

GSORTING

SPRING 2023 CAPSTONE PROJECT
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AGENDA

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Improvements made from
Professor Feedback

00

Problem
Statement



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00



Improvements made from Professor Feedback

- Additional submission of API documentation
- Optimization Project

Problem Statement

With this app I want to try to make it easier for users to sort their garbage and create their own garbage type profile.





01

Project Description



Project Description

“Gsorting” is a mobile application developed by Pace University students for CS 691 and CS 692 projects.

- Primary goal- Identify waste types and give disposal recommendations
- Feature Function- text search and photo scan search.
- Better- Intuitive interface and user-friendly design, easier to use! Added trash note function to help users manage trash at home



02

MVP





Minimal Viable Product

The image shows five screenshots of a mobile application interface for waste management:

- Login Screen:** Features a green header with a recycling symbol icon. Below it is a decorative illustration of wind turbines and clouds. Input fields for "Account" and "Password" are present, along with "Login" and "register" buttons.
- Register Screen:** Features a green header with a recycling symbol icon. It includes a user profile icon and input fields for "Account", "Nickname", "Sex" (radio buttons for Man/Woman), "Mobile", "Address", "Password", and "Confirm". A "Register" button is at the bottom.
- Home Screen:** Features a green header with a recycling symbol icon. A search bar contains the text "glasses". Below it is a grid of four icons: wet garbage (red), dry refuse (black), recyclables (blue), and harmful (red). A detailed guide for "Dry refuse" is displayed, mentioning household waste, fragility, and contamination.
- wet garbage Screen:** Features a green header with a recycling symbol icon. It lists items like "Dumplings(wet garbage)", "egg shell(wet garbage)", "langoustine(wet garbage)", "biscuits(wet garbage)", "watermelon rind(wet garbage)", and "shrimp shell(wet garbage)". Each item has a "Wet garbage delivery guide" link and a blue edit icon.
- My Screen:** Features a green header with a recycling symbol icon. It shows a user profile picture of Pikachu and the username "cz". Below are sections for "Personal", "Security", "Language Setting", and "About". Buttons for "Logout" and "ExitApp" are at the bottom.





03

Technologies







04

Personas



Persona 1-Eco-Conscious Edith

Name: Edith Lucy

Age: 30

Environmentally conscious homeowner:
This person is environmentally conscious and actively seeks ways to reduce their household's carbon footprint. They may use the Gsorting app to identify and dispose of household waste in an environmentally friendly way.





Persona 2 - Busy White

Name: Mr. White & Mrs. White

Age: 33 & 28 (Mr. White & Mrs. White)

Busy Parents: This persona is a pair of busy parents with limited time to do household chores. They can use the Gsorting app to identify the type of waste and get quick disposal advice to get rid of household waste quickly.



Persona 3-Student Sam

Name: Sam Peter

Age: 20

Student tenant: He's a college freshman. He may not be familiar with the waste management regulations of the city where the university is located and he can use the Gsorting app to properly sort his household waste and avoid fines.





05

Algorithms

Deep learning model

- A garbage classification dataset is first collected, including various types of garbage images.
- The ResNet18 model was selected as the classifier. The accuracy of the garbage classification task using the ResNet18 model was tested to be relatively high, typically above 97%.



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Architecture Diagrams





Architecture Diagrams

01

Conceptual Diagram

03

Class Diagram

02

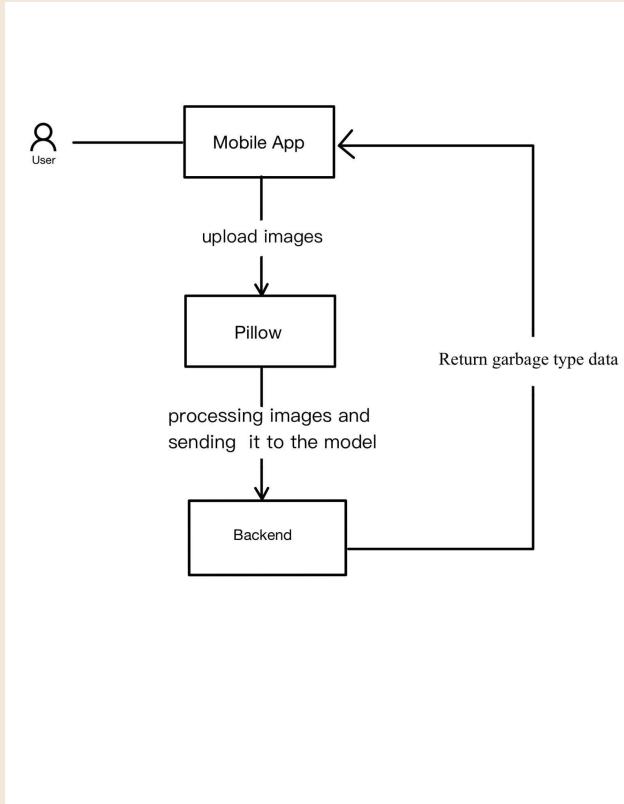
Sequence Diagram

04

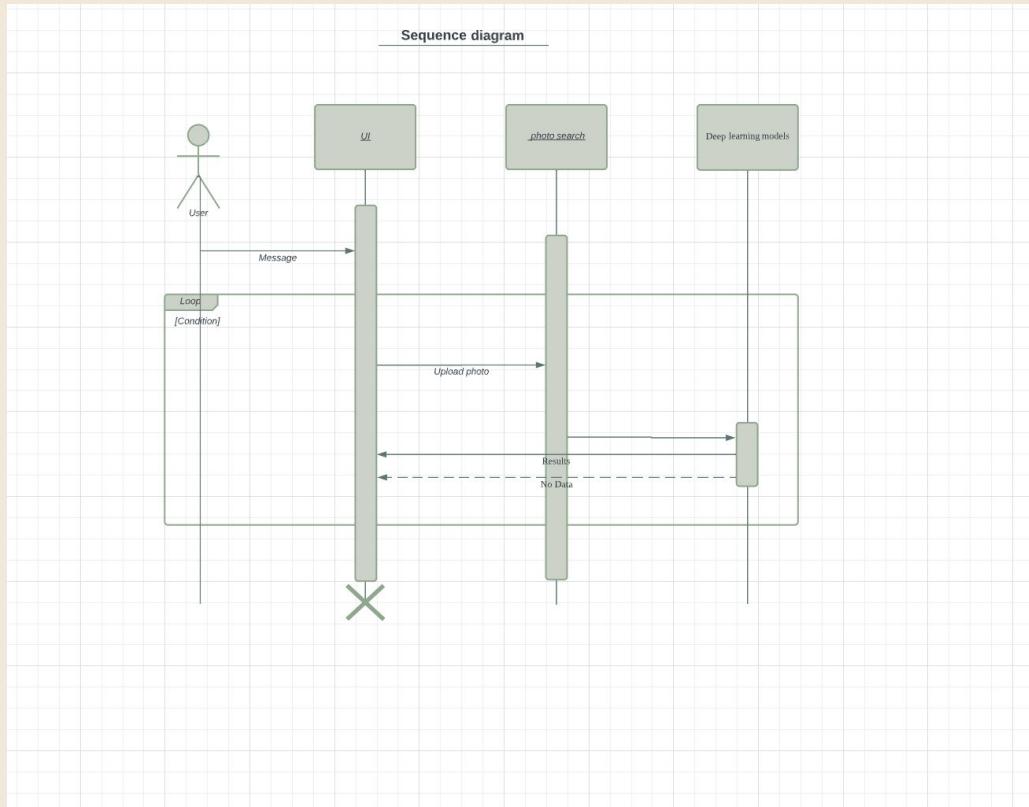
Use Case Diagram



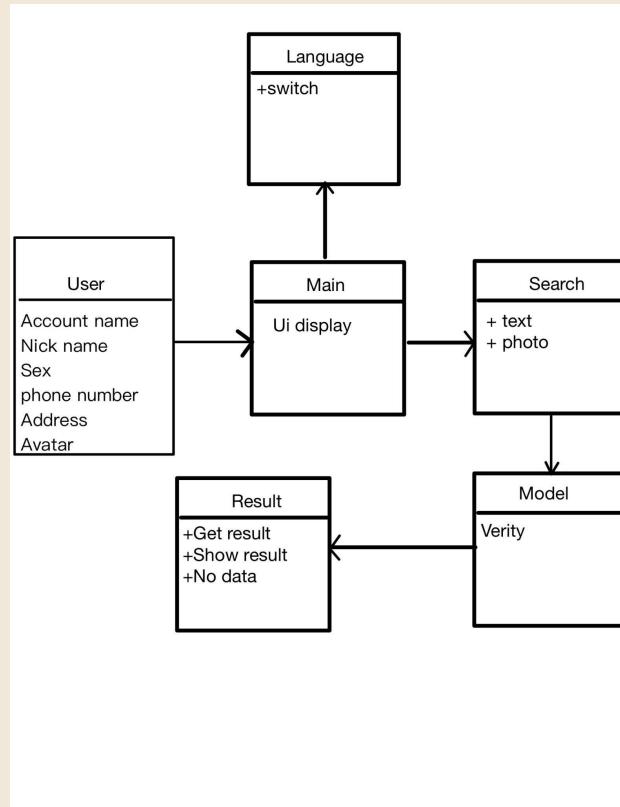
Conceptual Diagram



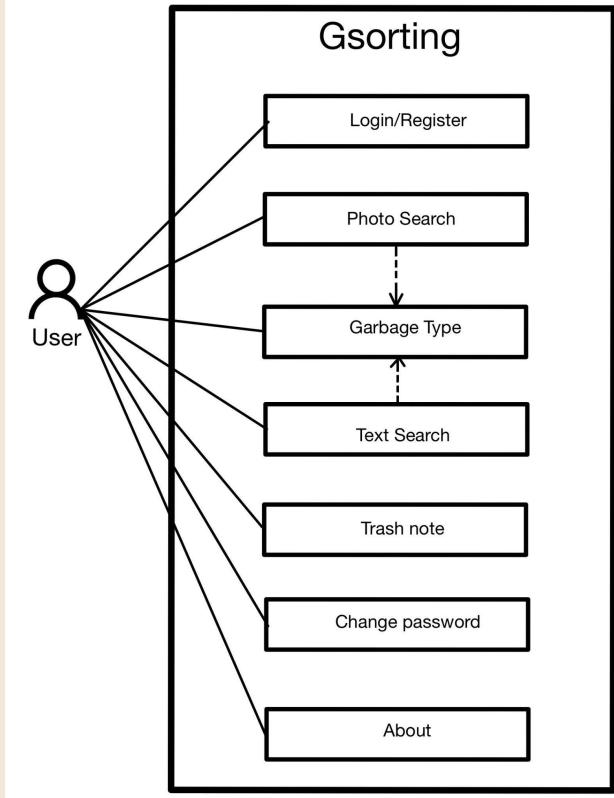
Sequence Diagram



Class Diagram



Use Case Diagram





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Sprint 1 Recap

ID	Name	Creation Date	Description
US1	Menu	01/24/2023	As a user, I hope to have a menu button that allows users to switch UI from one to another so that I can freely choose which category of garbage I want to know/search for.
US2	App reliability	01/24/2023	As a user, I want the app's reliability to be over 90% of successful running. This App would not be interrupted by other apps when it's working and it's compatible with different browsers.
US3	Setup Language	01/24/2023	As a user, I want the app's ability to set up the language(Chinese, English, and so on). So I can use it no matter what language I'm using.
US5	Language Switch	01/24/2023	As a user, the content of the app should not be confused by the language, I want to set a language change option so that people from a different country can use this app directly.
US8	Camera Scan	01/24/2023	As a user, I want to scan stuff so that I can search for more details on the app
US9	Picture Viewer	01/24/2023	As a user, I want images to distinguish the types of junk I'm looking for so I don't have to read a lot of text while searching for information.
US10	Word description	01/24/2023	As a user, I need as detailed text description as possible to introduce the knowledge of garbage classification to me, so that as to improve my garbage classification ability.
US12	About	01/24/2023	As a user, I want to know the information of the developer of this app, which helps me to understand this app
US13	UI	01/24/2023	As a user, I want the app to have a good UI design, so that I can use it more smoothly
US14	Upload picture	01/24/2023	As a user, I want to upload the picture I would like to use for my profile.
US15	Settings	01/24/2023	As a user, I want to be able to change settings so that I can use the app with my preferred options.
US17	Searcher	01/24/2023	As a user, I want to search for this item to find out what category it belongs to, so that I can realize how to recycle or dispose of it.
US21	Clickable picture	01/24/2023	As a user, I want to have a clickable picture so that I can select the detailed spam classification information THAT I want to know/search for.

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Product Backlog



ID	Name	Creation Date	Description	Sprint	Priority	Status	Notes
US1	Menu	01/24/2023	As a user, I hope to have a menu button that allows users to switch UI from one to another so that I can freely choose which category of garbage I want to know/search for.	1	High	Done	Renewed in Sprint 2
US2	App reliability	01/24/2023	As a user, I want the app's reliability to be over 90% of successful running. This App would not be interrupted by other apps when it's working and it's compatible with different browsers.	1	Medium	Done	
US3	Setup Language	01/24/2023	As a user, I want the app's ability to set up the language(Chinese, English, and so on). So I can use it no matter what language I'm using.	1	Low	Done	
US4	Welcome Screen	03/10/2023	As a user, I want to have an interface that shows me the app's icon when I open the app.	2	Low	Done	
US5	Language Switch	01/24/2023	As a user, the content of the app should not be confused by the language, I want to set a language change option so that people from a different country can use this app directly.	1	Low	Done	
US6	Warning Message	03/10/2023	As a user, I want to be warned when performing operations such as reset, so that I never lose my data.	2	Medium	Not Done	
US7	Account	03/10/2023	As a user, I want my Settings and information to be recorded so that I can respond to my preferences more quickly when changing devices.	2	Medium	Done	
US8	Photograph	01/24/2023	As a user I would like to have a photo feature within the app so that I can retrieve more content	1	High	Done	
US9	Picture Viewer	01/24/2023	As a user, I want images to distinguish the types of junk I'm looking for so I don't have to read a lot of text while searching for information.	1	High	Done	
US10	Word description	01/24/2023	As a user, I need as detailed text description as possible to introduce the knowledge of garbage classification to me, so that as to improve my garbage classification ability.	1	Medium	Done	
US11	Help Button	03/10/2023	As a user, I want to be able to use the help page when I don't understand a feature in the app so that I can get help where I need it.	2	Medium	Not Done	
US12	About	01/24/2023	As a user, I would like to know the version of this app, which helps me to update this app in time.	1	Low	Done	
US13	UI	01/24/2023	As a user, I want the app to have a good UI design, so that I can use it more smoothly	1	Large	Done	Renewed in Sprint 2
US14	Upload picture	01/24/2023	As a user, I want to upload the picture I would like to use for my profile.	1	Medium	Done	
US15	Settings	01/24/2023	As a user, I want to be able to change settings so that I can use the app with my preferred options.	1	Medium	Done	
US16	Register	03/10/2023	As a user, before I have a account, I want to have a nickname and save my personal information on the app, so that I won't reveal my real name, and I won't be asked to re-enter my information when I switch devices.	2	High	Done	
US17	Searcher	01/24/2023	As a user, I want to search for this item to find out what category it belongs to, so that I can realize how to recycle or dispose of it.	1	High	Done	
US18	Text editor	03/10/2023	As a user I wish I could search by editing text	2	High	Done	
US19	Password Change Function	03/10/2023	As a user, I don't want my current password anymore, so that I can click a button to enter a new one.	2	High	Done	
US20	Exit Screen	03/10/2023	As a user, I want to see a "goodbye, see you next time" sentence when I close the app	2	Medium	Done	
US21	Clickable picture	01/24/2023	As a user, I want to have a clickable picture so that I can select the detailed spam classification information THAT I want to know/search for.	1	Medium	Done	Renewed in Sprint 2
US22	Logout Function	03/10/2023	As a user, I want to have logout function so that I can switch to another account.	2	Low	Done	
US23	Records	03/10/2023	As a user, I need to create my own trash notepad so that I can keep track of my own trash disposal practices.	2	High	Done	

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Sprint 2 Backlog





ID	Name	Creation Date	Description	Sprint	Priority	Status
US4	Welcome Screen	03/10/2023	As a user, I want to have an interface that shows me the app's icon when I open the app.	2	Low	Done
US6	Warning Message	03/10/2023	As a user, I want to be warned when performing operations such as reset, so that I never lose my data.	2	Medium	Not Done
US7	Account	03/10/2023	As a user, I want my Settings and information to be recorded so that I can respond to my preferences more quickly when changing devices.	2	Medium	Done
US11	Help Button	03/10/2023	As a user, I want to be able to use the help page when I don't understand a feature in the app so that I can get help where I need it.	2	Medium	Not Done
US16	Register	03/10/2023	As a user, before I have a account, I want to have a nickname and save my personal information on the app, so that I won't reveal my real name, and I won't be asked to re-enter my information when I switch devices.	2	High	Done
US18	Text editor	03/10/2023	As a user, I need to create my own Garbage notenook, so that I write down the garbage I used to search and remember them.	2	High	Done
US19	Password Change Function	03/10/2023	As a user, I don't want my current password anymore, so that I can click a button to enter a new one.	2	High	Done
US20	Exit Screen	03/10/2023	As a user, I want to see a "goodbye, see you next time" sentence when I close the app	2	Medium	Done
US22	Logout Function	03/10/2023	As a user, I want to have logout function so that I can switch to another account.	2	Low	Done
US23	Records	03/10/2023	As a user, I need to create my own trash notepad so that I can keep track of my own trash disposal practices.	2	High	Done



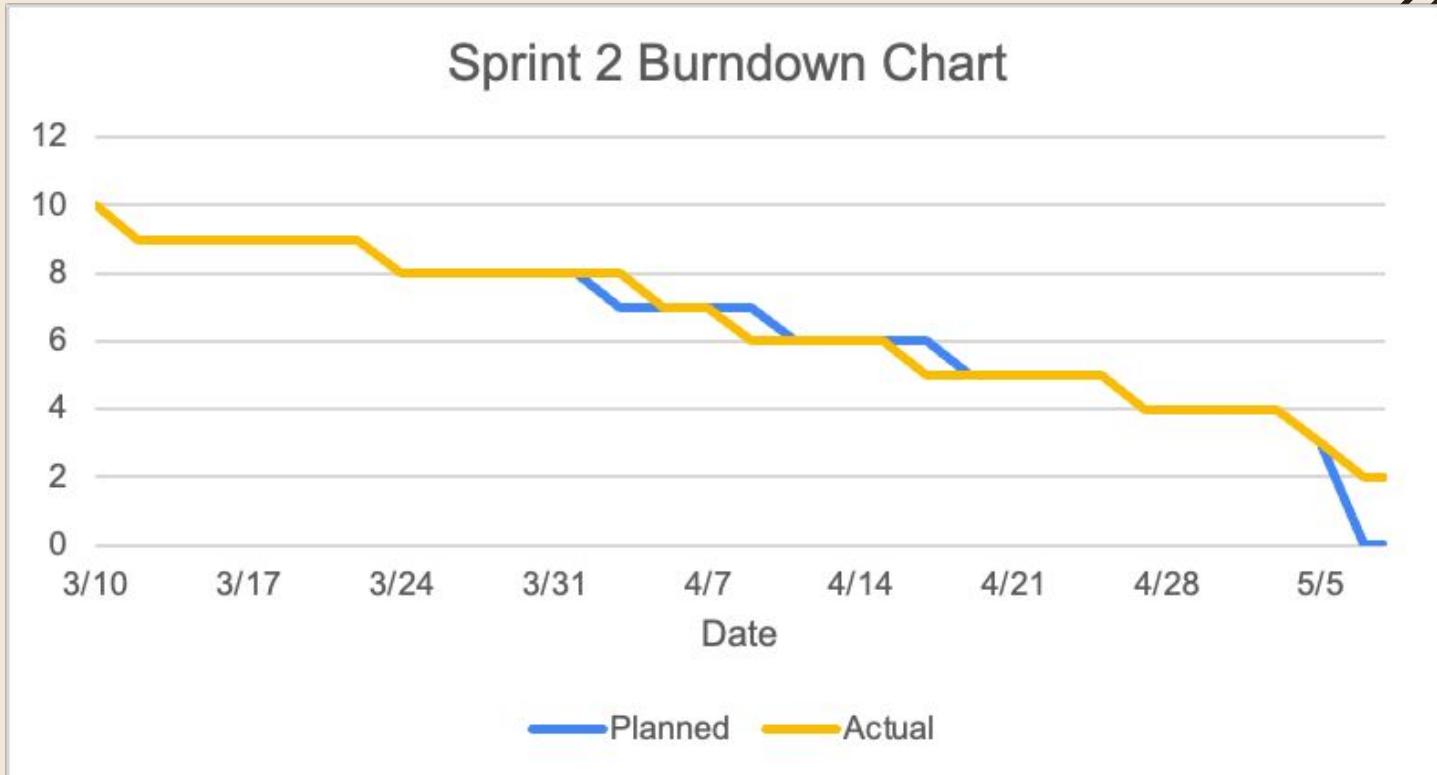
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Metrics



Team velocity and Burndown Charts

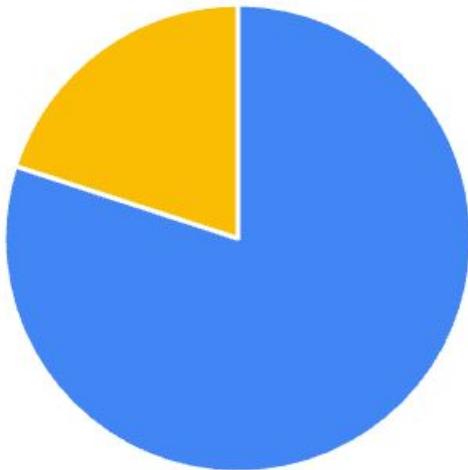
Sprint 2, I completed user stories



Completed/Committed Ratio



“Committed/Completed Ratio”



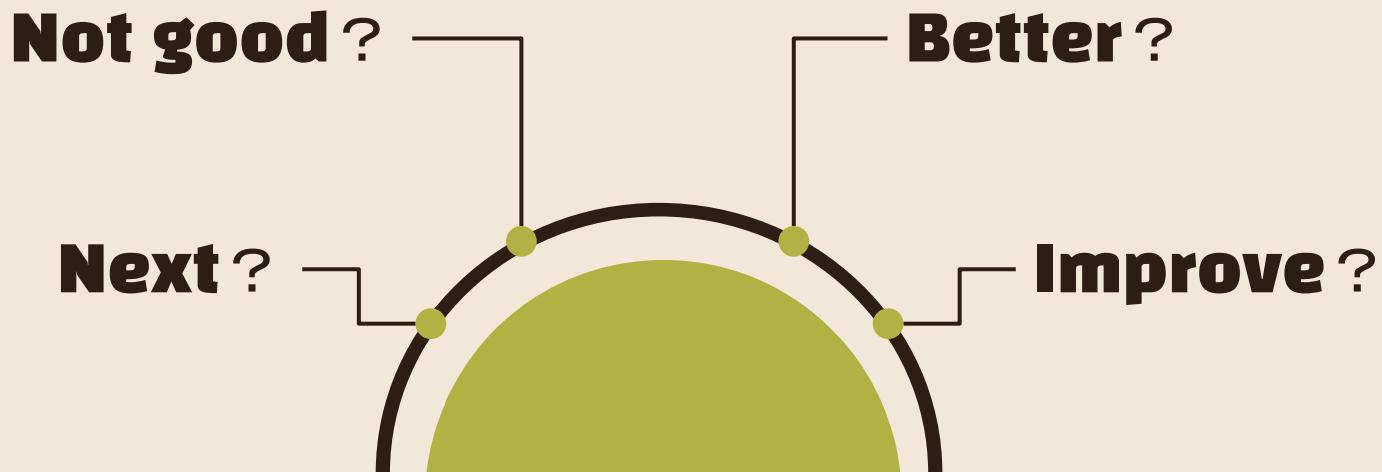
■ Completed ■ Incompleted

=**8/10**

=**80%**



11 Retrospective





Retrospective

What is going well ?

- *UI design is easy to use*
- *Completed deep learning model as back-end*



01



02

03

What to do next ?



- make this app portable to more platforms

What needs to be improved ?

- Larger images can't be uploaded, I need to try to fix this

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GitHub

<https://github.com/htmw/2023S-czhang>

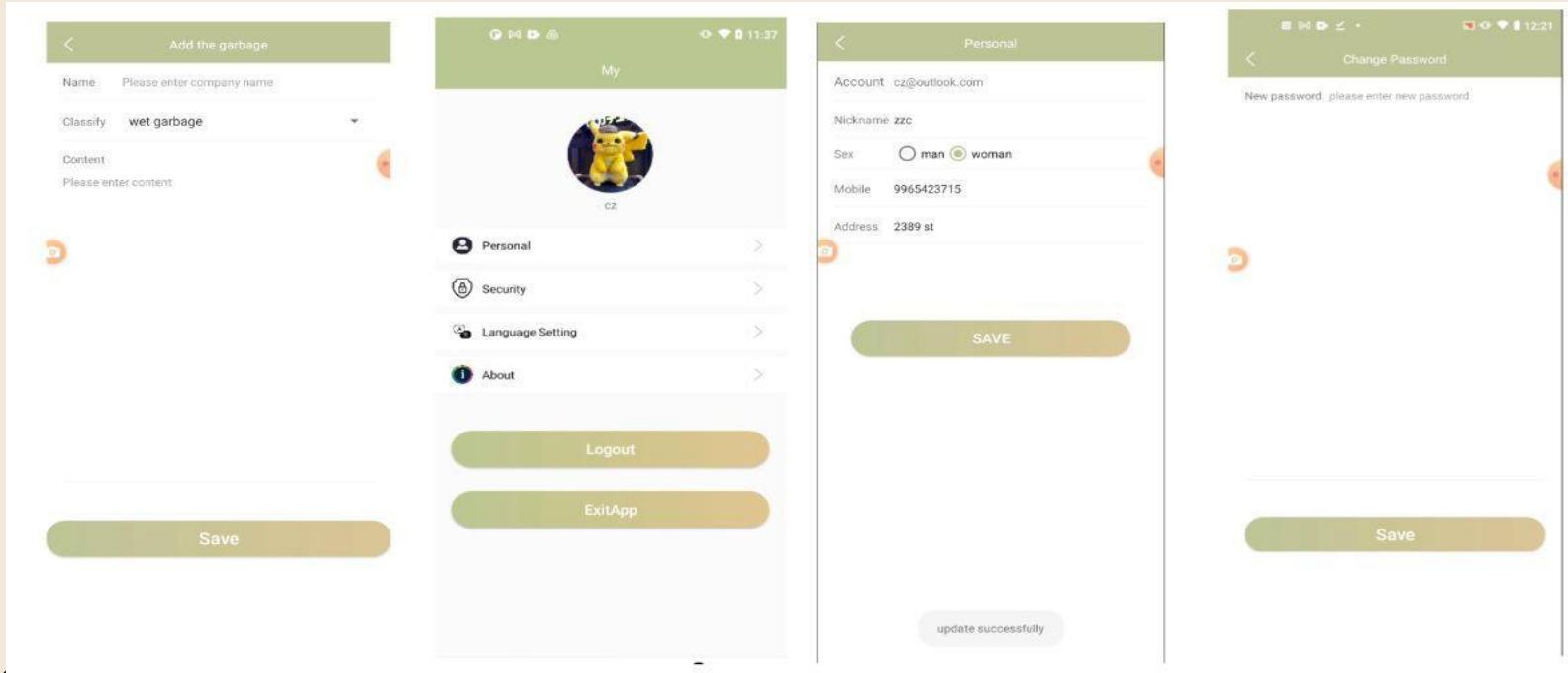


12. MVP Project Demo

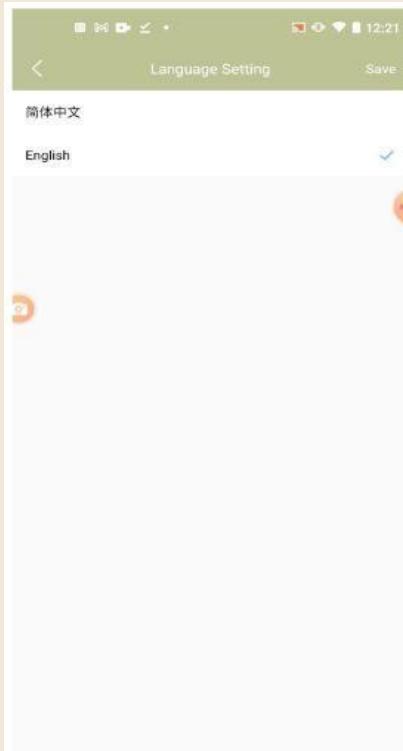
The image displays five screenshots of a mobile application interface:

- 4. GSorting**: A landing screen featuring a large circular icon with a trash bin containing a gear, labeled "GSorting". Below it are two buttons: "Login" and "register".
- 5. Login**: A login screen with fields for "Account" (placeholder: Please input account) and "Password" (placeholder: Please enter your password). It includes a decorative illustration of a landscape with trees, wind turbines, and a sun.
- 6. Register**: A registration screen with fields for "Account" (placeholder: Please input account), "Nickname" (placeholder: Please input Nickname), "Sex" (radio buttons for Man or Woman), "Mobile" (placeholder: Please enter your mobile), "Address" (placeholder: Please enter your address), "Password" (placeholder: Please enter your password), and "Confirm" (placeholder: Please enter confirmation password). It also features a placeholder for a user profile picture.
- 7. Home**: A home screen showing a camera icon and a search bar. Below are four categories: "wet garbage" (represented by a red trash bin icon), "dry refuse" (black trash bin icon), "recyclables" (blue recycling symbol icon), and "harmful" (red recycling symbol icon). A detailed description of "Dry refuse" is provided in Chinese: "Household waste in addition to the other three types of garbage. 厨余垃圾，类如剩饭剩菜的生活垃圾。" It includes instructions: "If fresh or have been contaminated, should be washed and put" (If fresh or have been contaminated, should be washed and put), "When put, should keep the surrounding environment neat and tidy" (When put, should keep the surrounding environment neat and tidy), and "Separate from other types of garbage" (Separate from other types of garbage).
- 8. wet garbage**: A list of wet garbage items with icons and links:
 - Dumplings(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - egg shell(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - langoustine(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - biscuits(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - watermelon rind(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - watermelon seeds(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...
 - shrimp shell(wet garbage)
Wet garbage delivery guide Kitchen garbage sh...A green circular button with a plus sign is located at the bottom right.

12. MVP Project Demo



12. MVP Project Demo





Thanks

Live Application Demo:

<https://www.youtube.com/watch?v=1pFVk-YiBwQ>

