**Project Design Phase-II**

**Solution Requirements (Functional & Non-functional)**

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| Date | 22 October 2022 |
| Team ID | PNT2022TMID34104 |
| Project Name | Project - Classification of arrhythmia by using deep learning with 2-D Spectral Image Representation. |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | User Registration | Registration through Form  Registration through Gmail  Registration through LinkedIN |
| FR-2 | User Confirmation | Confirmation via Email  Confirmation via OTP  Confirmatio via mobile number. |
| FR-3 | User Personal details. | Name of the user  Address of the user.  User age  User Height and Weight. |
| FR-4 | Type of heart disease. | Arrhythmia  1.Atrial fibirillation.  2.Ventricullar fibrillation. |
| FR-5 | ECG working. | Input signal is taken from human body by the ECG Machine.  Analysis the signal and heart condition of the patients. |
| FR-6 | Result signal by ECG. | ECG which records the electrical activity of the heart, it measures the timing of each pulse beat. |

**Non-functional Requirements:**

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

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| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | An ECG is often alongside other tests to help diagnose and monitor conditions affecting the heart. It can be used to investigate symptoms of a possible heart problems such as chest pain,palpitations,dizziness and shortness of breath. |
| NFR-2 | **Security** | To meet security and privacy requirements of ECG telemonitoring, an elaborate security design scheme is proposed. Firstly, Multi-stage Security Authentication (MSSA) strictly identifies all components and operators in the system, guaranteeing the legitimacy of the whole system. The next step is to ensure the security of all communications. |
| NFR-3 | **Reliability** | The reliability of the measures was estimated with Cronbach's α for sampling durations of 5, 15, 25, or 60 s, for single or multiple samples from each of the five baseline periods. Reliability of RSA was good (>.8) for samples of 25 s or greater but decreased with smaller sampling durations. |
| NFR-4 | **Performance** | An ECG measures the voltage generated by a heartbeat. The signal conditioning challenges inherent in this application are primarily due to the small signal of only 0.2 mV to 2 mV peak-to-peak, the 0.05 Hz to 150 Hz bandwidth, and the 50 Hz/60 Hz interference. |
| NFR-5 | **Availability** | The 12 lead ECG machine is the standard machine utilized in many clinical settings today.It provides 12 different views of the heart from varied angles. The number of different views helps furnishes doctors with the information they need to make accurate diagnoses when monitoring a patients. |
| NFR-6 | **Scalability** | The MRR construction strategy can be extended to incorporate existing deep models into its framework as its channel models. Theoretically, in the worst case, this method will still be able to achieve as good a performance as good as channel model-based solutions. |