**Project Design Phase-II**

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

| Date | 06 May 2023 |
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| Team ID | NM2023TMID11419 |
| Project Name | Intelligent Garbage Classif*i*cation using  Deep learning |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| --- | --- | --- |
| FR-1 | Image/Sensor Data Input: | The system should be able to receive image inputs or sensor data from garbage bins to analyze the waste items. |
| FR-2 | User Interface: | Develop a user-friendly interface that allows users to interact with the system. The interface should enable users to input images or sensor data and receive classification results. It should be intuitive, visually appealing, and accessible to a wide range of users. |
| FR-3 | Deep Learning Model: | Develop and train a deep learning model that can classify different types of waste accurately. The model should be able to handle various waste categories such as plastic, paper, glass, metal, and organic waste. |
| FR-4 | Real-Time Classification: | The system should provide real-time classification of garbage items. It should process the input data promptly and provide the results within a reasonable time frame. |
| FR-5 | Accuracy and Reliability: | The system should strive for high accuracy in garbage classification to minimize errors and misclassifications. It should be reliable and consistently provide accurate results. |
| FR-6 | Maintenance and Updates: | Plan for regular maintenance and updates of the system to address any bugs, improve accuracy, and incorporate new waste categories or classification techniques as needed. |

**Non-functional Requirements:**

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

| **FR No.** | **Non-Functional Requirement** | **Description** |
| --- | --- | --- |
| NFR-1 | **Accuracy** | The system should exhibit a high level of accuracy in classifying waste items. It should minimize misclassifications and errors, ensuring that items are sorted into the correct waste categories. |
| NFR-2 | **Security** | Implement appropriate measures to ensure the security and privacy of user data. The system should adhere to data protection regulations and safeguard sensitive information. |
| NFR-3 | **Reliability** |  |
| NFR-4 | **Performance** | The system should have high-performance capabilities, providing fast and efficient garbage classification. It should process and classify waste items within a reasonable timeframe to ensure a smooth user experience. |
| NFR-5 | **Availability** | The system should be reliable, operating consistently without unexpected downtime or disruptions. It should minimize system failures and ensure continuous availability. |
| NFR-6 | **Scalability** | Design the system to be scalable, allowing it to handle a large volume of garbage classification requests. It should be able to process multiple inputs simultaneously without sacrificing performance. |