

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

Date	29 October 2022
Team ID	PNT2022TMID00148
Project Name	PARKINSON'S DISEASE DETECTION USING MACHINE LEARNING
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	Analyzing Symptoms	<ul style="list-style-type: none"><li>➤ Stiffness in muscles</li><li>➤ Rigidity and slowness in body movements</li><li>➤ Breaking of voice and shivering in tone</li><li>➤ Difficulty with walking</li><li>➤ Emotional and behavioural changes</li><li>➤ Dementia and depression</li></ul>
FR-2	Collecting voice dataset	<ul style="list-style-type: none"><li>➤ Speech and voice recordings of the patient is collected.</li><li>➤ Various voice parameters are measured.</li></ul>
FR-3	Working on dataset	<ul style="list-style-type: none"><li>➤ Voice recording is measured against the parameters.</li><li>➤ Data is preprocessed and dependent variables are found.</li><li>➤ Data is split into train and test data.</li><li>➤ Training and testing is done and the model is evaluated.</li></ul>

FR-4	Applying SVM algorithm	<ul style="list-style-type: none"> <li>➤ SVM finds a hyper-plane that creates a boundary between the types of data.</li> <li>➤ We plot each data item in the dataset in an N-dimensional space.</li> <li>➤ The algorithm tries to find the optimal hyperplane which can be used to classify dataset into healthy person or person suffering from Parkinson.</li> </ul>
FR-5	Providing insights of dataset	<ul style="list-style-type: none"> <li>➤ Raw data collection and sharing of data and systems are essential factors in hospital management.</li> <li>➤ According to these data appropriate measures can be taken.</li> <li>➤ Providing data set without error.</li> <li>➤ Providing treatment for the patients who are suffering from Parkinson.</li> </ul>

### Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	<ul style="list-style-type: none"><li>➤ Usable systems are straightforward to use by as many people as possible, both in case of either end users or administrators to view the hospital records when needed.</li></ul>
NFR-2	<b>Security</b>	<b>Patient identification:</b> <ul style="list-style-type: none"><li>➤ To recognize and analyze the patient perfectly.</li></ul>
NFR-3	<b>Reliability</b>	<ul style="list-style-type: none"><li>➤ Understanding the current trend and working on to it to solve the problem in an efficient manner.</li><li>➤ Being software as a service, HMS is highly resilient to any technology disruptions, downtime, or crashes experienced by other technology systems.</li></ul>
NFR-4	<b>Performance</b>	<b>Response time:</b> <ul style="list-style-type: none"><li>➤ Providing acknowledgment in minimal time about the patient information.</li></ul> <b>Comfortability:</b> <ul style="list-style-type: none"><li>➤ To ensure that the guidelines and accessibilities are followed.</li></ul>
NFR-5	<b>Availability</b>	<ul style="list-style-type: none"><li>➤ Better coordination with the hospital management to provide all its resources accessible when needed.</li><li>➤ Accessibility of all medical facilities.</li></ul>
NFR-6	<b>Scalability</b>	<ul style="list-style-type: none"><li>➤ Make sure that the work is done in more efficient way with the appropriate resources.</li><li>➤ Make complex decisions understandable with proper data.</li></ul>