

Project Development Phase Model Performance Test

Date	10 February 2025
Team ID	LTVIP2025TMID38970
Project Name	Project - CleanTech: Transforming Waste Management with Transfer Learning
Maximum Marks	10 Marks

Model Performance Testing:

Metrics:

Classification Model (MobileNetV2)

- **Confusion Matrix:** Balanced, with most predictions in the correct class; minor confusion between recyclable and trash.
 - **Accuracy Score:** ~90.6% (from validation results)
 - **Classification Report** (*Precision, Recall, F1-score*):
 - **Biodegradable:** High precision & recall (~91–93%)
 - **Recyclable:** Moderate precision (~88–90%)
 - **Trash:** Consistent F1 (~89–91%)
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Model Tuning & Validation

- **Hyperparameter Tuning:**
 - Tuned **batch size**, **learning rate**, and **number of dense units**.
 - Used **Adam optimizer** and monitored **validation loss** for early stopping.
- **Validation Method:**
 - **Train/Validation split** (80/20) using **validation_split** or ImageDataGenerator.
 - Cross-validation is less common with CNNs on image data due to compute cost.

