

Center for Distance & Online Education

ANEXURE II

PROJECT SUMMARY

(To be submitted to the Project Steering Committee through the Learning Management System)

PART A: Project Summary

I. Student Information:

1. Program Name: MCA (Masters in Computer Application)

2. Student Name: Aniket Kumar Singh

3. Student ID: 2214504600

4. Semester & Year: November-December 2022-2024

II. Project Summary:

1. Project Title: Waste Management System

2. Project Overview and Review:

In the modern era, managing waste effectively is crucial. The growing amount of trash presents major obstacles to both the environment and public health. Adequate waste management not only addresses these obstacles but also encourages the reuse and recycling of resources. The Waste Management System is an online platform created to simplify the reporting of issues related to waste to local government bodies.

This waste management system is an internet-based tool that enables local governments to smartly handle the disposal of waste. It allows for the tracking of the fill levels of any waste bin within the city. Additionally, it facilitates the creation of optimized routes for garbage collection vehicles, ensuring that only the bins that require collection are visited.

3. The Waste Management System's Goals:

Businesses of all sizes generate a significant amount of waste every day. It's crucial to manage waste responsibly to protect our environment. While waste and recycling services can be costly, there are strategies to reduce these expenses. Before exploring different viewpoints, it's important to address the fundamental question: what are the primary goals of waste management? The main objectives include:

- Minimize Waste Production

- Implementing proper management practices helps reduce the amount of garbage and scraps that need to be dealt with. By focusing on reducing, recycling, and reusing as much as possible, we can lower the costs associated with disposal. The initial step in understanding the goals of waste management is to minimize the production of waste. Effective waste segregation and recycling initiatives can significantly decrease the volume of garbage in landfills or incinerators. Minimizing waste production is key to advancing a circular economy, where products and materials are reused and recycled in a closed-loop system. By adopting the principles of a circular economy, we can reduce waste generation and build a sustainable, regenerative society for future generations.

- Reduce Pollution Effects

- It's also important to lessen the impact of garbage on pollution. Food waste, for instance, can produce harmful methane gas as it decomposes. Globally, methane gas contributes to the greenhouse effect, which warms the planet. A large portion of waste is food waste. Properly managing food scraps can reduce pollution and its negative effects on the environment. For example, composting organic waste can divert a significant amount of trash from landfills and create nutrient-rich soil for farming and gardening.

- Protect Groundwater Sources

- Improperly managed waste can find its way into rivers, oceans, and other water sources, polluting the water and contaminating the soil beneath. This can endanger marine life. A well-managed waste management system is crucial for protecting our limited water resources and conserving endangered marine species.

- Ensure Sustainability

- There are methods to save money by reducing waste, but it's important to use natural resources wisely. Engaging in practices that protect nature achieves a balance between the environment and business operations. This balance leads to economic benefits while also protecting the environment. Waste management also aims to encourage innovation and the development of advanced technologies for waste treatment and resource recovery. Investing in research and technological advancements can result in more efficient waste-to-energy conversion, enhanced recycling processes, and the creation of valuable products from waste materials, thereby reducing our reliance on finite resources.

- Promote Public Awareness

- Another key goal of waste management is to raise public awareness and educate people about the importance of responsible waste disposal and recycling. Community involvement and educational programs encourage individuals to adopt sustainable practices and actively participate in waste separation and recycling efforts.

- Foster Social Equality, Equity, and Inclusion

- It's also important to ensure that waste management practices are socially equitable and inclusive, benefiting all communities, regardless of their socioeconomic status. Establishing fair and accessible waste collection systems guarantees that everyone can take part in waste reduction efforts and enjoy a cleaner, healthier environment.

1. Research Methodology of Waste Management System:

3.1 Requirements Collection The data will be collected through the use of questionnaires and Google forms for those in remote areas to cut the costs that will be sent. Some of the key questions that will be formulated are; 1. What is your name? 2. Area of residence? 3. Problems experienced in environmental conservation? 4. Proposals to help improve the way the environment is conserved, specifically waste with a collection of multiple data from different localities, a good approach will be taken to help build a reliable system that will be of great help after analysis. 3.2 Development methodology The Rapid application approach will be used because it is best for delivering applications in a short amount of time putting into consideration the time frame of the project. For rapid application development, there will be a high involvement of future users to ensure their designs and proposals are implemented. Development of the system will involve coding a web application with the front end and backend section to make it effective.

The Cleanv: waste management system will support a database, business logic, and user interface as the major areas of its design. The user machine will be the device used in accessing the pages and forms used for the web application e.g. phones, and laptops, and the local host will be the program that launches the application and makes it behave as if it is hosted on the internet, the back-end is the web server and database management system engine that manages the data used by the application and the React Js controls the movement of data between the user front-end and the application backend.

1. Technology to be Used for Waste Management System:

Several technologies are commonly used in computer vision research and applications. Here's an overview of some of the key technologies:

**1. ReactJS.**

● JavaScript framework for writing web applications.

○ Like AngularJS - Snappy response from running in the browser.

○ Less opinionated: only specifies rendering view and handling user interactions.

● Uses Model-View-Controller pattern.

○ View constructed from Components using pattern

○ Optional, but commonly used HTML templating

● Minimal server-side support dictated

● Focus on support for programming in large and single-page applications

○ Modules, reusable components, testing, etc.

**2. Python**

♣ …is a general-purpose interpreted programming language.

♣ …is a language that supports multiple approaches to software design, principally structured and object-oriented programming.

♣ …provides automatic memory management and garbage collection

♣ …is extensible

♣ …is dynamically typed.

**3. Mongo DB**

MongoDB is a cross-platform, document-oriented database that provides, high performance, high availability, and easy scalability. MongoDB works on the concept of collection and document.

**Database**🡪 Database is a physical container for collections. Each database gets its own set of files on the file system. A single MongoDB server typically has multiple databases.

**Collection** 🡪 Collection is a group of MongoDB documents. It is the equivalent of an RDBMS table. A collection exists within a single database. Collections do not enforce a schema. Documents within a collection can have different fields. Typically, all documents in a collection are of similar or related purpose.

**Document** 🡪 A document is a set of key-value pairs. Documents have dynamic schema. Dynamic schema means that documents in the same collection do not need to have the same set of fields or structure, and common fields in a collection's documents may hold different types of data.

6. References:

Other online references are: <https://www.google.com>

https://www.wikipedia.org

<https://github.com>

# PART B: Guide Consent for Project Synopsis

1. I, Dr./Mr./Mrs. **Supriya Mahadeo Babar** working with **Aniket Kumar Singh** as a Guide hereby confirms my willingness to guide **Mr. Aniket Kumar Singh** Reg No. **2214504600** for the topic of Computer Vision during the period 01/04/2024 to 01/09/2024.



Place: Banglore

Date:05/05/2024 (Signature of the Guide)

# PART C: Learner’s Declaration

I hereby declare that this project synopsis is an original work carried out by me and has not been/will not be submitted to any other University for the fulfillment of any course of study.

Place: Mumbai

Date: 05/06/2024

(Filled in application forms to be signed by both the student and the Guide. Forms must be scanned in either .pdf/.doc format and submitted through the LMS student’s Login.)

(Signature of the Learner)