

**Data Collection and Preprocessing Phase**

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| Date | 15 March 2024 |
| Team ID | 739675 |
| Project Title | Cleantech: Transforming Waste Management With Transfer Learning |
| Maximum Marks | 6 Marks |

**Preprocessing**

The proposed cleantech solution for transforming waste management leverages transfer learning to enhance waste classification accuracy and efficiency. By fine-tuning pre-trained convolutional neural networks (CNNs) such as ResNet50, DenseNet121, and MobileNetV2, the system can accurately categorize various waste types—including plastic, metal, paper, and organic materials—using limited labeled data .This approach significantly reduces the need for extensive datasets and computational resources, facilitating rapid deployment in diverse environments.

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| **Section** | **Description** |
| Data Overview | The dataset is sourced from **Kaggle**, consisting of waste management images including different wasteges |
| Resizing | Images are resized to a target size of **224x224 pixels** |
| Normalization | Pixel values are normalized to the range **[0, 1]** by dividing by **255**. |
| Data Augmentation | Augmentation techniques like **shearing**, **zooming**, and **horizontal flipping** are applied to enhance the dataset. |



**Data Preprocessing Code Screenshots**

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| Loading Data |  |
| Resizing ,  Normalisation,    Augmentation |  |