MIT WORLD PEACE UNIVERSITY | PUNE

Dr. Vishwanath Karad

TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

School of Computer Engineering & Technology

Synopsis

Group No. 39:

Avinash Shelukar – 1032201997 – 1032201997@mitwpu.edu.in – 9561388560

Ruchik Alhat – 1032202149 – 1032202149@mitwpu.edu.in – 9921078624

Pruthu Prabhudesai – 1032212257 – 1032212257@mitwpu.edu.in – 7499265945

Fahad Malik – 1032200260 – 1032200260@mitwpu.edu.in – 9622040907

Project Title: IOT Assisted Food Donation and Waste Management System.

Project Domain: IOT , ML And Web Development.

In-House Project: Yes

Abstract:

The increasing global concern for waste management, environmental sustainability, and charitable contributions necessitates innovative solutions that leverage cutting-edge technologies. a Waste Management and Donation App powered by E-Nose technology.

Waste management is a growing challenge in urban environments, and conventional methods often fall short in efficiently identifying and categorizing waste. This application aims to revolutionize the waste management process by integrating E-Nose sensors, which are capable of detecting and classifying odors with exceptional accuracy. These sensors can be deployed in waste collection points, enabling real-time odor monitoring and precise waste characterization. The data collected is then processed through advanced machine

learning algorithms to optimize waste collection routes, reduce operational costs, and minimize environmental impact.

Additionally, this application serves a dual purpose by incorporating a donation platform. Users can easily identify items of value within their waste, such as electronics, clothing, or household items, and choose to donate them to local charities or individuals in need. The application connects donors with beneficiaries, fostering a sense of community and social responsibility while reducing waste going to landfills.

Project Objectives for Team:

1. **Enhance Waste Sorting Accuracy:** Develop an app that utilizes E-Nose sensors to significantly improve the accuracy of waste sorting and categorization, reducing contamination in recycling streams.

2. **Real-time Odor Monitoring:** Implement real-time monitoring of odors at waste collection points to provide immediate feedback to waste management authorities, allowing for prompt corrective actions.

3. **Reduce Environmental Impact:** Decrease the carbon footprint associated with waste collection by minimizing travel distances and emissions through route optimization.

4. **Encourage Charitable Donations:** Create a user-friendly platform that encourages individuals to identify and donate reusable items, contributing to local charities and reducing the volume of usable items sent to landfills.

5. **Connect Donors and Beneficiaries:** Facilitate connections between donors and beneficiaries, fostering a sense of community and enabling those in need to access donated items easily.

6. **Scalability and Accessibility:** Ensure that the app is scalable to accommodate growing user bases and accessible to a wide range of users, including individuals with disabilities, to maximize its impact on waste management and charitable activities.

Hardware and Software Requirements:

1. **CPU**:

   - Most text summarization tasks can be performed on standard CPUs. However, more powerful CPUs with multiple cores can speed up processing for large volumes of text.

2. **Memory (RAM)**:

   - The amount of RAM you need depends on the size of the text data you plan to process. For small to medium-sized documents, 8GB to 16GB of RAM should be sufficient.

3. **GPU**:

   - Some deep learning-based summarization models, such as Transformer-based models like BERT or GPT-3, benefit significantly from GPU acceleration.
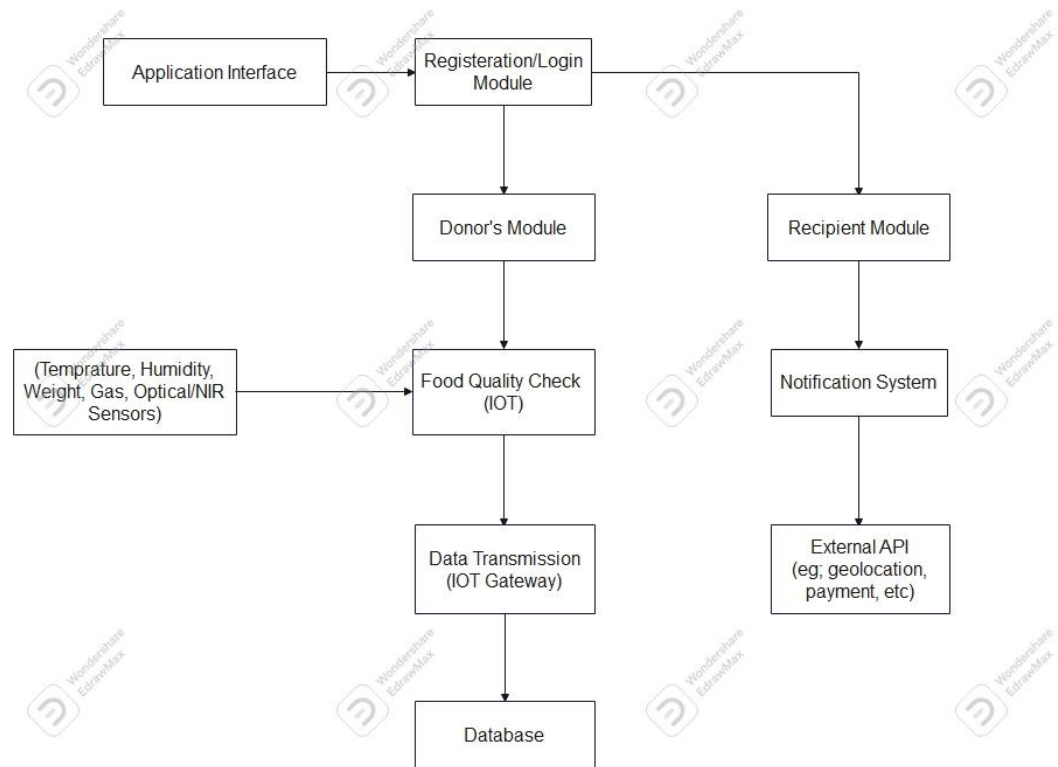
4. **IOT Tools Sensors**:

   1. NodeMCu- ESP8266

   2. emperature Sensor - K Thermocouple Using MAX 6675

   3. Gas Sensor: MQ4

   4. Jumper Wires

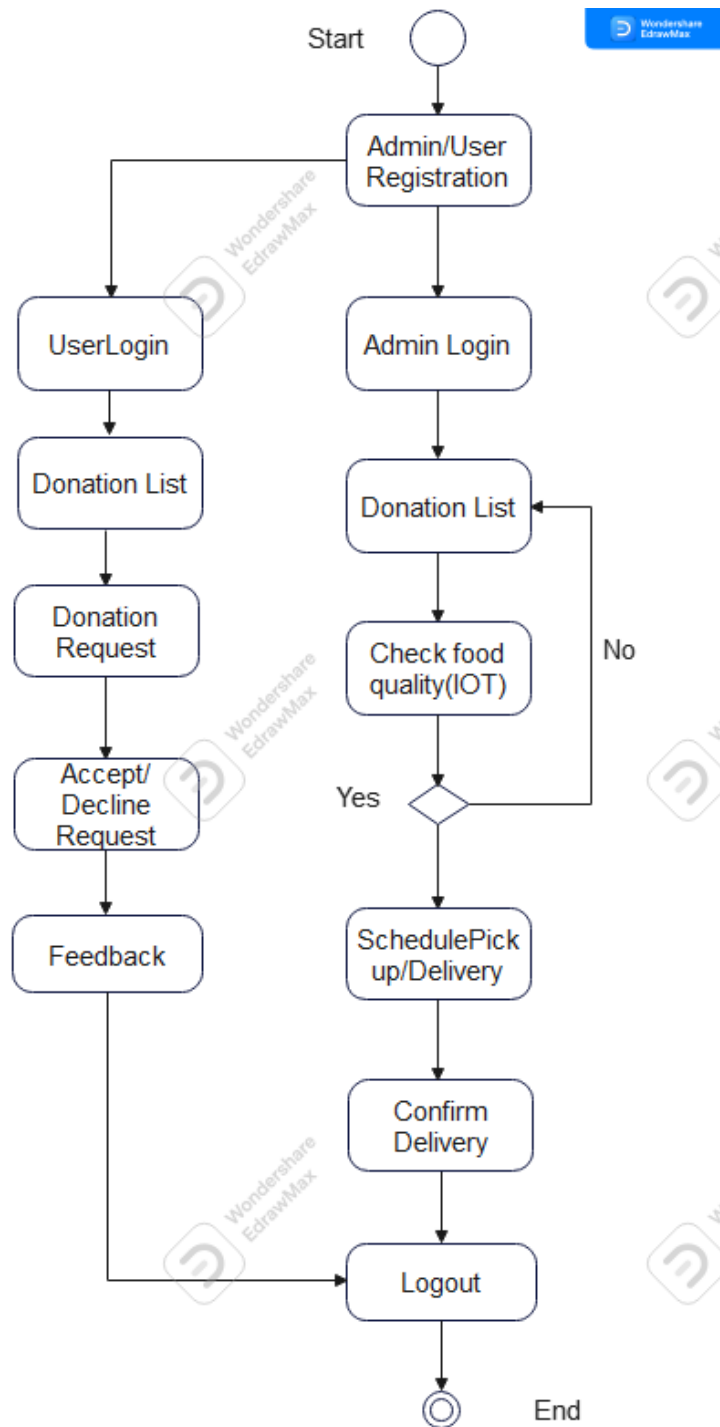**Software Requirements:**

1. Operating System (Windows 11)
2. REACT Js
3. Database
4. Node JS
5. Express
6. MongoDB

Diagrams:

Block Diagram

Activity Diagram:

Start

Admin/User
Registration

UserLogin

Admin Login

Donation List

Donation List

Donation
Request

Check food
quality(IOT)

No

Accept/
Decline
Request

Yes

Feedback

SchedulePick
up/Delivery

Confirm
Delivery

Logout

End

Project Guide

Dr. Vinayak Musale

PA 01 Avinash Shelukar

PA 02 Ruchik Alhat

PA 03 Pruthu Prabhudesai

PB 33 Fahad Malik