

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

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Team ID	NM2023TMID18041
Project Name	Project - Garbage classification 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	Input Interface The system should be able to process input data in real-time.	The system should provide a user-friendly interface for the user to input garbage items, such as images or descriptions
FR-2	Garbage Classification The system should use machine learning algorithms to continuously improve the accuracy of the classification.	The system should be able to accurately classify the input garbage item into appropriate categories, such as organic, recyclable, or hazardous.
FR-3	Output Interface The system should also provide suggestions for proper disposal or recycling methods for the classified item.	The system should provide an output interface for the user to view the classification results, such as displaying the category label and a description of the classification process.
FR-4	Database Management The system should ensure that the database is secure and accessible only to authorized personnel.	The system should store the input data and classification results in a database for future reference and analysis.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The garbage classification system should have an intuitive user interface that is easy to navigate and use. The system should be designed to be accessible for users with different abilities, including those with visual or hearing impairments. This can be achieved through the use of alternative text, captioning, and other accessibility features.
NFR-2	Security	A garbage classification system should ensure the security and privacy of user data, as well as prevent unauthorized access to the system. All sensitive data transmitted over the system, such as user

		information or payment details, should be encrypted to prevent interception and theft by third parties.
NFR-3	Reliability	A garbage classification system should be reliable in terms of accuracy, availability, and performance. The system should undergo rigorous testing and quality assurance procedures to ensure that it is reliable and performs as expected under different conditions and scenarios. This can involve testing the system under varying loads, inputs, and environmental conditions to identify and resolve any potential issues.
NFR-4	Performance	The system should be designed to classify garbage in real-time, meaning that it should be able to process requests quickly and efficiently without any significant delays. This can be achieved through the use of optimized algorithms, caching, and parallel processing techniques. The system should have monitoring and analytics capabilities to track its performance and identify any potential bottlenecks or performance issues.
NFR-5	Availability	Availability is an important aspect of a garbage classification system as it ensures that the system is accessible and operational whenever users need it. The system should have monitoring and alerting capabilities that can detect and notify system administrators of any potential issues before they become critical. This can involve the use of automated monitoring tools, real-time dashboards, and other techniques to ensure that the system is always operational and available to users.
NFR-6	Scalability	Scalability refers to the ability of a system to handle increased workload by adding resources to meet growing demand. To achieve scalability, the garbage classification system can use cloud-based infrastructure that allows for easy scaling of resources such as servers, storage, and databases. Additionally, the system can be designed with a distributed architecture, where different components can be run on separate servers or instances, allowing for easy scaling and load balancing.