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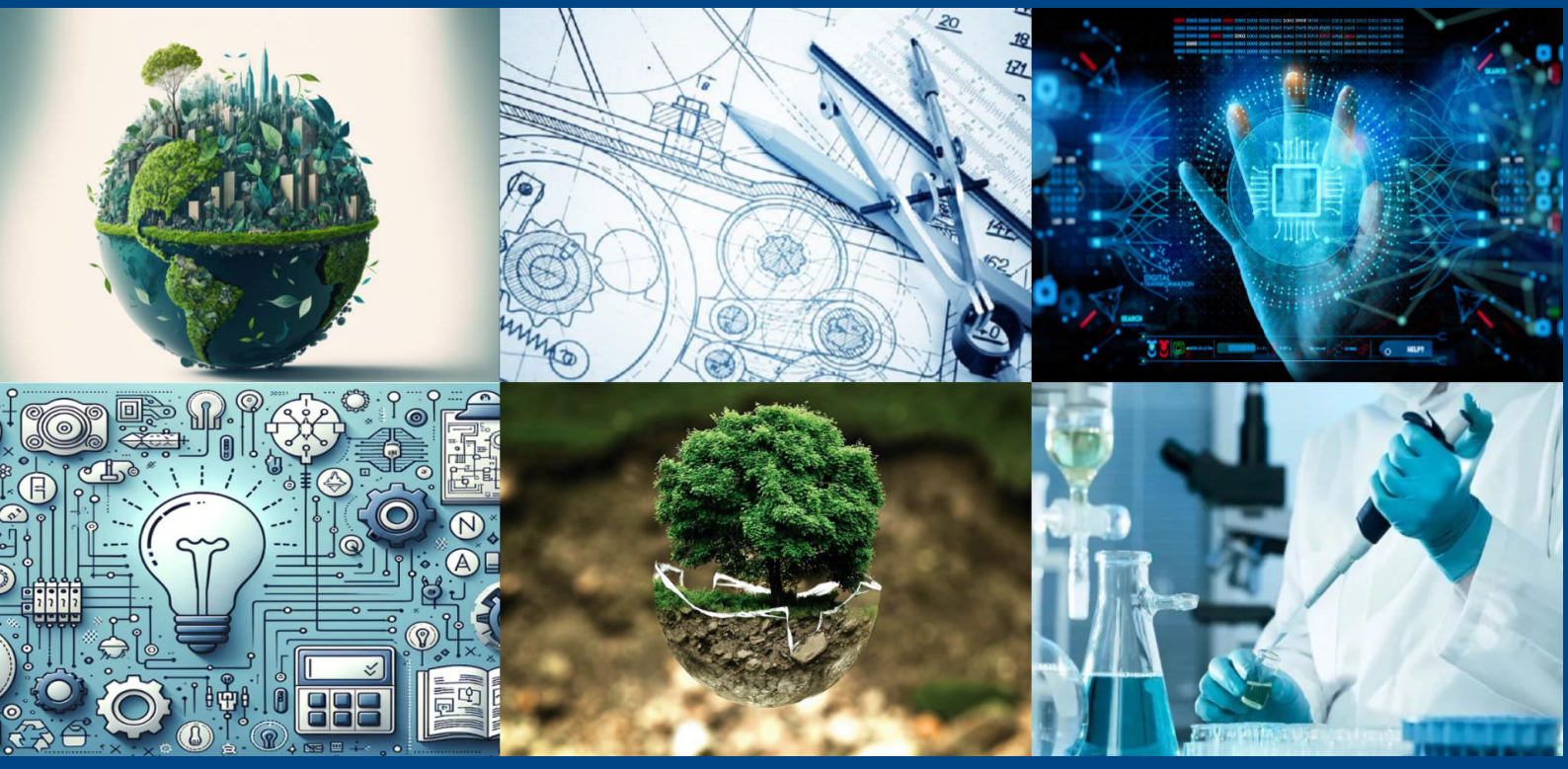

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Food Waste Management and Donating System

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ABSTRACT: A cognitive radio(CR) is a transceiver which automatically detects available channels in wireless spectrum and accordingly changes its transmission or reception parameters. In this paper, it proposes an algorithm for the energy-efficient and spectrum- aware communications requirements in CR network. It enables each node to determine and regulate its transmission strategy to provide minimum energy consumption without sacrificing end-to-end delay performance and also maximizes overall spectrum utilization. Spectrum sensing is one of the essential parameter to be considered in CR networks. Therefore, the security aspect of spectrum sensing should be addressed well. Using a Trust-Worthy algorithm, it improves the trustworthiness of the Spectrum sensing in CR-Networks. It implemented using Network Simulator-2.

KEYWORDS: Cognitive Radio, Spectrum Sensing, Efficient Communication, System Security.

I.INTRODUCTION

Around 17% of food produced worldwide in retail, food servicing and by households – amounting to nearly a billion tons – is wasted every year. Nearly 14% of the total food produced globally is lost between the harvest and retail stages. India's contribution to wasted food, at 68.8 million tons annually, is 7% of the global total, per the United Nations Environment Programmer Food Waste Index Report 2021. An Indian household, on average, wastes 50 kg of food every year, the Ministry of Consumer Affairs, Food and Public Distribution told the Parliament in March 2022. This was much less than most developed countries. Food loss and waste accounts for 8-10% of global greenhouse gas emissions, which in turn contributes to climate change and extreme weather events. Reducing food loss and waste (FLW) can thus support both food security for the poor, and climate change mitigation efforts.On September 29, 2022, as the UN Food and Agricultural Organization (FAO) marks the third International Day of Awareness of Food Loss and Waste, we found that India must bridge gaps in accurately measuring its food lost and wasted data, to effectively combat food waste. The Food Waste Index Report 2021 defines food as 'any substance – whether processed, semi-processed or raw – that is intended for human consumption'. Thus food also includes drinks and any substance used in the manufacture, preparation or treatment of food. It does not include cosmetics, tobacco or processing agents used along the food supply chain, or substances which are used only as drugs

unlicensed nodes that move in an environment according to some stochastic mobility models. It also assumes that entire spectrum is divided into number of M non-overlapping orthogonal channels having different bandwidth. The access to each licensed channel is regulated by fixed duration time slots. Slot timing is assumed to be broadcast by the primary system. Before transmitting its message, each transmitter node, which is a node with the message, first selects a path node and a frequency channel to copy the message. After the path and channel selection, the transmitter node negotiates and handshakes with its path node and declares the selected channel frequency to the path. The communication needed for this coordination is assumed to be accomplished by a fixed length frequency hopping sequence (FHS) that is composed of K distinct licensed channels. In each time slot, each node consecutively hops on FHS within a given order to transmit and receive a coordination packet. The aim of coordination packet that is generated by a node with message is to inform its path about the frequency channel decided for the message copying.

Furthermore, the coordination packet is assumed to be small enough to be transmitted within slot duration. Instead of a common control channel, FHS provides a diversity to be able to find a vacant channel that can be used to transmit and

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receive the coordination packet. If a hop of FHS, i.e., a channel, is used by the primary system, the other hops of FHS can be tried to be used to coordinate. This can allow the nodes to use K channels to coordinate with each other rather than a single control channel. Whenever any two nodes are within their communication radius, they are assumed to meet with each other and they are called as contacted. In order to announce its existence, each node periodically broadcasts a beacon message to its contacts using FHS. Whenever a hop of FHS, i.e., a channel, is vacant, each node is assumed to receive the beacon messages from their contacts that are transiently in its communication radius.

II. MODULE DESCRIPITION

In this project, there are two modules:
• Admin module
• Donator/Agent module

ADMIN MODULE : Dashboard: In this section, admin can view Total number of registered donators, total number of registered needy, total wastage of food and their status report. Registration: Admin can register donators, needy and new admin too. Profile: Admin can view, edit and delete the profiles of donators, needy and admins. Food Manage: Admin can manage the total information of food wastage here. New Entry: Admin verify the food details and share this to orphanages/needy.
DONATOR MODULE : Dashboard: In this section, donator can view total listed food entered by him and update status about the food. Profile: In this section, donator can edit his profile Food entry: In this section, donator can enter the details about the food wastage. The details include food name, capacity, location and phone number for communication. Condition of food, reason of food wastage and attach the picture of food wasted.

III. CONCLUSION

The Food Waste Management and Donating System project addresses one of the most pressing challenges of our time—food wastage and hunger. By developing a system that efficiently collects, manages, and redistributes surplus food, this initiative bridges the gap between excess and need. It not only reduces environmental impacts caused by food waste but also contributes to social welfare by feeding the hungry.The integration of technology—such as mobile apps, real-time data tracking, and logistics coordination—makes the system scalable, efficient, and adaptable to different environments. Moreover, by collaborating with local communities, NGOs, and food businesses, the project builds a sustainable ecosystem rooted in empathy, innovation, and responsibility. This project lays the groundwork for a more sustainable and compassionate society where food is valued, waste is minimized, and no one goes to bed hungry. With further development and wider adoption, the system has the potential to create lasting impact at both local and global levels.

REFERENCES

1.No Food Waste (India)
An NGO based in Coimbatore, Tamil Nadu, No Food Waste collects surplus food from events, institutions, and households, repackages it, and distributes it to those in need. They also developed a mobile app to facilitate food donations and identify hunger hotspots.
2.The Farmlink Project (USA)
A non-profit organization that rescues surplus produce from farms and delivers it to food banks and community organizations. Since its inception in 2020, it has rescued over 130 million pounds of food and distributed it to over 400 communities.
3.Food Recovery Network (USA)
A student-driven movement that mobilizes college students, food providers, and local businesses to recover perishable food that would otherwise go to waste and donate it to organizations feeding people experiencing hunger. They have recovered more than 16.5 million pounds of food to date.
4.The Felix Project (UK)
A charitable organization that saves surplus food from suppliers and redistributes it to charities. In 2021, they provided food for 30 million meals, helping to reduce food surplus and alleviate food poverty.

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