**Project Design Phase-II**

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

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| Date | 30 June 2025 |
| Team ID | LTVIP2025TMID44727 |
| Project Name | CleanTech: Transforming Waste Management with Transfer 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 | Waste Image Classification | - Upload image for classification - View classification results |
| FR-2 | Data Preprocessing | - Image resizing and normalization - Data augmentation options |
| FR-3 | User Interface | - Web page for image upload - Display prediction and confidence |
| FR-4 | Model Management | - Model loading and inference - Update model with new data |
| FR-5 | Results Storage and History | - Save prediction history - View past classifications |

**Non-functional Requirements:**

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

| **NFR No.** | **Non-Functional Requirement** | **Description** |
| --- | --- | --- |
| NFR-1 | Usability | Simple and intuitive web interface for users with minimal technical knowledge. |
| NFR-2 | Security | Secure upload endpoints with validation; HTTPS enabled for data transmission encryption. |
| NFR-3 | Reliability | Stable and fault-tolerant system; proper error handling and logging for smooth user experience. |
| NFR-4 | Performance | Fast image processing and classification with minimal latency; response time under 3 seconds. |
| NFR-5 | Availability | 99.9% uptime with cloud deployment and fallback mechanisms. |
| NFR-6 | Scalability | Architecture supports scaling for increased users and batch processing via modular microservices. |