

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

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| Date          | 16 October 2022                                      |
| Team ID       | PNT2022TMID28122                                     |
| 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 behavioral 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 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>  |