**Project Design Phase-II**

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

| Date | 15 October 2022 |
| --- | --- |
| Team ID | PNT2022TMID35844 |
| Project Name | Project - IoT Based Smart Crop Protection system for Agriculture |
| 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 LinkedIN |
| FR-2 | User Confirmation | * Confirmation via Email * Confirmation via OTP |
| FR-3 | App features | * Simple to use * Can be used in all operating systems * Regular updates for the app * Asking feedback from users to add in updates |
| FR-4 | Speed | * The whole device and sensors need to be connected to the internet * The device must be able to update values as soon as possible for better crop management. |
| FR-5 | Data management and analysis | * **Data preprocessing** - This will help to improve accuracy and efficiency of the subsequent mining. * **Data reduction** - is used to encode the data to a smaller reduced representation,so the integrity of original data was preserved. * **Data modeling** - It extracts the knowledge from the prepared data. Data modeling applies intelligent methods to identify patterns in the data. |
| FR-6 | Authentication | * Data and control of the field status can be accessed only by the concerned / authorized user. * Authorized access involves access over Motor control and visualizing the temperature , soil moisture and humidity values. |

**Non-functional Requirements:**

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

| **FR No.** | **Non-Functional Requirement** | **Description** |
| --- | --- | --- |
| NFR-1 | **Usability** | * The user must be able to understand ,learn new features and use them . * Language used is English which is the standard medium for communication.   It depends on ;-   * **Efficiency of user intuitiveness** * **Low perceived workload** |
| NFR-2 | **Security** | * Prevents hackers from stealing personal data of customer for identity theft * Prevents interception of sensitive information travelling over the network |
| NFR-3 | **Reliability** | * Periodically notified regarding the field status * Long distant field and crop management * System is trained to reduce the probability of errors in crop monitoring. |
| NFR-4 | **Performance** | * The real time information from IoT devices was used to control on-off switching water sprinklers automatically. * Initially, we collected IoTs information for 5 months (170 days) and performed yield analysis with this data. * The obtained IoTs information consists of temperature, humidity, and soil moisture, and was collected every 20 min, but for analysis the daily averages were used |
| NFR-5 | **Availability** | * Need internet connection for updating the values and low maintenance needed for the operation. * Can be accessed remotely from anywhere in the world . |
| NFR-6 | **Scalability** | Extending functionality and features of the system on a regular basis based on customer feedback. |