

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

Aman Banajre

Garbage Classifier for Waste Management

AI-Powered Garbage Segmentation System

Primary Roles

 Documentation

 Testing

 Quality Assurance

BTech (Hons.) CSE - Artificial Intelligence

5th Semester | Group 09

University Teaching Department (UTD)

CSVТУ, Bhilai

December 2025

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1 Role Overview

Assigned Responsibilities:

 **Documentation** — Technical and user documentation

 **Testing** — Functional and UAT testing

 **Quality Assurance** — Code review and validation

2 Documentation

2.1 User Documentation

Created comprehensive user-facing documentation:

Table 1: Documentation Components

Document	Content
Installation Guide	Step-by-step setup instructions
Usage Guide	Interface walkthrough with examples
API Reference	Function signatures and parameters
Troubleshooting	Common issues and solutions

2.2 Usage Instructions

Table 2: Application Usage Guide

Action	Description
Upload Image	Click image area or drag-drop file
Set Confidence	Adjust slider (0.1 to 0.95)
Enable Enhancement	Toggle checkbox for better accuracy
Detect	Click "Detect Garbage" button
View Results	See annotated image and pie chart

3 Testing

3.1 Functional Testing

Table 3: Functional Test Results

Test Scenario	Expected	Status
Image upload works	Success	✓
Confidence slider functional	Updates detection	✓
Enhancement checkbox works	Toggles preprocessing	✓
Detect button triggers inference	Shows results	✓
Pie chart displays correctly	Correct distribution	✓
Summary text accurate	Matches detections	✓

3.2 User Acceptance Testing

Performed UAT with team members:

- 👥 Tested with 5 team members
- 👥 Collected UI/UX feedback
- 👥 Identified usability improvements
- 👥 Verified output accuracy

3.3 Edge Case Testing

- ⚠️ Empty image upload
- ⚠️ Very large images (4K resolution)
- ⚠️ Images with no garbage
- ⚠️ Images with many objects (10+)
- ⚠️ Non-image file uploads

4 Quality Assurance

4.1 Quality Checklist

Table 4: QA Validation Checklist

Criterion	Status
All functions documented	✓
Error handling in place	✓
Input validation complete	✓
Output format consistent	✓
Performance acceptable	✓
UI responsive	✓
Deployment successful	✓

5 Technical Achievements

🏆 Key Accomplishments:

★ Created comprehensive user documentation

★ Conducted thorough functional testing

★ Performed user acceptance testing

★ Ensured code quality through reviews

★ Validated deployment readiness

6 Skills Demonstrated

Category	Skills
Documentation	Technical writing, user guides
Testing	Functional, UAT, edge cases
Quality	Code review, validation
Communication	Clear documentation