

Software Engineering Individual presentation
Professor: Min yuh Day



Thesis Topic:

Based on Food Carbon Emission Scheduling System to Achieve Personal Diet Carbon Reduction



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From Institute of Information Management**

Date: 2024/05/29

AGENDA

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Research Background

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Research Motivation

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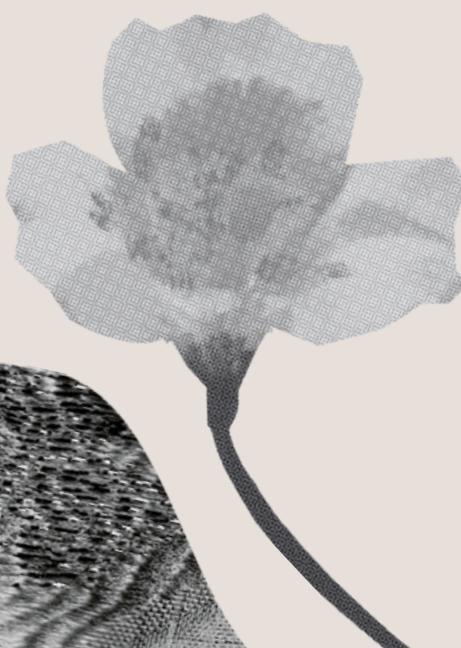
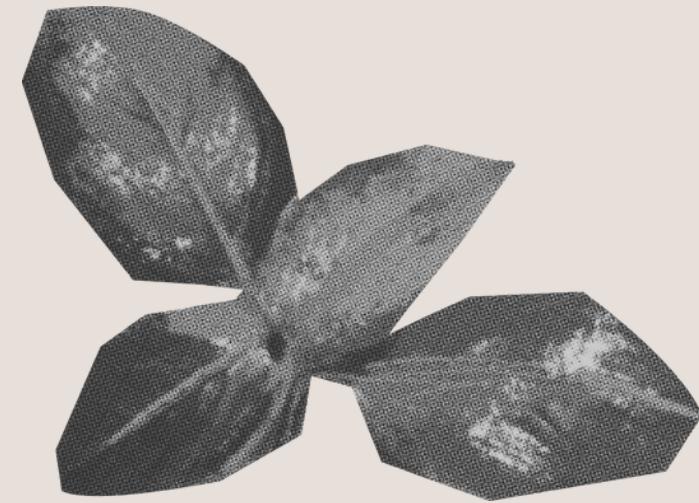
Research Objective

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Literature Review

5

Research Method



RESEARCH BACKGROUND



The global “Food system” accounts for approximately 21-37% of carbon emissions. This clearly indicates that people’s dietary habits have a significant impact on climate change.

- IPCC



Changes in lifestyle behaviors and improvements in material usage efficiency can reduce carbon emissions by approximately 8%.

- IEA



RESEARCH MOTIVATION

We cannot determine the country's energy policy, but everyone has the ability to change their own eating habits.

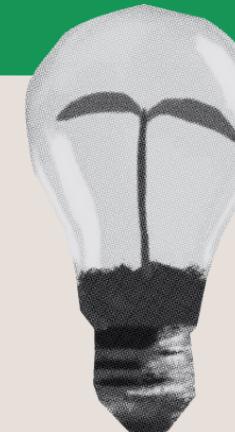
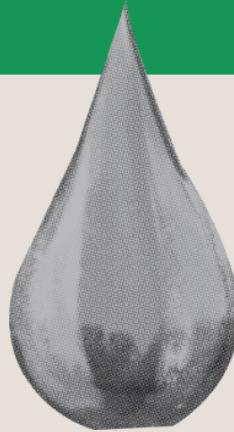
In 2023, COP28 released the annual Climate Change Performance Index (CCPI), ranking Taiwan seventh from the bottom among 67 countries.

In the same year, the Taiwanese government proposed the “2050 Net Zero Emission Lifestyle Guide.” One of the guidelines emphasizes “Zero Waste and Low Carbon Diets.”



RESEARCH OBJECTIVE

Achieving carbon reduction with minimal even no impact on individual dietary habits.



FOOD SCHEDULING SYSTEM

This scheduling system can balance carbon emissions, nutrients, and calories, offering specific food advice.

SATISFIED ALL EATING STYLE

This system can satisfy all types of dining preferences in Taiwan, including dining out, food delivery, and home cooking.

EARN WHILE YOU EAT

Rewards individuals who achieve significant carbon reductions, encouraging the society carbon reduction.

Academic Contributions

- Integration of Interdisciplinary Research Ex. data science, IoT technology and MIS.
- Innovation in Personal Carbon Emission Calculation Models

EXPECTED CONTRIBUTIONS



Practical Contributions

- Enhancing Individual Environmental Awareness and Action
- Effective Tool for Achieving Carbon Reduction Goals

LITERATURE REVIEW



Low-carb Diets

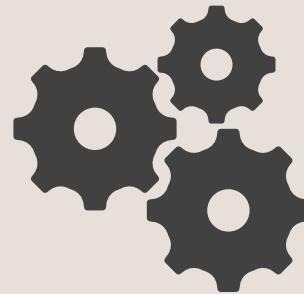


衛生福利部
Ministry of Health and Welfare
促進全民健康與福祉

- Eat more fruits and vegetables.
- Eat less processed food.
- Eat in moderation, and choose a variety of foods.
- Choose seasonal and locally food.

EAT	EAT - Lancet	Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
Whole grains	Rice, wheat, corn and other	232	811
Tubers or starchy vegetables	Potatoes and cassava	50 (0-100)	39
Vegetables	All vegetables	300 (200-600)	78
Fruits	All fruits	200 (100-300)	126
Dairy foods	Whole milk or equivalents	250 (0-500)	153
Protein sources			
	Beef, lamb and pork	14 (0-28)	30
	Chicken and other poultry	29 (0-58)	62
	Eggs	13 (0-25)	19
	Fish	28 (0-100)	40
	Legumes	75 (0-100)	284
	Nuts	50 (0-75)	291

LITERATURE REVIEW



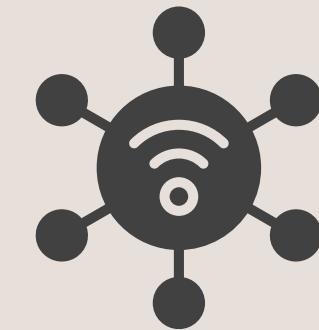
SCHEDULING SYSTEM

Exploring the characteristics of Scheduling Systems for Designing a Food Carbon Emission System.



DATA COLLECTION

- Food Carbon Emission Database France [AGRIBALYSE 3.1.1](#)
- Food Calories Database [FDA Food Nutrition Database](#)
- Food Nutrition Database [FDA Food Nutrition Database](#)



IOT AND PAPERLESS TRANSACTIONS

- How The Line Constructs a Closed Carbon Net-Zero City.
- Exploring How Wearable Devices and Smart Homes Record Human Daily Life Data.
- Referencing Nordic paperless transactions.

RESEARCH METHOD

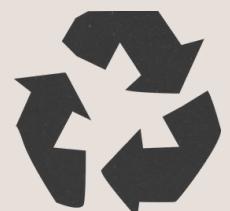
Achieving carbon reduction with minimal even no impact on individual dietary habits.

Question Description



Existing Limitations of Food Carbon Emission Calculation Tools

- Unable to Provide Specific Recommendations Based on Individual Dietary Habits



How to design a scheduling system that can balance carbon reduction and user lifestyle habits?



The system should maintain applicability and feasibility across different dietary habits.

RESEARCH METHOD

Achieving carbon reduction with minimal even no impact on individual dietary habits.

Research Context



PAPERLESS TRANSACTION

Each transaction can be recorded by the system.

WEARABLE DEVICES

widespread adoption of wearable devices, that can record human daily action.

SMART HOME APPLIANCES

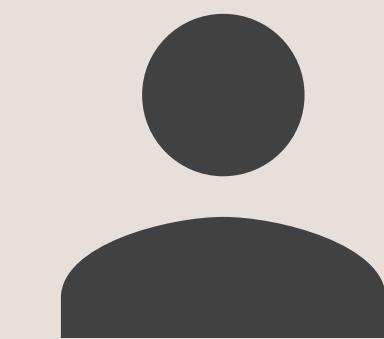
Smart appliances can recognize food types, expiration dates, etc. For example, smart refrigerators.

RESEARCH METHOD

Achieving carbon reduction with minimal even no impact on individual dietary habits.

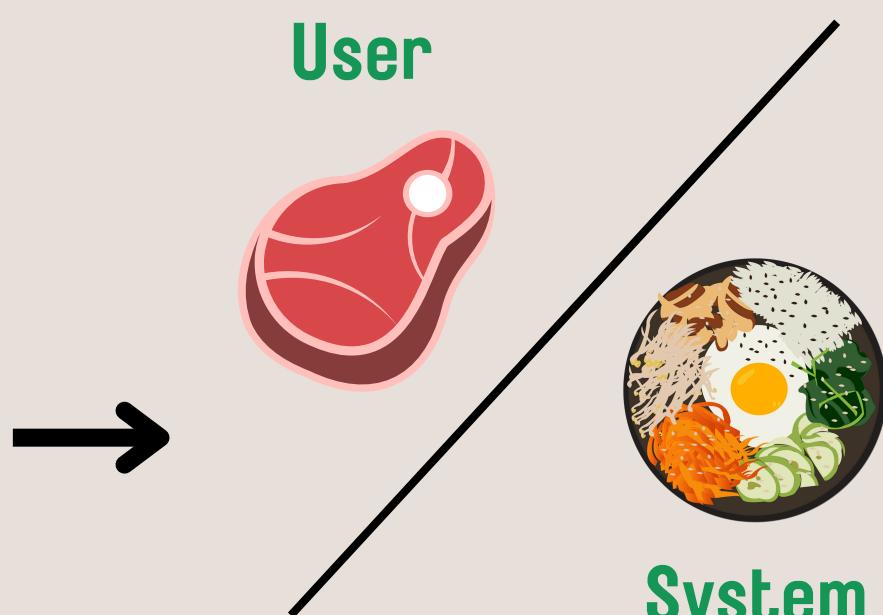
System Architecture

Height
Weight
Age
Dietary Habit



Carbon Emission
Calories
Nutrients

Food Database



Phase 1
Imperceptible
Carbon reduction

EAT-Lancet

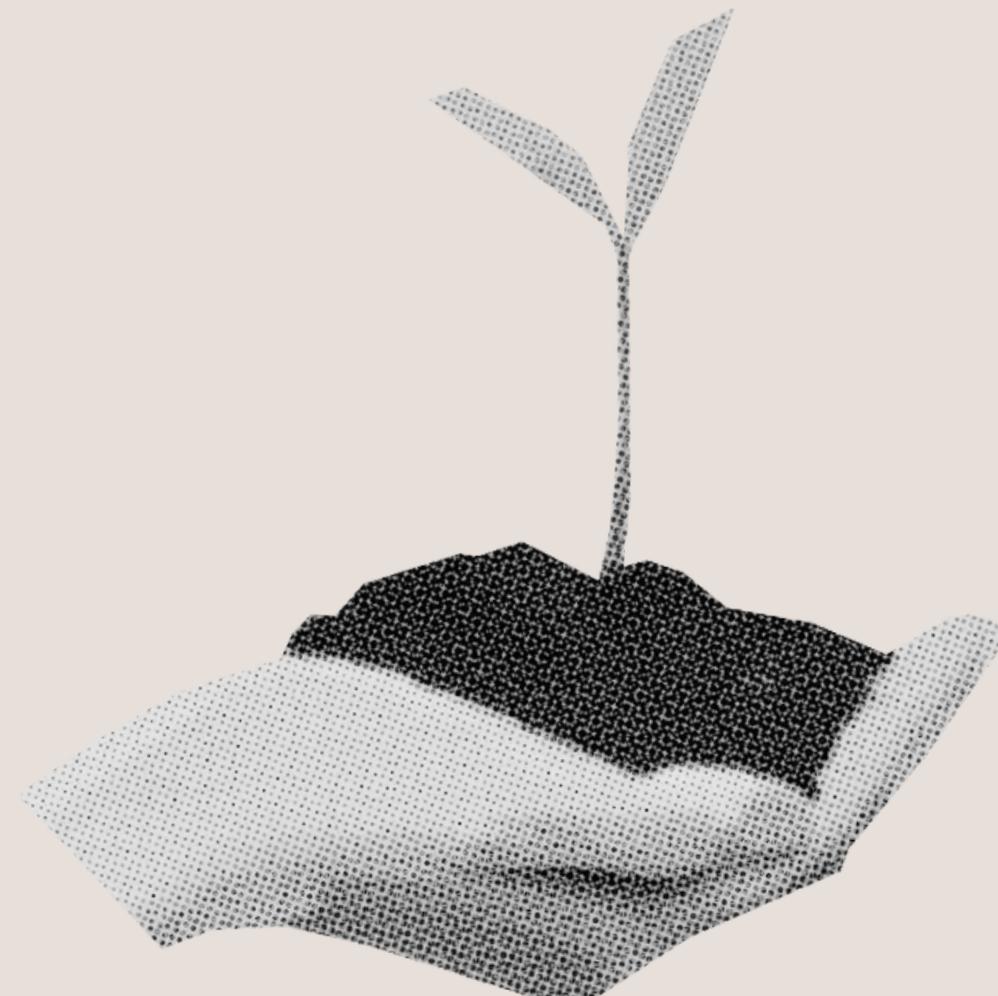


Phase 2
Speed up Carbon reduction

REFERENCES

- <https://visionproject.org.tw/story/6738>
- 內政部淨零綠生活指引
- EAT-Lancet
- 全球氣候評比 我國倒數第七 丹麥蟬聯榜首
- 低碳飲食 愛護地球守護健康
- France AGRIBALYSE 3.1.1
- FDA Food Nutrition Database
- THE LINE: a revolution in urban living

My Github Page





THANKS FOR LISTENING

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