint • Confirmation via Iris Scanning
FR-3	Data Management	This can be done by • By using the Cloud Storage and Drive • By using the External Hard Drive • By clearing out the documents of last 3 years and 5 years. • By clearing out the cache • By cleaning out the death persons data
FR-4	Authorization levels	This can be done by • Giving access to only specific people with username and password. • By having persons identification and marks. • By using authentication code.

		• By giving access to information only
FR-5	Historical data	• It should contain a historical data of the patient information and their ECG results. • It should also contain a patient heart beat levels and blood pressure level. • To display the official result. • It should also track the patient heart beat level and their blood pressure levels. • It should also contain a complex type and cases of patients treated.
FR-6	Certification Requirements	The machine can be certified by various standards and technicians such as: • Certified Phlebotomy Technician (CPT) • Certified Clinical Medical Assistant (CCMA) • Certified Medical Assistant (CMA) • Certified Nursing Assistant (CNA) • Registered behavior technician (RBT) • Certified Professional Coder (CPC) • Certified Pharmacy Technician (CPhT)

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	To automatically classify heart disease, estimated peaks, durations between different peaks, and other ECG signal features were used to train a machine-learning model.
NFR-2	**Security**	The security measures can be include in the machine learning models such as: • Launch ML instances in a VPC • Use least privilege to control access to ML article • Use data encryption • Use Secrets Manager to protect credentials • Monitor model input and output • Enable logging for model access • Use version control on model artifacts

NFR-3	**Reliability**	• Reliability specifies how likely the system or its element would run without a failure for a given period of time under predefined conditions. Traditionally, this probability is expressed in percentages. • For instance, if the system has 85 percent reliability for a month, this means that during this month, under normal usage conditions, there's an 85 percent chance that the system won't experience critical failure.
NFR-4	**Performance**	• An electrocardiogram records the electrical signals in the heart. • It's a common and painless test used to quickly detect heart problems and monitor the heart's health. • The performance increases with the size of data and number of users.
NFR-5	**Availability**	• The device performs with all remote monitoring devices, such as wristbands, are becoming increasingly common, facilitating collection of large ECG databases. • As a consequence, a lot of work has been devoted to automatic interpretation of this kind of data. • The deep learning models have proven to be useful in increasing the effectiveness of diagnoses of cardiovascular diseases using ECG signals. • As the information and machines can be used from anywhere and everywhere.
NFR-6	**Scalability**	• The application is always user flexible and can store large amount of data. • The data's can be stored in computerized form instead of storing in handwritten files and data's in the hospital, labs.