

SUSTAINABLE DEVELOPMENT GOALS

2. ZERO HUNGER



Other details

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Campus Food Waste Tracking

In Chennai Institute of Technology, Food waste tracking system are implemented in a comprehensive approach to monitor and manage food waste from key areas, including the hostel mess, dining hall, and cafeteria. This system helps to improve inventory management, minimize food waste, and ensure food quality and safety. It supports a range of activities including tracking food orders, inventory levels, meal production, consumption rates, and waste management. By integrating data from various campus dining outlets, it enables better decision-making and promotes sustainable practices.





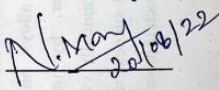
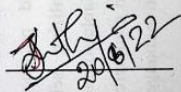
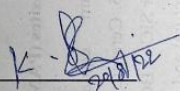




Each day, collected waste food from different sources is gathered at the designated facility and sorted. Once sorted, the waste is carefully weighed to determine its mass, and this weight is documented meticulously. The quantity is recorded both in the system software and in physical logbooks as a backup. This dual approach ensures data accuracy and preserves a record even in case of system failures. After weighing, calculations are performed to track daily, weekly, and monthly totals, enabling better waste management planning and resource allocation. Specific details, such as the type of waste and its origin, are also noted to analyze patterns over time. These records are then used to generate reports that highlight trends and support future projections, which are critical for decision-making in waste reduction strategies. Additionally, any deviations in weight or consistency of the waste are flagged, allowing for immediate follow-up. Ensuring data integrity across both digital and

paper records plays a vital role in streamlining operations and achieving sustainability goals effectively.

This report provides a comprehensive overview of food waste data collected from July 2022 to June 2023 .

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Food Tracking Report 2022-23												
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Hostel Mess	600kg	680kg	700kg	665kg	690kg	350kg	500kg	700kg	600kg	780kg	750kg	630kg
Cafeteria	350kg	355kg	365kg	350kg	325kg	200kg	250kg	365kg	350kg	400kg	320kg	320kg
Dinning Hall	280kg	295kg	320kg	335kg	305kg	210kg	280kg	300kg	300kg	300kg	300kg	300kg
Total	1230kg	1330kg	1385kg	1350kg	1320kg	760kg	1030kg	1365kg	1250kg	1480kg	1370kg	1250kg
Total Food Waste for academic year 2022-23 is 15.12 tones												
Staff Incharge 1	 20/06/22											
Staff Incharge 2	 20/06/22											
Supervisor	 20/06/22											

Sample Month-Wise Records Maintained in the System

Aug-22																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Hostel Mess	22	21	21	21	21	20	21	22	23	23	21	22	24	22	23	22	21	23	21	22	24	22	21	23	20	21	22	24	22	23	22	680
Cafeteria	13	12	13	13	12	12	7	11	12	13	12	10	11	8	12	11	12	11	13	12	7	13	12	12	12	11	13	6	12	13	14	355
Dining Hall	10	11	10	11	11	10	2	9	9	8	9	8	9	3	12	11	10	12	10	11	2	12	11	12	11	12	12	3	12	10	12	295
Total	45	44	44	45	44	42	30	42	44	44	42	40	44	33	47	44	43	46	44	45	33	47	44	47	43	44	47	33	46	46	48	1330
Sep-22																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total	
Hostel Mess	26	24	22	26	21	20	21	22	23	23	27	22	24	22	26	23	22	26	23	21	24	22	21	23	24	24	26	25	24	23	700	
Cafeteria	16	15	12	11	13	16	14	11	12	13	3	12	11	16	12	11	12	6	13	12	15	13	12	12	5	11	13	16	14	13	365	
Dining Hall	12	14	12	3	12	10	13	12	12	10	2	11	13	12	12	10	11	4	10	11	12	12	11	12	4	12	12	13	12	14	320	
Total	54	53	46	40	46	46	48	45	47	46	32	45	48	50	50	44	45	36	46	44	51	47	44	47	33	47	51	54	50	50	1385	
Oct-22																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Hostel Mess	21	20	20	20	21	20	19	21	21	22	21	21	21	22	23	22	21	23	21	22	23	22	21	23	20	21	22	24	22	23	22	665
Cafeteria	13	5	13	13	12	12	13	11	6	13	12	10	11	12	12	5	12	11	13	14	12	13	7	12	14	11	13	13	12	6	14	350
Dining Hall	10	3	14	13	13	12	13	12	4	10	12	11	14	12	12	6	10	12	10	11	12	12	5	12	11	12	12	13	12	6	14	335
Total	44	28	47	46	46	44	45	44	31	45	45	42	46	46	47	33	43	46	44	47	47	47	33	47	45	44	47	50	46	35	50	1350

Sample Month-Wise records maintained in the Log book

SEPTEMBER - 2022

Date	Hostel mess	Cafeteria	Dining Hall	Total	Signature (Coordinator)
1/9/2022	26	16	12	54	Am
2/9/2022	24	15	14	53	Am
3/9/2022	22	12	12	46	Am
4/9/2022	26	11	3	40	Am
5/9/2022	21	13	12	46	Am
6/9/2022	20	16	10	46	Am
7/9/2022	21	14	13	48	Am
8/9/2022	22	11	12	45	Am
9/9/2022	23	12	12	47	Am
10/9/2022	23	13	10	46	Am
11/9/2022	21	3	2	32	Am
12/9/2022	22	12	11	45	Am
13/9/2022	24	11	13	48	Am
14/9/2022	22	16	12	50	Am
15/9/2022	23	11	10	44	Am
16/9/2022	23	11	10	44	Am
17/9/2022	22	12	11	45	Am
18/9/2022	26	6	4	36	Am
19/9/2022	23	13	10	46	Am
20/9/2022	21	12	11	44	Am
21/9/2022	24	15	12	51	Am
22/9/2022	22	13	12	47	Am
23/9/2022	21	12	11	44	Am
24/9/2022	23	12	12	47	Am
25/9/2022	24	5	4	33	Am
26/9/2022	24	11	12	47	Am
27/9/2022	26	13	12	51	Am
28/9/2022	25	16	13	54	Am
29/9/2022	24	14	12	50	Am
30/9/2022	23	13	14	50	Am
Total	700	365	320	1385	Am 30/9/22

Supervisor Signature:
K. 20/9/2022

Total Campus Population

In the academic year 2022-23, the total population on our campus is **4032** including students, faculty, and staff. This population count reflects the growing size of our community, contributing to a vibrant and dynamic academic environment. The diverse range of individuals within this total number supports a wide variety of academic, cultural, and social activities on campus, fostering a collaborative atmosphere for learning and personal growth. This population data also helps in planning resources, facilities, and services to better accommodate the needs of everyone on campus and ensure a positive and well-supported campus experience.

Student Hunger

As part of our commitment to Sustainable Development Goal 2 (SDG-2): Zero Hunger, our campus is taking proactive steps to combat hunger and malnutrition by providing students with access to **organic, nutrient-rich foods**. We understand that a healthy, balanced diet is essential for academic success, mental focus, and overall well-being.

Serving only organic foods in the campus mess aligns by ensuring that students consume food free from harmful pesticides, chemicals, and genetically modified organisms, fostering better overall health. Organic farming practices are typically more sustainable, conserving water, preserving soil health, and reducing carbon emissions compared to conventional agriculture. This commitment to organic food helps reduce the campus's environmental footprint while promoting awareness of sustainable food sourcing. In addition to supporting health and sustainability, sourcing organic food from local farms or ethical suppliers also helps boost local economies, making it a community-driven initiative. By integrating organic foods into the daily meals served in the mess, students can experience the benefits of nutritious, sustainably grown food, while also learning about food security, environmental responsibility, and ethical consumption.

MENU	04/09/2022	05/09/2022	06/09/2022	07/09/2022	08/09/2022	09/09/2022	10/09/2022
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Breakfast	Poon (2nos) Yellow aloo pattani masala Bread Jam	Pongal Medhu Vada Gothu White Chutney	Idly Masal Vada Vengaya Chutney Sambar	Masala Poha Rava Pongal Sambar Chutney	Idiyappam Navratan Kuruma Chilly Semiya	Bread Cut Veggies Omelette	Sweet Poha Semiya Kichdi Green Coconut Chutney
Lunch	Chicken Kuzhambu Pepper Chicken Kalaan Kuzhambu Poriyal Navaratri Saffron Kesari **	Keerai Kuzhambu Poriyal Kootu Wheel Chips **	Vathakuzhambu Poriyal Kootu Ice Cream **	Dum Biryani Chicken Chettinadu Paneer Biryani Potato Fry (Veg) **	Rajma Curry Poriyal Kootu Paapad **	Sambar Karakari Poriyal Aval Kesari **	Fruit Curd Rice Bisi Bele Baath Veg Poriyal Thovayal Ice Cream **
Snacks	Navaratri Saffron Kesari	Sundal	Spnnkle Biscuit	Sundal	Vanilla Milk Cake	Verkadalai	Chocolate Cake
Dinner	Veg Dosai Tiffin Sambar Kaarai Chutney **	Chapati Channa Masala Sliced Onion **	Beetroot Raita Pudina Rice Veg Masala Boiled Egg **	Idly Vadacurry **	Parotta Kerala Chicken Curry Kallangu Curry **	Unapatta Aloo Masala Sliced Onion **	Idly Chicken Curry Kuruma **

**Rice, Rasam, Pickle

Signature of Hostel Warden

Signature of Supervisor

Sample of Week-wise Mess menu

In our hostel, a student council meeting is conducted once a month to discuss and finalize the monthly menu, ensuring that the food choices align with the preferences and needs of the residents. we believe in offering more than just regular meals—we want to surprise and delight our residents with nutrient-packed meals that are both healthy and delicious. To make dining more engaging and to minimize food wastage, a **surprise menu** is introduced once a week. By involving students in menu planning and offering creative meal options, we aim to provide a satisfying dining experience while promoting sustainability.

Student Projects Contributing in SDG-2

S.No	Name of the Project	Abstract
1	Cook Buddy	<p>Cook Buddy is a comprehensive recipe app designed to revolutionize the culinary experience for users of all skill levels. With an intuitive interface and an extensive database of diverse recipes, this app serves as a digital companion for aspiring home chefs, seasoned cooks, and anyone eager to explore the realm of gastronomy. Our app boasts a diverse collection of recipes ranging from quick and easy weekday meals to elaborate gourmet creations. Users can explore recipes from various cuisines, dietary preferences, and cooking techniques. Each recipe is accompanied by detailed instructions, cook lists, and step-by-step tutorials, empowering users to recreate dishes with ease. Users can also engage with interactive features such as timers, conversion tools, and cooking tips for a seamless cooking experience. Users can add their own recipes to the community which makes the scope and the resources of the app wider. This can be achieved after the user becomes culmination by sending culmination request. Moreover users can save the recipes which they like for future reference. The admin have all the access for the recipes in the system, the admin can add, edit, delete and edit an recipe, he can also make can recipe active and inactive and the recipes accepted the admin alone will be displayed in the application.</p>
2	Intelligent Plant Health	<p>Plant disease detection is a crucial task in agriculture, as it can help prevent significant crop losses caused by diseases. Machine learning has emerged as a promising solution for this problem. In this paper, we present an abstract of the state-of-the-art techniques for plant disease detection using machine learning. We start by introducing the challenges associated with plant disease detection, including the high dimensionality of image data, the need for large datasets, and the requirement for accurate labelling. Overall, this abstract highlight the potential of machine learning in plant disease detection and its importance for sustainable agriculture., we present the results of recent studies</p>

		that have used machine learning for plant disease detection and discuss their limitations and potential future directions. Next, we discuss the various machine learning algorithms used for plant disease detection, including convolutional neural networks (CNNs), support vector machines (SVMs), and decision trees. We then discuss the importance of data augmentation and transfer the potential of machine learning in plant disease detection and its importance for sustainable agriculture. Identification of the plant diseases is the key to preventing the losses in the yield and quantity of the agricultural product.
3	Experimental study of performance improvement of solar bubble dryer for agricultural products	The project "Experimental Study of Performance Improvement of Solar Bubble Dryer for Agricultural Products" aims to revolutionize solar drying technology in agriculture. Our goal is to enhance both efficiency and affordability. Through innovative redesign and optimization strategies, we aim to boost drying efficiency by 30% while cutting costs compared to current market options. We prioritize reducing power consumption, measured in watt- hours, for sustainability and cost-effectiveness. Using interdisciplinary methods and rigorous experimentation, we seek to develop a cost-effective solution for efficient agricultural product preservation. This initiative has the potential to positively impact sustainable food processing practices, reducing food loss and improving access to high- quality preserved agricultural products. Through collaboration and knowledge sharing, we aim to encourage the wider adoption of solar drying technology, contributing to a more sustainable agricultural sector. We are excited about the prospect of leading this innovative project. By leveraging our knowledge and skills, we aim to overcome technical challenges and achieve significant advancements in solar drying technology. Through collaboration with industry partners and stakeholders, we plan to gain valuable insights and ensure the practical applicability of our solutions. By disseminating our findings through publications and presentations, we hope to inspire future research and foster continued innovation in sustainable agricultural practices.
4	Plant Disease Detection	Agriculture field has a high impact on our life. Agriculture is the most important sector of our Economy. Proper management leads to a profit in agricultural products. Farmers do not expertise in leaf disease so they produce less production. Plant

		<p>leaf diseases detection is the important because profit and loss are depending on production. CNN is the solution for leaf disease detection and classification. Main aim of this research is to detect the apple, grape, corn, potato and tomato plants leaf diseases. Plant leaf diseases are monitoring of large fields of crops disease detection, and thus automatically detected some feature of diseases as per that provide medical treatment. Proposed Deep CNN model has been compared with popular transfer learning approach such as VGG16. Plant leaf disease detection is the one of the required research topic as it may prove benefits in monitoring large fields of crops, and thus automatically detect the symptoms of diseases as soon as they appear on plant leaves. In this project we focus on providing a quick and effective solution to every farmer who is affected with crop damaging pests.</p>
5	Farm Management System	<p>This report describes the development and implementation of a farm management system project that enables farmers to directly sell their products to customers. The project aims to eliminate intermediaries in the farm-to-market supply chain, thereby providing farmers with a more profitable and efficient means of selling their products. The system includes features such as product listings, inventory management, and online ordering, which allows customers to purchase farm products directly from the website. The report outlines the project's objectives, methodology, and outcomes, highlighting the system's benefits to farmers and customers alike. Overall, the farm management system project offers a practical solution to the challenges faced by small-scale farmers in accessing markets and generating income.</p>
6	Orchard management in open fields with deep learning-based fruit monitoring	<p>Mango is an important agricultural produce with high export value as it is being consumed internationally. This work presents a method for detection and counting of mangoes in RGB images for further yield estimation. The RGB images are acquired in open field conditions from a mango orchard in the pre-harvest stage. The proposed method uses, deep convolutional neural network based architecture for mango detection using semantic segmentation. Further, mango objects are detected in the semantic segmented output using contour based connected object detection. Results are analysed using the precision, recall, F1</p>

		<p>parameters derived from contingency matrix. Results demonstrate the robustness of detection for a multitude of factors such as scale, occlusion, distance and illumination conditions, characteristic to open field conditions. Further mango fruit size also determined for the estimation of fruit maturation and size distribution, for further decision making to harvest and marketing. To detect fruit, cascade detection with histogram of oriented gradients (HOG) feature is applied. Finally, fruit lineal dimensions were calculated using the RGB-D depth information, fruit image size and the thin lens formula. We believe this work represents the first practical implementation of machine vision fruit sizing in field, with practicality gauged in terms of cost and simplicity of operation.</p>
7	Mango leaf disease prediction	<p>The Convolutional Neural Network CNN works by obtaining a picture and designating it with some weightage supported by the various objects of the image, to distinguish them from one another. CNN needs little or no pre-processing information as compared to different deep learning algorithms. Early diagnosis and correct identification of mango plant disease prediction will manage the unfolding of the diseases Mango leaf diseases damage mango quality and yield. This research uses deep learning to automatically identify leaf diseases in different mango plant kinds. The planned work is Associated with the Nursing correct identification approach for the mango plant disease prediction exploitation of the Convolutional Neural Network. It includes generating comfortable method pathological pictures Associate in nursing coming up with a model and a design of the Convolutional Neural Network to discover mango leaf diseases. The image augmentation method is employed to extend the number of images. completely different information augmentation techniques square measure applied to stop overfitting and improve generalization.</p>
8	NutriDetect: ML-Powered Analyzer for freshness and nutrition in Fruits and vegetables	<p>This research presents an innovative approach to classify fruits and vegetables and provide detailed nutritional analysis and freshness assessment. Leveraging OpenCV for image processing and Convolutional Neural Networks (CNN) for machine learning, our system accurately identifies and categorizes produce from images. It also extracts essential nutrient information from a CSV dataset. Integrated with a freshness detection</p>

		model, it empowers consumers to make informed decisions when selecting fresh and nutritious produce.
9	HealthHub: Food Item Recognition with Calorie Estimation and HealthConscious Product Suggestions	<p>Accurately measuring the calorie content of food is essential for promoting healthy eating habits and managing dietary intake. However, calorie estimation poses challenges due to the diverse composition of ingredients and variations in cooking methods. This paper presents a novel approach for estimating food calorie content based on ingredient recognition and thermal information. The proposed method utilizes convolutional neural networks (CNN) for image classification to identify food items and extract their corresponding ingredients from a comprehensive database enriched with nutritional knowledge. Additionally, thermal imaging is employed to analyze the heat patterns of food ingredients, aiding in the segmentation and classification process. Fuzzy logic techniques are applied to classify ingredient boundaries based on their thermal signatures and intensity levels. The classified ingredients are then aggregated, and their calorie content is calculated using established nutrition knowledge and area ratios. Comparative analysis against conventional methods demonstrates the efficacy of the proposed approach in accurately estimating food calories. Furthermore, the HealthHub Food Item Recognition system integrates this calorie estimation functionality with health-conscious product suggestions, enhancing its utility for promoting balanced nutrition and facilitating informed dietary choices.</p>



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NIRF
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Patents Contributing in SDG-2

S.no	Application	Topics
1	202341073935 A	AGRICULTURAL INNOVATION: IOT-ENHANCED SMART IRRIGATION SYSTEM WITH CROP PROTECTION
2	202341067795	INTENSIFICATION OF OIL YIELD FROM KOKUM SEEDS; AN ENERGY-EFFICIENT EXTRACTION USING ULTRASONICATION TECHNIQUE
3	202241075331 A	AGRICULTURE CROP INSURANCE POLICY USING BLOCK CHAIN TECHNOLOGY

S.No	Publications Contributing to SDG-2
1	A Multitask Learning-Based Vision Transformer for Plant Disease Localization and Classification
2	Multi-scale characteristics of drought propagation from meteorological to hydrological phases: variability and impact in the Upper Mekong Delta,
3	Revolutionizing UAV: Experimental Evaluation of IoT-Enabled Unmanned Aerial Vehicle-Based Agricultural Field Monitoring Using Remote Sensing Strategy
4	Neural Network-Based Automated Soil Salinity Mapping and Remediation Using Wireless Sensor and Cloud Computing
5	Reshaping agriculture using intelligent edge computing
6	Precision farming for crop prediction
7	Computational Intelligence Router of Machine and Artificial Intelligence Learning for the Expansion of Agriculture's Manufacturing Sector
8	Wireless Sensor Network and Internet of Things-based Smart Irrigation System for Farming
9	Plant Disease Detection using ResNet
10	Monitoring and Detection of Plant Diseases Using Neural Networks
11	IoT based Energy Efficient using Wireless Sensor Network Application to Smart Agriculture
12	Applications of machine learning and deep learning in smart agriculture
13	Smart Aerial Imaging Solution in Precision Agriculture
14	A Recent and Systematic Review on Water Extraction from the atmosphere for Arid Zones
15	Role of irrigation tank rehabilitation and related off-farm activities in achieving sustainable rural development
16	Statistical study of water users association for sustainable agriculture in rural development

Events to raise awareness for SDG-2

It is essential to mobilize support, foster understanding, and inspire actions towards ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. Here are some impactful event ideas for raising awareness around SDG-2:

1. World Food Safety Day, observed on June 7 each year, aims to raise awareness about the importance of safe food practices to protect public health and prevent food borne illnesses. Established by the United Nations in collaboration with the World Health Organization (WHO) and the Food and Agriculture Organization (FAO), the day highlights the need for a comprehensive approach to food safety along the entire supply chain, from production to consumption. Food safety involves proper handling, storage, and preparation of food to avoid contamination from bacteria, viruses, parasites, and chemicals that can lead to foodborne diseases. The theme of World Food Safety Day varies each year, often focusing on areas such as hygiene, safe farming practices, food industry accountability, and consumer awareness. Key messages include the importance of governmental regulations, food industry responsibility, and individual actions to ensure that food is safe and nutritious.



2. National Nutrition Week is an annual campaign dedicated to raising awareness about the importance of nutrition, healthy eating, and lifestyle choices. Celebrated in many countries, including India and the United States, this week is an opportunity to educate people of all ages about balanced diets, the role of nutrition in preventing diseases, and the long-term benefits of a healthy lifestyle. This campaign not only highlights the value of proper nutrition but also supports efforts to reduce malnutrition, boost immunity, and improve mental and physical well-being. By empowering individuals with knowledge about balanced diets and healthy habits, National Nutrition Week contributes to building healthier communities and supporting long-term public health goals.



3. World Food Day, celebrated annually on October 16, is a global day of action dedicated to tackling hunger, promoting healthy diets, and achieving food security for all. Each year, World Food Day brings attention to critical food-related issues, including malnutrition, climate change, agricultural innovation, and the need for greater equity in food access. The theme of World Food Day changes annually, focusing on pressing global challenges. Past themes have included calls to “grow, nourish, sustain together,” emphasizing the need for collaboration across governments, organizations, communities, and individuals to transform food systems and make them more equitable and sustainable. Events around the world mark this day with activities such as community gardens, food donations, educational workshops, and policy discussions that aim to address hunger and promote solutions that foster sustainable development.



4. Happy Farmers' Day! let's take a moment to honor the hard work, dedication, and resilience of farmers who tirelessly provide the food on our tables. Behind every grain of rice, every vegetable, and every meal we enjoy lies the effort of farmers who work through tough weather, long hours, and unpredictable conditions to feed the world. As we celebrate, let's also remember a simple but powerful way to show gratitude: think of a farmer before wasting food. Each time we leave food uneaten or let groceries go to waste, we overlook the labor, time, and resources that went into producing it. Reducing food waste not only respects the farmer's efforts but also conserves water, energy, and the land used in food production. Today, and every day, let's honor our farmers by being mindful of our food. Serve yourself what you can finish, use leftovers creatively, and help spread awareness about food waste. Every small step counts in showing appreciation for the hands that feed us and in creating a sustainable world for future generations.

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nirf 175th Rank
NAAC A+

HAPPY FARMERS DAY

Think a Farmer
Before wasting your food...

NATIONAL FARMER'S DAY

① It costs your family over ₹1.7 L per year
② You waste more than your body weight in food each year
③ You waste more than your parents did
④ Food waste makes your food prices higher
⑤ You waste about a quarter of the water you use
⑥ Food waste pollutes your environment

23rd Dec

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