# Envision a Design Report: Mycrowave

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## *Problem*

Dear Investors,

We are students from the University of Washington and we are presenting a new mobile application called Mycrowave. Mycrowave is an app that will encourage healthy eating, provide recipes, and decrease food waste. The stakeholders we would like to address are college students, new cooks, and working individuals. With our app Mycrowave, we will be addressing our stakeholder needs by providing them with app features that would support our users.

Firstly, college students face many challenges during their college years. As the cost of college tuition, housing, and food are on the rise, many students find it difficult maintaining their budget and hunger together while stressing with school work. Time and money is super important for a college student, so implementing an app that finds quick and easy recipes that can be made in under 30 minutes can be a great option for them. With that being said, students can make quick meals at home without having to spend too much time in the kitchen. Students who are worried about their budget can use our app that suggests recipes based on the ingredients they have in their fridge. This is the best way to reduce food waste but most importantly save money on their meals. Of course, to keep things fun and inclusive, our app includes not only a variety of recipes but recipes from different parts of the world. This way, college students can learn new food combinations and are exposed to different cultures' cuisine. College students with unhealthy diets can lead to nutrition deficiencies, hypertension, diabetes, heart disease, and obesity (Shaak, 2021). We believe that having a healthy diet is important for college students. Mycrowave provides nutritional information for each recipe they choose. This can help students make decisions on what they should eat and get the nutrients they need. The app also has features such as user reviews to allow students to comment and share their opinions on recipes.

Secondly, for new cooks and working individuals who struggle to find time to cook after a long day or don't know where to start because of the lack of experience in cooking. These stakeholders end up needing to order take out to avoid those problems. On average 28% of 1087 people say they don't know how to cook, while 21% claim they don't have time to cook (Staff, 2013). Mycrowave provides simple instructions that allow users to create meals, ensuring new cooks with limited cooking backgrounds are able to prepare delicious and healthy meals. Our app can easily enable users to scan what they have in their fridge and also allow users to select different foods they would like to use to cook. Mycrowave also provides users with a shopping list where they can check off what they need to buy the next time they go on a grocery trip. Foods then can be added to the my ingredients list, which the app can track the expiration date of the item and alerts you whenever an item is about to go bad. The alert acts as a reminder for users to use the item before it spoils, this can prevent further food being tossed into the trash.

Lastly, our hope with our solution is to not only help college students, new cooks, and working individuals but to help all people that struggle with not knowing what to cook with the food items they have in their fridge. Mycrowave is an app that lets users add food items they have in their kitchen, and combines them into healthy delicious meals for everyone. What makes Mycrowave unique from other apps are the different features like the global cuisines, dietary restrictions option, and perishable food alert. We believe Mycrowave is an inclusive and perfect app for individuals who need help coming up with ideas to cook at home or for those who need help in maintaining a healthy diet while keeping a busy schedule. We hope that you will find our app useful and we are looking forward to hearing feedback from you.

## *Functionality*

The main purpose of Mycrowave is to help people dispose of **leftovers** or the ingredients that people already have in their fridge and use them to make a new meal. Other auxiliary functions include **planning** the ingredients needed for **grocery** shopping and recording the consumption of each item. Mycrowave is a highly open app that not only teaches people how to **cook**, but also allows users to **upload recipes** to help other users. With this in mind, we designed the Mycrowave app with three main features and auxiliary.

My Ingredients -- keep track of existing food storage in the kitchen.

Recipes -- Provide recipes based on existing ingredients.  (Users can also upload your own recipes)

Shopping List -- Records ingredients to be purchased according to the recipes.

Settings -- Set dietary restrictions and cooking utensils.

**Mycrowave Homepage**



This is the homepage of the Mycrowave app, here users can find the main functions of Mycrowave. Here what we are showing is the main screen of what our user Amy sees when logging into the Mycrowave app after registration. When Amy wants to reach any functions or setting,  she just needs to press the corresponding part's button.

**My Ingredients page:**
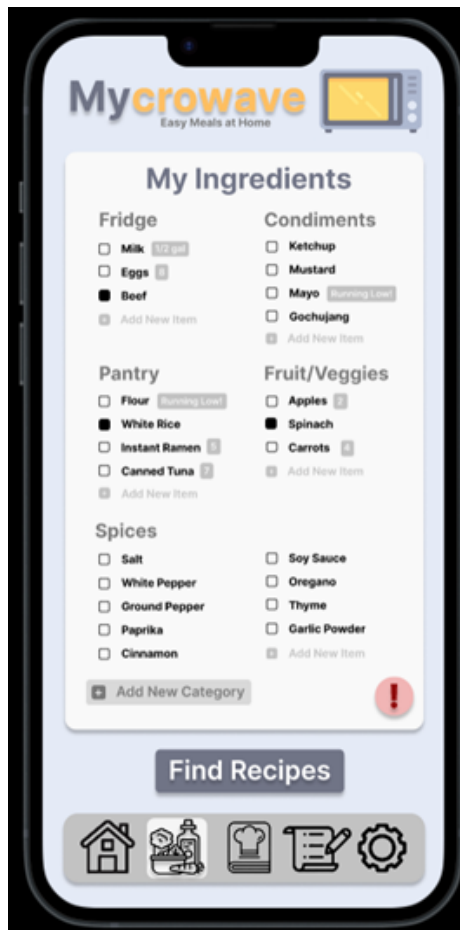


 As the picture shows, here you can record the remaining ingredients in your kitchen now, by checking the box to record the current condition. We've provided five common **categories** of ingredients, which in turn include detailed ingredients. Here we will take the pantry part as an example. Cooking much more rice than needed for a meal is a very common thing for an example user, and in this case, a user can simply check the box "white rice". Then the Mycrowave app will **record** and know that the user will have some leftover white rice in their fridge. Next time when you start cooking and try to find the recipes, Mycrowave will give a user preference for recipes that require ingredients that include white rice.

This part of our app may require manual input of the initial condition of the ingredients when people first use Mycrowave, but subsequent calculations can be made by the program itself. Subsequent Recipes functions are based on My ingredients. One minor flaw is that currently the software can only know whether there is food left, but it cannot calculate the exact amount. When the user finishes the meal according to the recipe, the software will directly regard the

remaining food as having been used up. However, our subsequent improvements will solve this problem.

**Recipes Page:**

As an app whose main function is to guide cooking, Mycrowave's recipe function is the most complete. When you click on the recipe feature at the bottom of the page, you will be presented with a screen like this.



As long as a user wants to cook at any time of the day, recipe features can be shown to choose recipes for users, even including tutorials for making snacks and desserts. If a user wants to try new foods, the **global cuisine** recipe will provide users with food from all over the world. Even if a user is self-conscious about their own cooking, users can upload their own recipes to share with other users by using the Submit Your Own Recipe function.
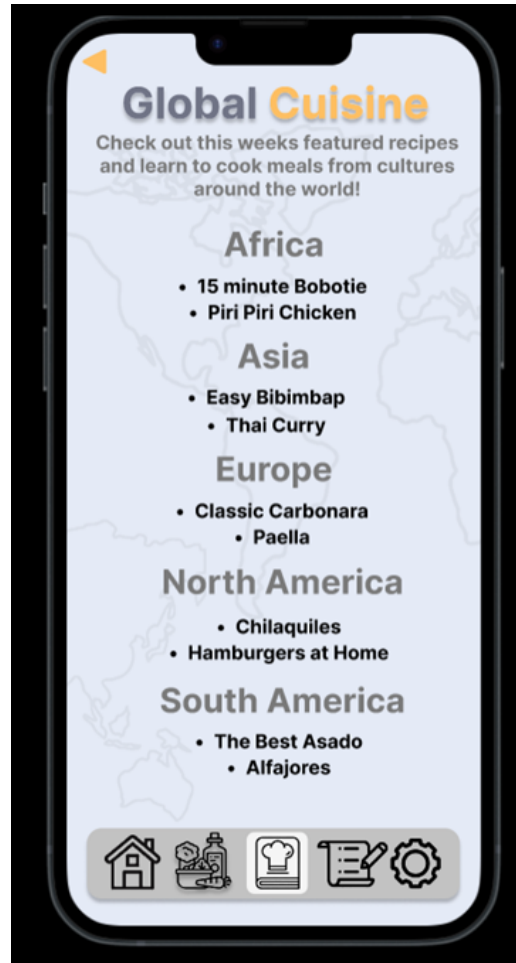
When a user decides which type of recipe they want to make and click through, the name of each dish is displayed. Take **Global Cuisine** as an example, this page displays the most iconic local foods and recipes from different parts of the world.

**Bibimbap**
Traditional Korean mixed rice dish consisting of vegetables, egg, meat, and gochujang sauce.

See User Reviews

Cook Time: 30 min
Serves: 2 people
Missing Ingredients: bean sprouts
Equipment: pan, rice cooker

Favorite this Recipe ☆

Nutrition Information (scroll)

## Ingredients
- 100g beef
- 250g cooked spinach
- 350g bean sprouts
- 120g chopped carrots
- 1/2 tsp salt
- 2 cups cooked rice
- 2 eggs
- Gochujang Sauce

## Directions
Wash rice and put in rice cooker

Season beef and cook on stove for 10 minutes or until brown

Blanch spinach for 2 minutes and put in cold water

Add salt to carrots and bean sprouts

Fry eggs on stove

Add all ingredients to a bowl and enjoy!

**Bibimbap**
Traditional Korean mixed rice dish consisting of vegetables, egg, meat, and gochujang sauce.

See User Reviews

Nutrition Information (scroll)

### Nutrition Facts

| Serving size | 1 Bowl |
|---|---|

**Amount Per Serving**

**Calories 490**

| | % Daily Value* |
|---|---|
| **Total Fat** 14g | 18% |
| Saturated Fat 2.4g | 12% |
| *Trans* Fat 0g | |
| **Cholesterol** 0mg | 0% |
| **Sodium** 620mg | 27% |
| **Total Carbohydrate** 75g | 27% |
| Dietary Fiber 10g | 36% |
| Total Sugars 2g | |
| Includes 0g Added Sugars | 0% |
| **Protein** 18g | 36% |

Not a significant source of vitamin D, calcium, iron, and potassium

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

When the user finally decides which dish to cook, the selected recipe will show details of the ingredients, time, cooking steps and so on. For those who control their diet or are concerned about **nutritional content**, Mycrowave provides a nutritional value table. This makes it easy for users who control their daily calorie or protein intake.
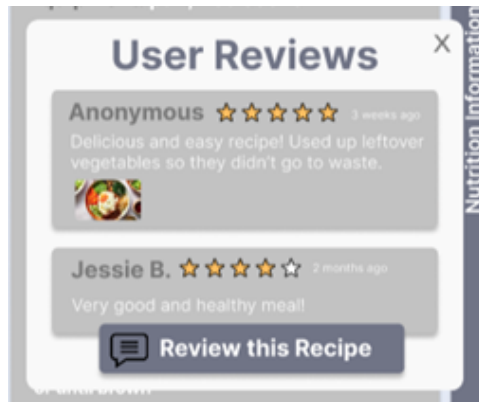
 After cooking, users can leave their own **comments** and give a **review** on recipes, which can also guide users who have not started cooking to help them decide whether they really want to cook the dish.

**Shopping List:**
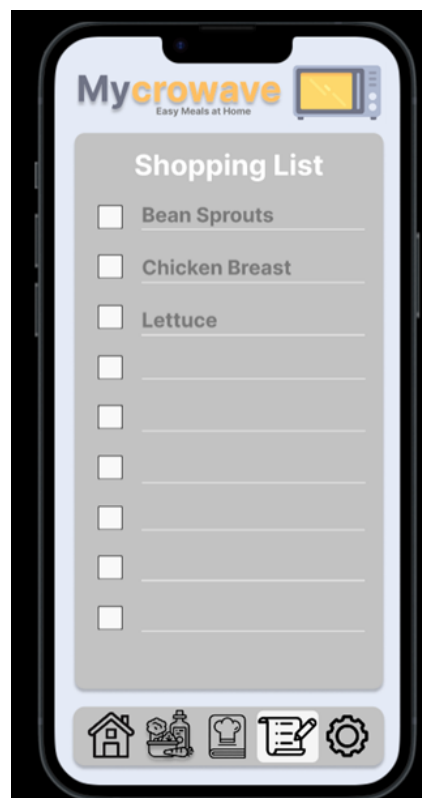


Compared to the recipe features, a **shopping list** is a simple feature that lists the ingredients users will need to buy, when a user buys ingredients and cooking materials that are currently consumed.

**Settings:**



As a cooking app, **food safety** issues are also important, and Mycrowave takes into consideration this point and filters for common **allergenic** sources, and when users choose to be in the process, the menu containing the corresponding ingredients will no longer be recommended for users.

In the same way, hardware is a factor in limiting cooking, and you can record all the **cooking utensils** you have in the setup. Mycrowave will only recommend you to cook recipes for your cooking utensils.

# *Architecture*

**Diagram & App face  -**
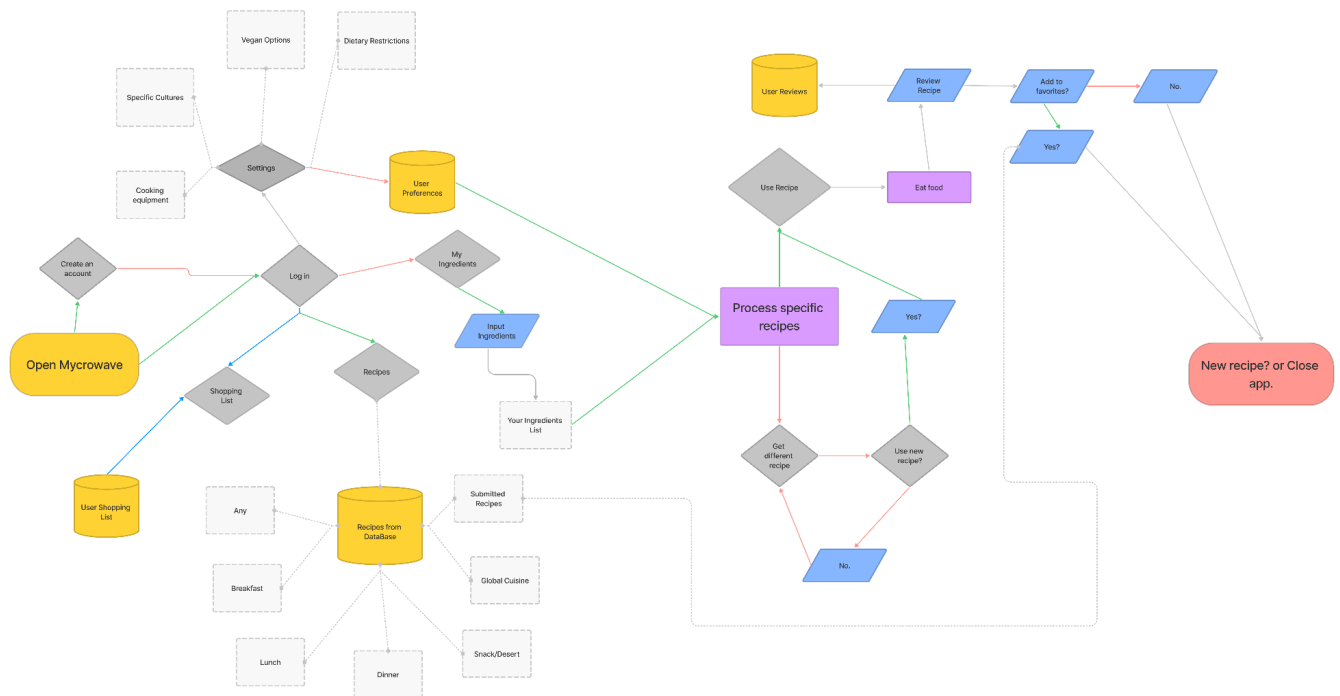


- **link to diagram**

The **Mycrowave app** aims to solve the problem of users not knowing what to cook with the food items they have in their fridge. The app allows users to input a list of food items they have, and it then outputs recipes they can make with the listed items.

The system architecture of the Mycrowave app consists of a few major components:

**User Interface**: This component serves as the front-end of the system and allows users to interact with the app using a mobile or web interface. It includes screens for entering food items, displaying recipes, and other features that users can access. Making it easy for users to navigate the app.

**Recipe Recommendation Engine**: This component is responsible for recommending recipes based on the user's input. It uses a combination of algorithms and machine learning models to analyze the food items entered by the user and recommend recipes that can be made with those ingredients. This solves the problem of not knowing what to make with the ingredients you have left over.

**Database:** This component stores the information about food items and recipes used by the recommendation engine. The database is updated regularly to ensure that the app always has the latest recipes and food items available. Keeping you up to date with what is currently available.

**APIs:** This component is responsible for integrating the recommendation engine and the database with the user interface. The APIs provide a way for the user interface to communicate with the recommendation engine and the database to retrieve information and display it to the user. Making the recommendations relevant to the ingredients you currently have.

The information flow in the Mycrowave app starts with the user entering a list of food items through the user interface. The input is then sent to the recipe recommendation engine, which analyzes the list of food items and generates a list of recipes that can be made with those ingredients. The recommended recipes are then sent back to the user interface, which displays them to the user.

Overall, the Mycrowave app architecture comprises of these components: User Interface, Recipe Recommendation Engine, Database and APIs which enable the app to address the problem of users not knowing what to cook with the food items they have in their fridge by suggesting recipes based on the available ingredients.

# *Benefits*

**Convenience:** Mycrowave is a platform that can be accessed as an app and can be used on mobile devices, this makes it so accessibility can be used from nearly anywhere. This means you can use it in almost any setting. For example, if you ever go camping and get stuck on what to make, Mycrowave can easily match the ingredients you have and the cooking equipment you have with you. The app has clear instructions and is easy to use, making it quick for anyone who would like to cook.

**Food Waste:** Mycrowave helps reduce food waste by giving consumers recipes that match their leftover ingredients, furthermore consumers can always input more ingredients that can be close to expiring. By using Mycrowave, you would be reminded to use the food before it goes bad. Reducing leftover food will reduce overall food waste.

**Variety:** Variety of food choices and options to choose from, based on preference, dietary, and restriction options. Mycrowave also has countless recipes (that can be filtered based on

preferences) that users can choose from if they would like to just find some new tastes. The variety of options is what makes Mycrowave inclusive to all people from varied backgrounds. By including global cuisine and having dietary restrictions, we were able to shine light and be accessible to all people.

**Healthier Foods:** Since there are a variety of foods and recipes on our platform, there are also ways to limit the results to certain dietary and physical restrictions. Each recipe contains the nutritional values that consumers can base whether or not they will choose that recipe. For those who care about what food they intake, Mycrowave's dietary restriction feature can help them cut down unnecessary foods they don't want to consume, making recipes much healthier.

# *Harms*

**Over-Reliance:** As a result of the use of Mycrowave giving consumers recipes, users may not have the same enjoyment in creating and experimenting with new recipes or foods that they created. Moreover, if consumers don't have access to the application, it may be difficult for them to find the same recipes.

**Technology Use:** Due to the growing use of technology and cause the application is located on mobile devices, this can cause consumers to over-rely on the app, which makes it difficult for users to cook recipes if our app is down or in need of maintenance. Improper technology use over time can lead to health issues.

**Unintended Consequences:** Consequences such as food unintended food allergies and system digestive issues can be caused by a misread or misinformation of the recipes and foods, which can lead to health violations. Consumers may also want to use the same ingredients or the same recipes repeatedly which can lead to a nutritional unbalance.

**Privacy:** Our app may collect sensitive information, such as dietary restrictions, personal preferences, and health conditions, which can be used for targeted advertising or sold to third-party companies. Our app's privacy policy may not be clear or transparent, and users may not be aware of how their personal data is being collected and used.

# *Policies*

A policy that Mycrowave is subject to is Section 102 of Title 17 in the United States Code, titled, the Copyright Act of 1976. This law states that "original works of authorship" (Copyright Act of 1976, 1976) may not be reproduced, adapted, published, performed, or displayed (17 USC 106:

Exclusive rights in copyrighted works, n.d.) by anyone other than the copyright owner. Mycrowave collects recipes from users and scans the web for recipes that match what ingredients the user has. This policy affects the architecture of Mycrowave because the application will have to display recipes with credit to the original author, or it will have to direct the user to the original website/source. The functionality will be affected because the user might have to click on links to external sources which adds a step to the recipe finding process.

However, in accordance with Section 202.1(A) of Title 37 in the U.S. Code of Federal Regulations, "mere listing(s) of ingredients or contents" (Cornell Law School, n.d.) are not subject to copyright protection. This means that the Mycrowave database will be able to display ingredient lists with simple directions from the internet freely to users. The ingredients and process for making the dish are facts and thus not copyrightable. But, if a recipe contains "substantial literary expression in the form of an explanation" (U.S. Copyright Office, n.d.), credit will have to be given to the creator of the recipe. For example, recipes with personal anecdotes from blog posts, creatively expressed instructions, or recipes from cookbooks will have to be credited. Regarding the architecture of Mycrowave, the database may have to have a feature that requests permission from a source before adding it to the application. This affects the functionality if a user tries to access a new recipe and has to wait for permission to be granted.

# Citations:

17 USC 106: Exclusive rights in copyrighted works, (n.d.). Office of the Law Revision Counsel: United States Code. https://uscode.house.gov/view.xhtml?req=(title:17%20section:106%20edition:prelim)#:~:text=The%20five%20fundamental%20rights%20that,stated%20generally%20in%20section%20106.

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