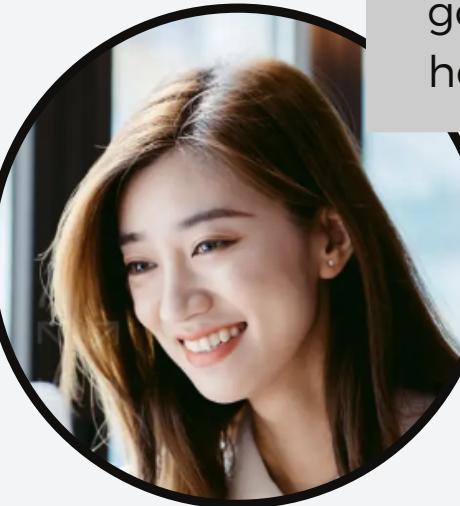


# **CAPSTONE RAINBOW RILEY AI CHATBOT**

**BY CHIN WANYING**

# PROBLEM

Singaporeans are increasingly more health conscious. However, many find it hard to sustain eating healthily because they are short of time and patience to constantly find delicious ways to cook their food.



**Abigail**

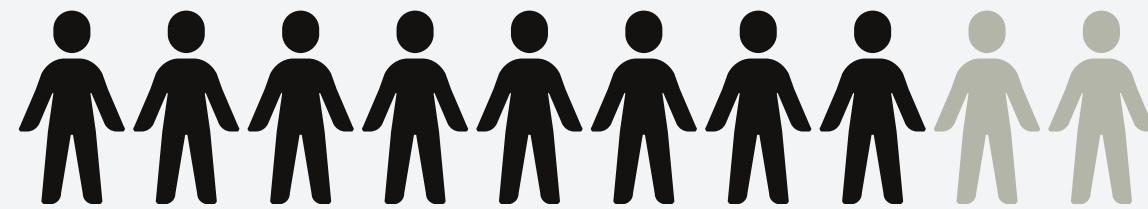
"I work late and have no time to think about my meals. I would like to have more control over what goes into my food. It'll be great if someone could help with this."



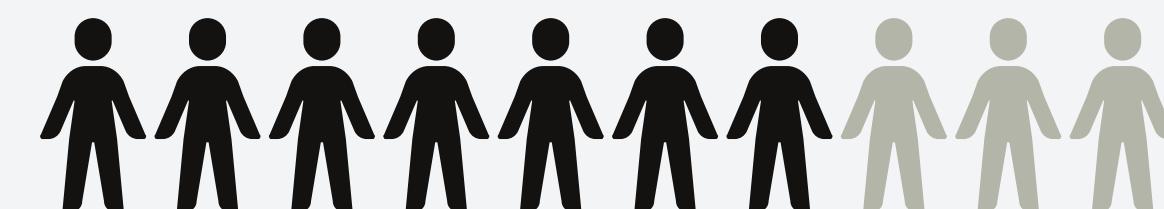
**Alex**

"I gym during lunch time and want to pack meals to work that taste good yet help me with my exercise gains."

**79%** Singaporeans  
actively making dietary  
choices to help prevent  
health conditions.



**74%** Singaporeans  
willing to pay more for  
foods that promote  
health benefits.



# WHY HOME COOKED MEALS

- Fresher
- No preservatives
- No additives
- Easier to balance diet
- Easier to portion control
- Control salt & sugar intake

**Frequency of eating home cooked meals and potential benefits for diet and health**

'Those consuming home cooked meals more than five times, compared with less than three times per week, were **28% less likely to have overweight BMI**, and **24% less likely to have excess percentage body fat.**'

*National Library of Medicine, 2017 ([link](#))*



**WHAT IS THE FASTEST,  
EASIEST AND NUTRITIOUS  
WAY TO PICK INGREDIENTS?**

# DOES THIS MEET THE 5-COLOUR DIET?



# WHAT IS THE 5-COLOUR DIET?

| Red  | Orange /yellow  | Green   | Blue /purple   | White /brown  |
|--|---|---|--|---|
| <ul style="list-style-type: none"><li>• lycopene (from the vitamin A family)</li><li>• folate</li><li>• potassium</li><li>• vitamin A (<u>lycopene</u>)</li><li>• vitamin C</li><li>• vitamin K1</li></ul> | <ul style="list-style-type: none"><li>• <u>carotenoids</u>, which belong to the vitamin A family</li><li>• fiber</li><li>• folate</li><li>• potassium</li><li>• vitamin A (beta carotene)</li><li>• vitamin C</li></ul> | <ul style="list-style-type: none"><li>• Chlorophyll and carotenoids</li><li>• fiber</li><li>• folate</li><li>• magnesium</li><li>• potassium</li><li>• vitamin A (beta carotene)</li><li>• vitamin K1</li></ul> | <ul style="list-style-type: none"><li>• anthocyanins</li><li>• fiber</li><li>• manganese</li><li>• potassium</li><li>• vitamin B6</li><li>• vitamin C</li><li>• vitamin K1</li></ul> | <ul style="list-style-type: none"><li>• anthoxanthins (flavonols, flavones), allicin</li><li>• fiber</li><li>• folate</li><li>• magnesium</li><li>• manganese</li><li>• potassium</li><li>• vitamin B6</li><li>• vitamin K1</li></ul> |

# WHAT IS NOT THE 5-COLOUR DIET?



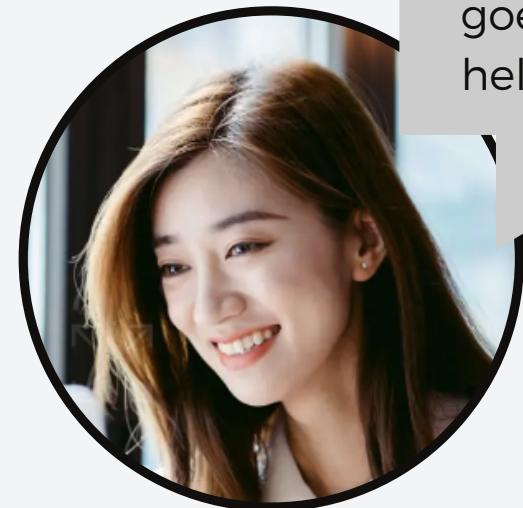
# HOW DO WE HELP ABIGAIL AND ALEX?

- Build an ingredients and recipe recommender based on the 5-colour diet using FairPrice fruits and vegetables ingredients
- Leverage on machine learning to recommend at 'shopping cart stage' for missing ingredient colours and their respective recipes

# RESULTS TABLE

|                      | Relevancy | <b>Output comparison: My cart already has pomegranates, oranges, and blueberries. What else should I add to achieve the 5 colour diet, and what recipe can I try?</b>  |
|----------------------|-----------|--|
| <b>gpt-3.5-turbo</b> | 0.9026    | You should add bananas to achieve the 5-color diet. To try a recipe, consider making a mixed fruit smoothie with pomegranates, oranges, blueberries, and bananas.  |
| <b>gpt-4</b>         | 0.8014    | You're missing green and white/tan. Add green apples and bananas to your cart. You could try making a fruit salad with pomegranates, oranges, blueberries, green apples, and bananas.  |
| <b>gpt-4-1106</b>    | 0.8955    | To achieve the 5-color diet, you should add something white/tan and green. Consider adding bananas and green apples. A recipe you can try is a fruit salad with pomegranates, oranges, blueberries, bananas, and green apples. |

# DEMO



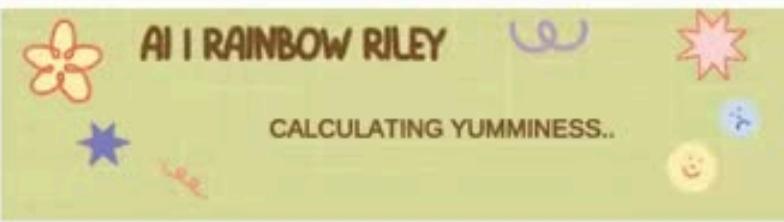
**Abigail**

"I work late and have no time to think about my meals. I would like to have more control over what goes into my food. It'll be great if someone could help with this."



**Alex**

"I gym during lunch time and want to pack meals to work that taste good yet help me with my exercise gains."



How Can I Help You Today?

Ask Me Rainbow Riley Questions Relating to fun ingredients and yummy recipes.



# WHAT ELSE CAN WE DO TO ENCOURAGE HOME COOKED MEALS?



## OCTOBER

Include the ability to recognize images of the ingredients. Include the option to select budget and cooking time.

## NOVEMBER

Suggest recipes based on event type: family meal, gatherings, meal prep. Include meat. Include specific deficiencies so that people with certain deficiencies can select specific recipes to help them with that.

## DECEMBER

Rollout to encompass other grocery stores

# RECAP



## Problem

Singaporeans find it hard to sustain eating healthily because they are too busy to find delicious ways to cook their food.



## Solution

Build an ingredients and recipe recommender based on the 5-colour diet that uses machine learning to recognize typed inputs.



# EVERYONE WINS?



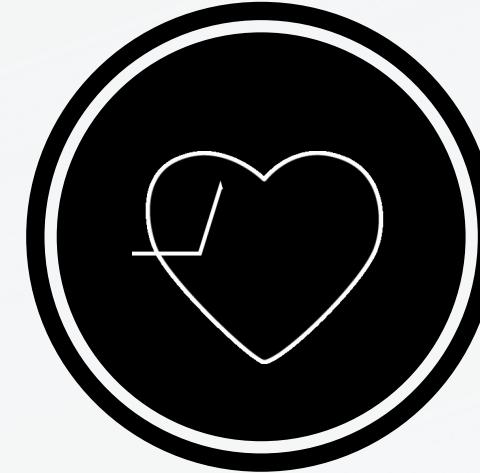
## Society

- Reduce strain on medical resources
- Increase work productivity impacted by illness or having to care for family whose illness could have been prevented with good diet.



## Supermarkets

- Increase revenue as the barrier to preparing meals reduces and people are more likely to buy more groceries than meals from eateries outside.



## Individual

- Stay healthy and have a better quality of life for longer
- Meals are more enjoyable even though it is healthy
- Save money as groceries are cheaper than eating out

**THANK YOU**

