University Teaching Department

Chhattisgarh Swami Vivekanand Technical University, Bhilai

B.Tech. (HONS.)

Computer Science and Engineering(AI)

Session: 2025

Semester:5th

Minor-Project Report

Faculty In-charge:

Mr. Rishabh Shukla

Submitted by: -

Group : 9

Branch: CSE(AI)

CERTIFICATE

This is to certify that the Minor Project titled **"Garbage Classifier for Waste Management"** has been completed and submitted by the following students of **B.Tech (Hons.) in the Department of Computer Science and Engineering [A.I], 5th Semester**, **University Teaching Department**, during the academic year **2025–2026:**

1. **Abhay Singh Sisoodiya**
2. **Abhinav Anand**
3. **Aditya Verma**
4. **Anshul Yadav**
5. **Aman Banajre**
6. **Harsh Kumar Chandrakar**

The project has been completed as part of the prescribed academic requirements of the department and is hereby accepted for submission.

Internal Signature **External Signature**

DECLARATION

We, the students of B.Tech (Hons.) CSE (AI), hereby declare that our Minor Project titled "" has been completed by our group as part of the curriculum requirements for the academic year 2025–2026.

The work included in this report has been carried out by our team members through regular study, practical understanding, and collaborative effort. Any materials, references, or resources used during the preparation of this project have been properly acknowledged within the report.

Team Members:

1. Abhay Singh Sisoodiya | 3000127230
2. Abhinav Anand | 3000127230
3. Aditya Verma | 3000127230
4. Anshul Yadav | 3000127230
5. Aman Banajre | 3000127230
6. Harsh Kumar Chandrakar | 3000127230

Date:
Place: University Teaching Department

ACKNOWLEDGMENT

We would like to express our sincere thanks to the **Department of Computer Science and Engineering of University Teaching Department**, for giving us the opportunity to work on our Minor Project titled **"Garbage Classifier for Waste Management"** as part of our academic curriculum.

We are grateful to the faculty members and staff of the department for providing guidance, support, and a helpful learning environment throughout the duration of this project. Their encouragement and cooperation made the completion of this work possible.

We also appreciate the support of our classmates, friends, and families for motivating us during the project. Lastly, we acknowledge the efforts and teamwork of all group members in successfully completing this Minor Project.

Team Members
(Group of 6 Students)

INDIVIDUAL CONTRIBUTION REPORT

Abhinav Anand

Garbage Classifier for Waste Management

AI-Powered Garbage Segmentation System

Primary Roles

Data Collection
Documentation
Report Writing

BTech (Hons.) CSE - Artificial Intelligence
5th Semester | Group 09

University Teaching Department (UTD)
CSVTU, Bhilai

December 2025

Contents

1 Role Overview

Assigned Responsibilities:

Data Collection — Dataset sourcing and preparation

Documentation — Project documentation and README

Report Writing — Technical report preparation

2 Data Collection

2.1 Dataset Research

Conducted comprehensive research to find optimal training dataset:

Evaluated multiple platforms: Kaggle, Roboflow Universe, GitHub

Compared annotation quality, format compatibility, class diversity

Selected Roboflow garbage-segmentation dataset

2.2 Dataset Specifications

Table 1: Selected Dataset Properties

Property	Value
Source	Roboflow Universe
Total Images	481
Training Set	385 (80%)
Validation Set	96 (20%)
Annotation Format	YOLOv8 Segmentation
Image Resolution	640×640 pixels
License	CC BY 4.0

2.3 Class Categories

Table 2: Garbage Class Definitions

ID	Class	Examples
0	Biological	Food waste, fruit peels, leaves
1	Cardboard	Boxes, packaging, cartons
2	Glass	Bottles, jars, containers
3	Metal	Cans, foils, tins
4	Paper	Newspapers, documents
5	Plastic	PET bottles, bags, wrappers

3 Documentation

3.1 README Files Created

File	Contents
README.md	Project overview, installation, usage guide
data/README.md	Dataset source, license, statistics
weights/README.md	Model download instructions
notebooks/README.md	Training notebook documentation

3.2 Documentation Standards

- ✅ Function-level docstrings for all modules
- ✅ Parameter and return value descriptions
- ✅ Usage examples in README
- ✅ Troubleshooting guides

4 Report Writing

4.1 Technical Report Contributions

- ✏️ Abstract and Introduction sections
- ✏️ Dataset chapter with statistics and visualizations
- ✏️ Team contributions documentation
- ✏️ References and citations formatting

4.2 Content Organization

- Structured logical report flow
- Created informative tables and figures
- Ensured consistent LaTeX styling
- Verified citation accuracy

5 Technical Achievements

Key Accomplishments:

- Identified and secured high-quality training dataset
- Created comprehensive project documentation
- Ensured reproducibility through detailed guides
- Contributed to professional technical report

6 Skills Demonstrated

Category	Skills
Research	Data sourcing, evaluation, selection
Writing	Technical documentation, LaTeX
Organization	Information structuring
Communication	Clear technical writing