**Project Design Phase**

**Solution Architecture**

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| Date | 12 June 2025 |
| Team ID | LTVIP2025TMID38840 |
| Project Name | cleanTech: Transforming Waste Management with Transfer Learning |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

This solution architecture diagram illustrates a real-time system where high-speed cameras capture images of waste and an AI model classifies each item. Based on this classification, robotic arms automatically sort the materials, drastically increasing recycling purity and operational efficiency.

* A user provides input to the system.
* Images are gathered as the raw data for the project.
* Image preprocessing is performed to clean and prepare the image data.
* The data is split into "Train Data" and "Test Data" sets.
* A Deep Learning (DL) Algorithm is trained using the "Train Data".
* The trained algorithm is evaluated for performance using the "Test Data".
* The final, trained "Model" is created from this process.
* The user interacts with the model through a User Interface (UI).
* The model provides a "Prediction" back to the user via the UI.

**Example - Solution Architecture Diagram:**

