ZeroWasteMate

Objective:

Our platform aids both **homeowners and businesses** in reducing food waste by **tracking perishable ingredients** and providing accessible recipes to optimize usage.

ZeroWasteMate

Introduction

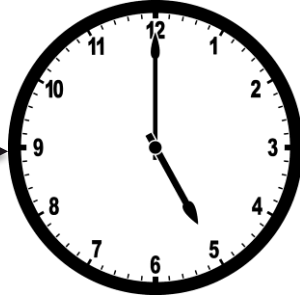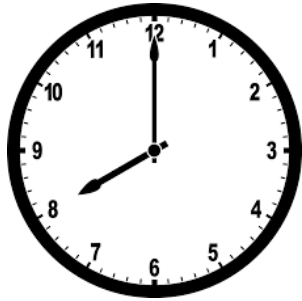# Daily Struggle: Cost of Living Has Been Increase

$50 Input

NTUC

Output

Sentiment

Daily Struggle: Work 44 hours a week

Mon to Fri

Sat and Sun

CHARGING...

Daily Struggle: Increasing Cost of Living and Limited Time

2. The only things that remain constant are my salary and my age

3. Need to cut food cost.

4. Time to go NTUC and stock up

1. Need to Pay and Pay !!!

Daily Struggle:
This is what happen when we stock up food

The next thing that always remains constant is my IQ...

How can I improve it to remember all the ingredients?

Daily Struggle: 2 week later....

This fridge is a reflections of life without a system in place.

Time to call my parents to help me clean...

Annually, 744 Million KG of Food Waste are produced

Source: Food Waste (towardszerowaste.gov.sg)Food Waste (towardszerowaste.gov.sg)

An annual increase of 20% in food waste means we need to incinerate 20% extra of food each year.

This will lead to 20% rise in the emission of greenhouse gases.

Problem Statement

We aim to develop and implement the fresh ingredient recognizer and tracker system, an innovative solution designed to reduce avoidable food wastage through the use of technology

Success Metrics

1. The primary metric for assessing the success of the ZeroWasteMate is its **accuracy** in identifying fresh ingredients and determining their freshness levels.

2. The Secondary metric will be is its usability of the recommended recipe

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Data Exploration

Types of Ingredient

Cabbage

Cauliflower

Red Chili

Green Chili

Cherry Tomatoes

Tomatoes

Types Freshness Level Cauliflower

Fresh

Slightly unfresh

Unfresh

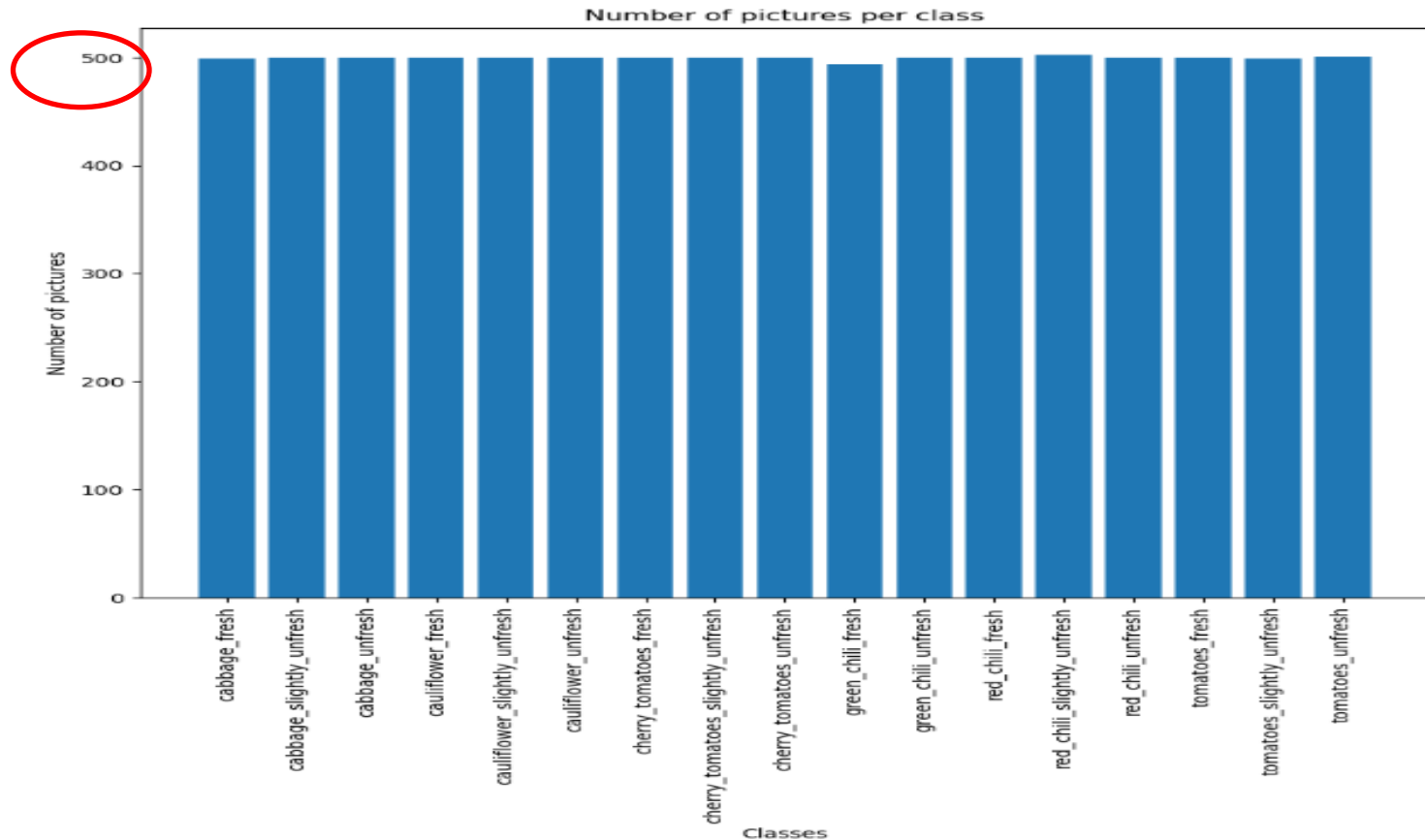# Types Freshness Level Red Chili

Fresh

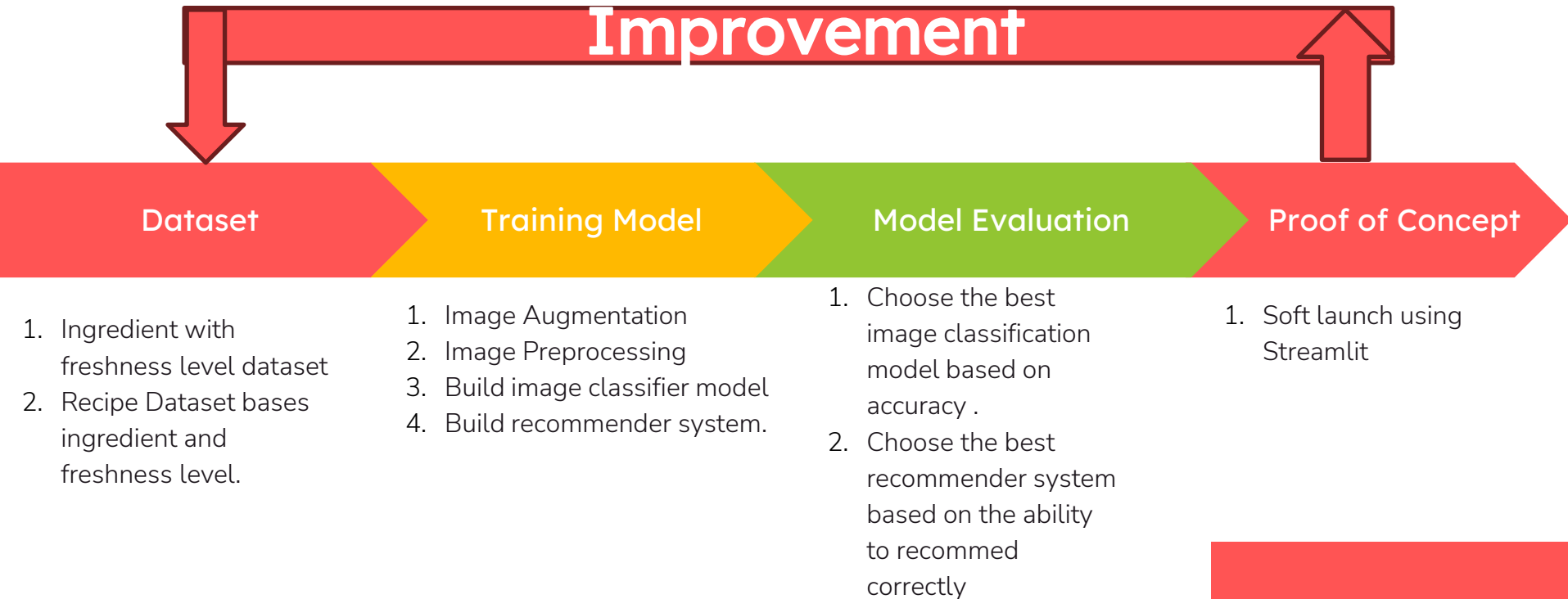Slightly unfresh

Unfresh

500 of pictures per class

Number of pictures per class

Modelling

Workflow

Improvement

| Dataset | Training Model | Model Evaluation | Proof of Concept |

Dataset
1. Ingredient with freshness level dataset
2. Recipe Dataset bases ingredient and freshness level.

Training Model
1. Image Augmentation
2. Image Preprocessing
3. Build image classifier model
4. Build recommender system.

Model Evaluation
1. Choose the best image classification model based on accuracy .
2. Choose the best recommender system based on the ability to recommed correctly

Proof of Concept
1. Soft launch using Streamlit

Image Classification Models

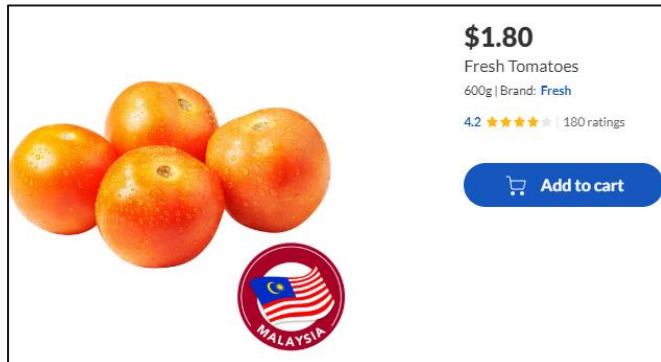| Model	Average val_accuracy	Training time	Test Accuracy	Testing Time
EfficientNetB3	0.9374	2hr 19min 6s	0.713	52.4s
EfficientNetB7	0.9298	14hr 37min 18s	0.68	2min 51s
MobileNetV2	0.1380	49min 29s	0.109	16.1s
InceptionV3	0.8370	1h 30min 39s	0.651	46.2s

Challenges
&
Future
Improvements

Challenges

Due to time constraints, all of the ingredient images were sourced online, which means their physical appearance may differ from those found in local markets.

Local Market

Dataset

Future Improvements

1. Spend a considerable amount of time documenting the transition of ingredients from fresh to slightly unfresh and then to unfresh.

2. During the documentation of the ingredient images, will place the ingredients against both white and non-white backgrounds in well-lit and poorly lit areas.

3. Will also explore a wider variety of perishable ingredients for the model to train on.

Conclusion:

1. ZeroWasteMate aims to significantly reduce food waste

2. Challenges faced included limited dataset diversity

3. Future work will expand the dataset

4. Despite obstacles, ZeroWasteMate is pivotal step towards eco-friendly food management, highlighting the vital role of technology in environmental preservation.
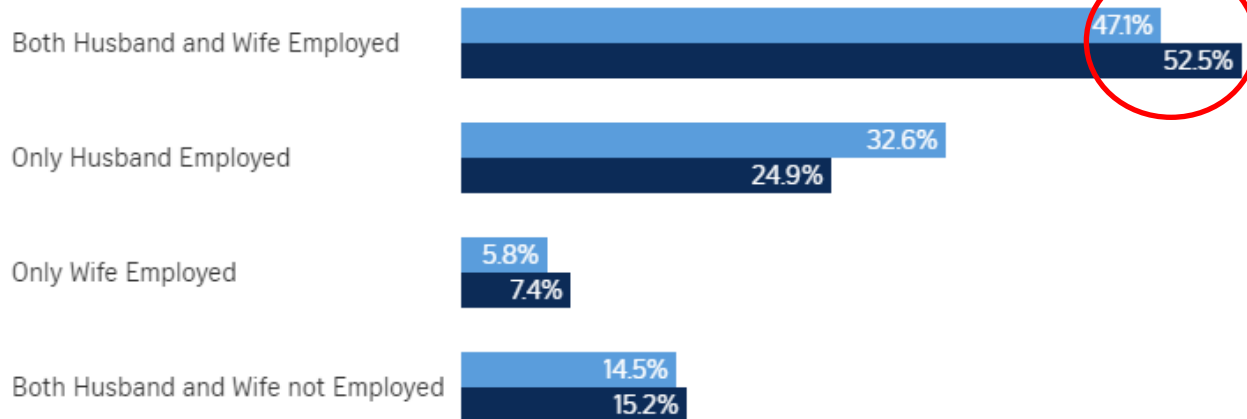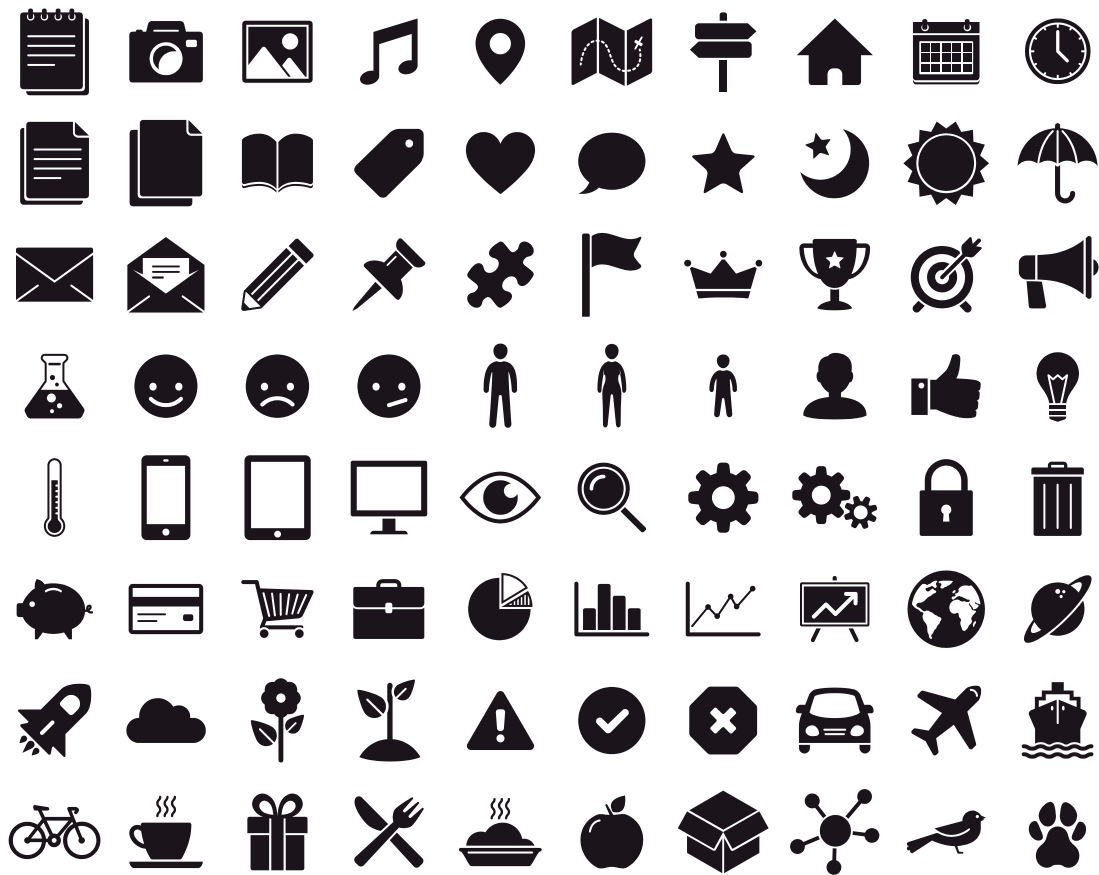

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No Question?

Thank You !!!!

Increasing Rate of Dual Income Families

Labour force status of married couples in resident households

■ 2010 ■ 2020

Both Husband and Wife Employed
- 47.1%
- 52.5%

Only Husband Employed
- 32.6%
- 24.9%

Only Wife Employed
- 5.8%
- 7.4%

Both Husband and Wife not Employed
- 14.5%
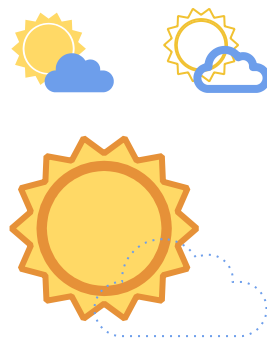- 15.2%

Source: Department of Statistics

SlidesCarnival icons are editable shapes.

This means that you can:
- Resize them without losing quality.
- Change fill color and opacity.
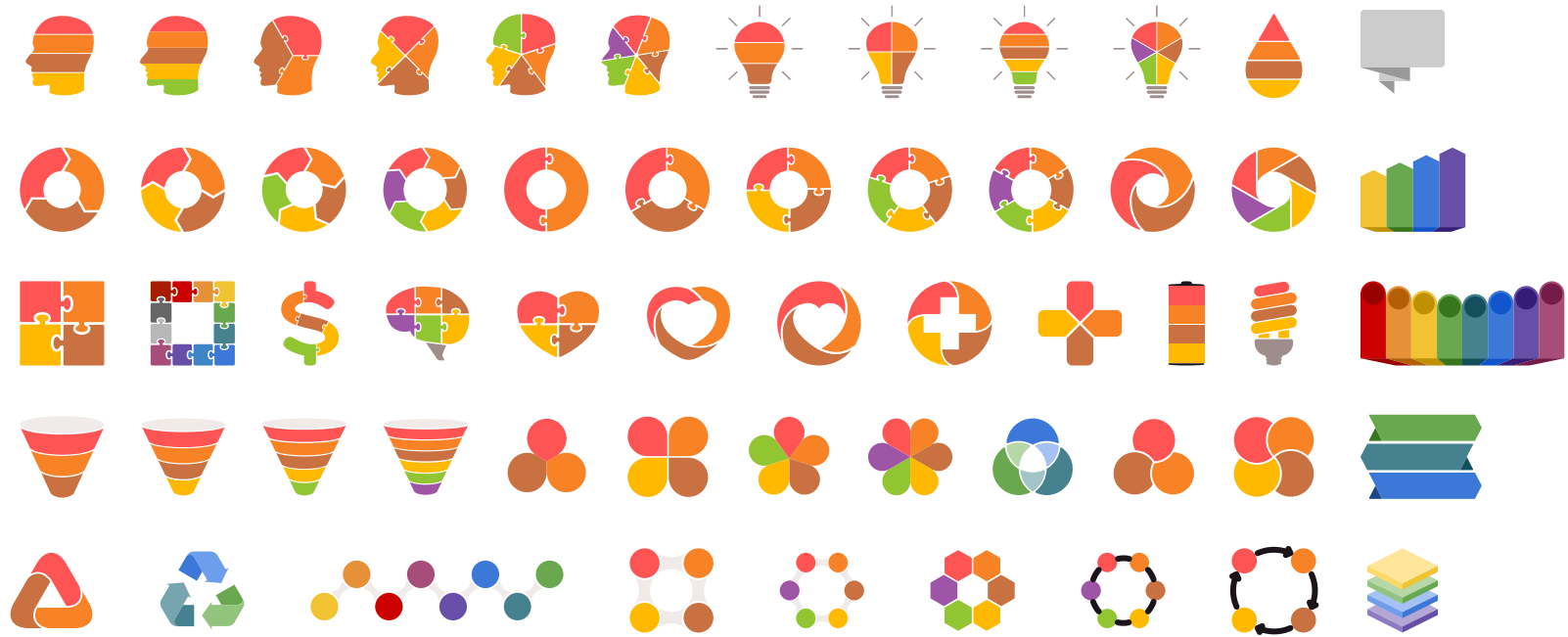- Change line color, width and style.

Isn't that nice? :)

Examples:

Find more icons at slidescarnival.com/extra-free-resources-icons-and-maps

Diagrams and infographics

You can also use any emoji as an icon!

And of course it resizes without losing quality.

How? Follow Google instructions

https://twitter.com/googledocs/status/730087240156643328