Software Requirements Specification
for
Food Magic

Jiangpei Chen, Zhixin Huang, Nontawat Janpongsri, Sandy Wu

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1) Introduction

1.1 Purpose

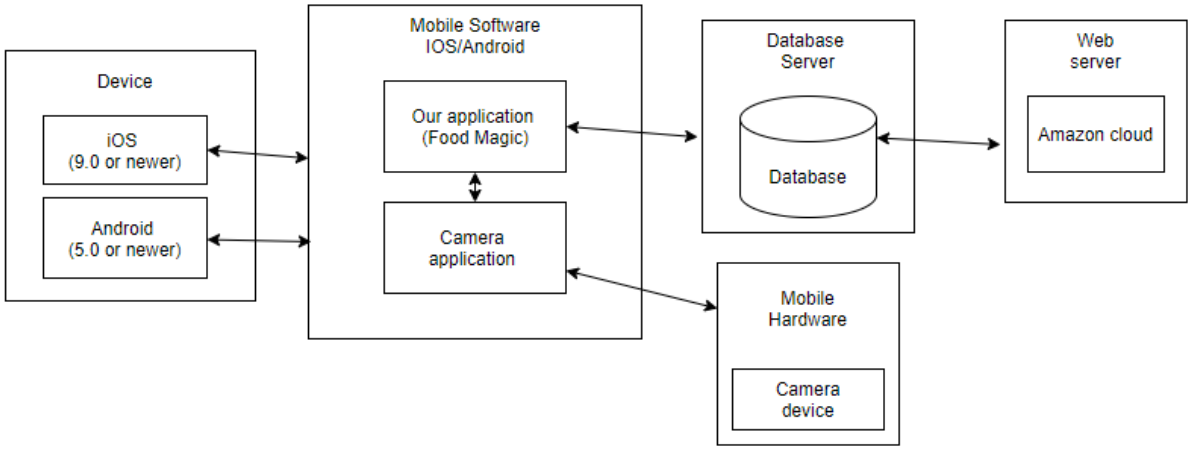
Food magic is a mobile application that aims for users to be able to, personally monitor their calorie intake. With the help of artificial intelligence, accurate food weight calculation, and nutrition facts finder, users can make healthier decisions by just simply taking pictures of their food. The application will then proceed to identify all the ingredients and their corresponding weights to perform accurate calorie calculations and nutrition facts for the users. Thus, this will allow users to avoid painstakingly calculate and track their calorie intake and possibly introduce calculation errors in the process.

1.2 Scope

Food magic is an application created for Digital health Inc. to calculate calorie intake more accurately and conveniently. The application will be using Amazon Cloud to handle its storage and communication. With the assistance of artificial intelligence, this application will analyze the food picture uploaded by the users to identify all the ingredients in it and then calculate the calorie and nutrition facts. This will allow the users to more easily track their calorie intake and make a relatively good judgment for their next meal to stay healthy.

1.3 Product overview

1.3.1 Product perspective



1.3.2 Product functions

1.3.2.1 Calorie calculator

From the food picture uploaded by the user, the software will identify all of the ingredients that were visually detectable in the pictures (with the help of artificial intelligence). The software will then proceed to calculate the weight of each ingredient. The calculation will be done by calculating the visible surface of the ingredient, then calculating the volume of the ingredient, and then using food density tables to convert volume to weight. Once the weight is known, existing nutrition tables will be used to convert from weight to calories, for each ingredient. The software will then calculate the total amount of calories as the sum of the calories of all ingredients to display to the users.

1.3.2.2 Health tracking/recommending

After the software calculates the total amount of calories, it will save that number to the users' profile for tracking purposes. By analyzing all the calories value present in the user database, the software will notify the users of their current food intake health status with the suggestion of how to improve it.

1.3.2.3 Saved food

The software will save all the previous food that the users have uploaded into its database under the users' profile. Thus, in the future, if the users eat the same food the software can save time calculating and identifying the food by just taking the information from the database. This method will greatly improve the efficiency of the software.

1.3.3 User characteristics

Users	**Nature of Using**	**Characteristics**
Healthcare providers in diet and health clinics	Using the app to provide useful advice to their customers	A healthcare provider will be using the pro version of the application to analyze the user's food intake report. This will help them to get a clear understanding of their patients regular food intake and provide a more efficient and beneficial diet plan. Education level: high
Regular Users	Using app to monitor	Users will use the application to monitor

	energy intake, energy consume and personal health status	their daily food consumption. The users might not care for the advanced features and might not be willing to upgrade to the pro version. Education level: varies
Pro Users	Using app to monitor energy intake, energy consume and personal health status	Users will be using the application to monitor their daily food consumption with the expectation to improve their health status. Users most likely will be upgrading to the pro version of the application to fully utilize the benefit that the application will provide to the users. Education level: moderates

1.3.4 Limitations

No.	Limitations	Description
1	smartphone	To be able to use the application the users must have a working smartphone that has access to the internet.
2	platform	The application will only work if the users are using iOS version 9.0 or newer for their apple product. Otherwise, if the users are using an android product, it must be in version 5.0 or newer.
3	coding language	The application will be written in Swift language for the iOS platform and Java for android. No other language can be used for both platforms.
4	Artificial Intelligence	The AI training needs to be incremental. As new images are uploaded, the AI module should improve its model with those new images quickly, as opposed to re-training itself completely from scratch with the entire dataset.
5	Infrastructure	The system must be highly scalable. The application is going to upload millions of food images every day. So storage, processing, and communication need to be highly scalable. Therefore, the company's infrastructure must use the Amazon Cloud.
6	Accuracy	In both food identification and calorie calculation, the software must have a high accuracy for it. The accuracy must be at or near the top of the list of existing VBM systems.

7	Safety	The application is in no way a substitute for medical advice or professional consulting for users. The application is only a method for users to personally track their calorie intake in an efficient and accurate way.
8	Privacy	In order to utilize the application in an efficient way, the users must allow the application to have access to the camera and album.

1.4 Definitions

CI/CD pipeline	Continuous Integration / Continuous Deployment. This allows developers to automatically test and publish their work through a series of defined steps called a pipeline.
SSL	Secure Sockets Layer. Keeps an internet connection secure by preventing criminals from reading and modifying any information transferred between two systems [1].

2. References

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3. Requirements

3.1 Functions

3.1.1 User registration

No.	Function requirements
1	The software shall require the user to input all the answers to the question that were asked.
2	The software shall verify that all the answers provided by the user are valid.
3	The software shall require the user to re-answer the question if any of the answers are not valid.
4	The software shall save all the information that the user has input into the Amazon cloud database.
5	The software shall notify the technical support if the information cannot be saved on the Amazon cloud database.
6	The software shall redirect the user to the sign-in page after all the data has been saved to the Amazon cloud database.

3.1.2 User sign-in

No.	Function requirements
1	The software shall require the users to correctly input their username and password

	for signing in.
2	The software shall validate the username and password that the user has input with the data from the Amazon cloud database.
3	The software shall allow the users to recover their account when they forget their password or username.
4	The software shall allow the users to sign-in to their account if all the inputs are correct.
5	The software shall redirect the page to the main page of the application that is associated with the user that has sign-in.

3.1.3 Calorie calculation

No.	Function requirements
1	The software shall allow users to add their daily meal into the application
2	The software shall allow users to take a picture of the meal through their smart device camera.
3	The software shall allow users to upload their meal picture from the photo library in their smart device. .
4	The software shall allow users to adjust the meal dimension detected by AI.
5	The software shall allow users to add ingredient by entering ingredient information.
6	The software shall allow users to edit the ingredients information that were added by the users or the AI.
7	The software shall show the total calories consumed by the user for all the meals being added.
8	The software shall show the meal on the home screen after the user added the meal.
9	The software shall allow users to edit the meal information that was added before.

3.1.4 Notification

No.	Function requirements

1	The software shall notify the users about the new notification.
2	The software shall allow users to check notifications sent by the application.
3	The software shall distinguish read notifications and unread notifications.
4	The software shall allow users to delete a specific notification.

3.1.5 Plan calendar

No.	Function requirements
1	The software shall load all the information that is required for the calendar page from the Amazon cloud database and display them on the calendar with the associated day.
2	The software shall show the calories goal per day on the Calendar Page.
3	The software shall use different colors to indicate calories goal status for a specific day.
4	The software shall demonstrate the detailed calories information for a specific day.

3.1.6 Saved food

No.	Function requirements
1	The software shall allow users to delete a specific food that was added to the save by the users.
2	The software shall allow users to add a picture for a specific saved food.
3	The software shall save all the information about the food on the Amazon cloud database.

3.1.7 Personal Information

No.	Function requirements
1	The software shall allow users to edit any of the personal information.

2	The software shall show the number of meals eaten on the current day that entered the system.
3	The software shall show the total consumed calories for the current day.
4	The software shall show the amount of the consumed ingredients for the current day.
5	The software shall show the nutrition facts associated with the ingredients.

3.2 Performance requirements

No.	Requirements
1	The data shall be saved into Amazon Web Service within 20ms.
2	The data save failure rate shall not be greater than 0.005%.
3	The data fetch process shall be finished under 20ms.
4	The data fetch process failure rate shall not be greater than 0.005%
5	The credit card payment service success rate shall be greater than 99.95%
6	The accuracy for identifying all the visible ingredients shall be greater than 95%.
7	The accuracy for the calorie calculation shall be greater than 95%
8	The artificial intelligence training shall be incremental.
9	The accuracy for the nutrition facts for each ingredient shall be greater than 95%
10	The time taken to calculate the calorie shall be no greater than 30s.

3.3 Usability requirements

3.3.1 Measurable effectiveness

- The system shall identify food with above 95% accuracy.
- The system shall notify the user with daily reports and reminders to keep the user on a consistent and effective diet plan.
- The system shall calculate the user's progress in meeting their calorie goals.
- The system's AI feature shall encourage users to save time by opting into a paid feature.

- The system shall determine the user's calorie goals using their age, gender, height and weight to set realistic diet expectations.

3.3.2 Efficiency

- The system shall calculate the total number of calories in a meal within 2 seconds.
- The system shall identify the ingredients from the user's images within 3 seconds.
- The system shall generate the individual meal information page within 5 seconds after meal images are uploaded.
- The system shall save the user's most frequently eaten meals so users can record their meals without listing out the meal details repeatedly.
- The system shall generate the meal history calendar within 5 seconds.

3.3.3 Satisfaction criteria

- The system shall be reviewed by users on the Apple App Store and Google Play Store.
- The system shall maintain an above 4/5 rating on the Apple App Store and Google Play Store.
- The system shall maintain a user's daily commitment to the app for at least 1 month.
- The system shall convert a user on Basic plan to Pro plan within 2 weeks.

3.3.4 Avoidance of harm

- The system shall not distribute the user's data without their consent.
- The system shall inform the user if they are under- or over-eating based on their age, gender, height and weight to promote healthy eating habits.
- The system shall provide calorie goals that are catered to the user.
- The system shall not discourage users with negative criticisms in the form of notifications or messages if they are unable to fulfill the calorie goals.
- The system shall encrypt user data before storing into the database.

3.4 Interface requirements

3.4.1 External interface

- The user's credit card information shall be verified from the respective credit card company.
- The system shall use AWS to store, host and manage user data.
- The system shall use Git for version control and to update the main site.

- The system shall be listed and downloaded through the Apple App Store and Google Play Store.
- The system shall have the infrastructure to serve users from all over the world if laws and regulations permit the use of our app in their country.

3.4.2 Internal interface

- The login page shall permit existing users to access their account details.
- The login error page shall inform users if their combination of login information does not exist in our database.
- The user information page shall display the user's personal health details, and their daily progress in meeting calorie and vitamin goals.
- The saved foods page shall allow the user to add and select meals so they can report the same dishes without re-entering the details.
- The notification page shall list messages previously reported by the system.
- The calendar page shall display the user's daily progress on calorie goals since the day they started using the app.
- The home page shall inform the user of their dietary progress on the current day.
- The subscription shall inform the user of their subscription mode.
- The share button shall allow users to post their dietary progress to social media platforms.

3.5 Logical database requirements

3.5.1 Types of information used by various functions

Upon signing up with our app, users will provide their contact and login information (name, email, password, custom username). Creating an account allows the user to access their meal tracking data across multiple devices and help them if they forget their password. We may send promotional emails to encourage users to keep up with their calorie goals.

Users will be prompted to provide their height, weight, gender and age so that the app can calculate their personalized daily calorie plan.

When users opt in to our premium features, we keep their credit card information on file to automatically resubscribe them for the next month.

Our central ingredient database includes ingredients with their respective vitamin and calorie counts per 100g. When a user reports a meal, each ingredient's weight will be recorded and the calorie and vitamin count will be calculated using the central ingredient database. We also store the date and time when a user consumes their meal to help them keep track of their daily calorie goal progress.

3.5.2 Frequency of use

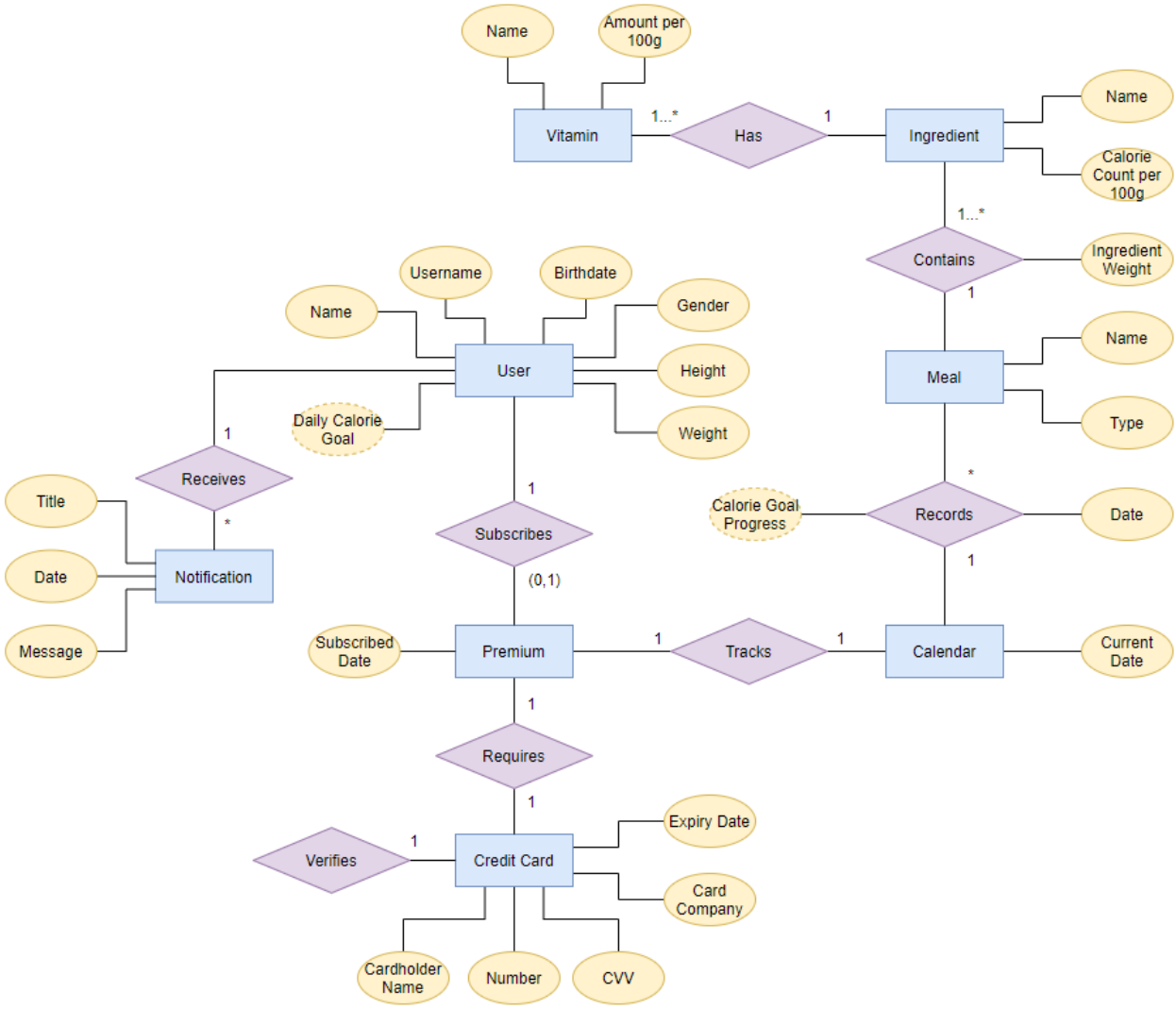
A user's data will only be accessed whenever the sole account owner logs in and updates their personal information or daily diet records. Admin access to a user's account will only be done at the explicit request of the user account owner for technical help.

3.5.3 Accessing capabilities

Users shall only access their own data and meal planning information. We want users to feel confident in their progress without outside distractions.

Selected database managers of our app will have access to full access to all user data. They will fix any problem that users may have when entering or changing their personal information.

3.5.4 Data entities and their relationships



3.5.5 Integrity constraints

User:

Name	string of letters
Username	string of alphanumeric characters with no whitespaces
Birthdate	datetime object
Daily Calorie Goal	integer

Weight	integer
Height	integer
Gender	“M” or “F” or “Other”

Vitamin:

Name	string of letters
Amount	integer (in milligrams per 100g of the ingredient)

Ingredient:

Name	string of letters
Calorie Count	integer (in milligrams per 100g of the ingredient)

Meal:

Name	string of letters
Type	breakfast, lunch, or dinner

Calendar:

Current Date	datetime object

Credit Card:

Cardholder Name	string of letters on the user’s credit card
Number	string of numbers on the user’s credit card
CVV	string of 3 numbers on the user’s credit card
Card Company	Mastercard or Visa

Expiry Date	string in the format of “MM/DD” on the user’s credit card

Notification:

Title	string of text
Date	datetime object
Message	200-character string of text

Premium:

Subscribed Date	datetime object

Records (Calendar/Meal):

Date	datetime object
Calorie Goal Progress	integer

Contains (Meal/Ingredient):

Ingredient Weight	integer (grams)

3.5.6 Security

Users shall only have access to data from their own account. Data shall be encrypted and shall not be modified without their approval.

Developers shall ensure all user data is properly secured [2]. Developers shall encrypt all database servers, connections and settings. They shall ensure that our APIs are secure and practice SSL. Servers shall be kept up to date with database and other software upgrades. Developers shall closely monitor server traffic and logs to detect suspicious behaviour.

We also have no intentions in selling or releasing a user’s personal data. We want our users to have confidence in their dietary progress without fear of being analyzed by their peers.

3.5.7 Data retention requirements

User data will be stored for 6 months after the user requests to delete their account. This period allows users to reopen their account should they wish to embark on their dieting journey again. We will not suddenly delete a user's account unless they breach the app's Terms and Conditions.

Data will be deleted through the process of overwriting using non-sensitive data [3].
Their information will no longer exist in the back-up data as well.

3.6 Design constraints

3.6.1 External standards

To publish our app onto the mobile markets, we must adhere to the guidelines set by the Android [4] and iOS platforms [5].

Coding style guides shall be used to promote the maintainability of the code:

- Google Java Style Guide [6], and
- Swift's API Design Guidelines [7].

Database management shall follow the SQL standards in ISO/IEC CD 9075-1 [8].

The handling of credit card information shall be compliant with the PCI Security Standards [9] to enforce data security.

3.6.2 Regulatory requirements

The handling of user data will adhere to the standards set in British Columbia's Personal Information Protection Act [10]. This act governs the collection, use, disclosure and protection of one's personal information by an organization.

The system shall state the terms and conditions and the privacy policy to users when they sign up for an account [11].

3.6.3 Project limitations

Since the app relies on the user's uploaded images, the app may be limited by the user's camera quality. For example, blurry images will obscure visual details required for identifying ingredients from meal images.

The success of the app's ingredient detection is dependent on the images we provide to the AI training model. The app must have a diverse set of training images that can encompass the wide range of ingredients used in a number of different settings. The app should also identify ingredients that can exist in other forms (sliced, diced, grinded, …). The app is limited by how it perceives ingredients of similar shape and form based on a few photos.

3.7 Software system attributes

3.7.1 Reliability

Developers are to maintain a CI/CD pipeline that will only publish their code if it passes through a series of unit and integration tests. Failed builds of their code will require further examination by the author and will not be published.

New code shall be closely monitored to ensure the application performance is not diminished.

3.7.2 Availability

Developers shall build with scalability in mind [12]. Since the app's competitive AI calorie calculator will be an attractive feature for people looking for a comprehensive dieting app, our application should have increasing traffic. The app should accommodate additional application servers and increase the database size easily.

Developers shall use monitoring tools to keep informed of application performance in regards to new code changes and user traffic. Developers will keep runbooks updated whenever they encounter any application problems, so future maintainers will have documents to refer from.

3.7.3 Security

Server monitoring shall be done to ensure servers are healthy and running efficiently. Logs shall be enabled for easier examination of application problems and to detect anomalies.

Credit card information shall be verified using secure APIs approved by the issuing companies.

Please refer to Section 3.5.6 regarding our commitment to protecting user data.

3.7.4 Maintainability

Developers will adhere to the following programming style guides to assist in writing the Android and iOS apps:

- Google Java Style Guide [6], and
- Swift's API Design Guidelines [7].

Developers will also be prompted to install an extension that automatically reformats their code to use the specified style guides. Style guides help maintain the readability of code so that team members can build upon it easier.

Git shall be used for version control and accountability. Code reviews shall be mandatory for every change. A minimum of 2 developers must approve a team member's change prior to merging it with the current main branch.

Developers shall be expected to modularize each component of the application (user profile, ingredient item, meal information, ...) and saved in separate files. The code file hierarchy should be organized by their purpose in the application and functionality.

3.7.5 Portability

The app shall only be available on the Android and iOS mobile markets. Our team shall be using Java for the Android version and Swift on the iOS app.

Developers are expected to modularize their code into components, each residing in a different file. Code hierarchy shall be representative of the structure of the application. Modularization shall allow future developers to replace or reuse components with more ease.

Both Android and iOS versions of the app shall use the same APIs. This would reduce the amount of rework to be done when each version gets updated.

The percentage of host-dependent code and components shall be at most 80%.

3.8 Supporting information

The prototype design shall be hosted on Figma here (https://www.figma.com/proto/3lGoFWGILfnB5lUvHHC3Px/FoodMagic?node-id=125%3A97&scaling=scale-down&page-id=0%3A1).

Youtube demo: https://www.youtube.com/watch?v=ulWlGwryNbs

4. Verification

4.1 Functions

4.1.1 User registration

No.	Main verification	Description
1	Input completion	The software checks if the users have provided answers to all the questions that were asked in the registration form.
2	Input validity	The software notified the users for any inputs that were incorrect or invalid during the registration.
3	re-entering the input	The software allows the users to re-enter their incorrect or invalid input during the registration.
4	Add user to the database	The Amazon cloud database is being updated once the users finish registration.
5	Database fail notification	The software notified the developers when the Amazon cloud database failed to accomplish their task.
6	redirect to sign-in page	The software redirects the users to the sign-in page.

4.1.2 User sign-in

No.	Main verification	Description
1	username/password validity	The software rejects all attempts to sign-in if the username and password does not match with the data in the Amazon cloud database.
2	Username recovering	The software allows users to recover their username.
3	Password recovering	The software allows users to recover their password. .
4	Sign-in	The software allows users to sign-in, if the username and password match with the data in the Amazon cloud database.
5	redirect to main page	The software redirects the users to the main page associated with them.

4.1.3 Calorie calculation

No.	Main verification	Description
1	upload meal	The users can click on the upload button on the selected meal time to upload their meal.
2	camera access	The software opens up the camera when taking the picture .
3	photo library access	The software opens up the photo library when uploading meals using existing photos. .
4	adjust meal dimension	The software allows the users to adjust the dimension of the meal that was detected by the AI from the uploaded picture.
5	Add ingredient	The software allows the users to add any of the missing ingredients undetected by the AI to the calorie calculation.
6	Edit ingredient information	The software allows the users to edit the information (such as weight, calorie, etc.) for each individual ingredient that was displayed to them.
7	Total calorie calculation/display	The software displays the total calories on the top right corner of the upload page.
8	Meal display	The software displays the recent uploaded meal on the main page under specific meal time selected by the users.
9	edit meal information	The software allows the users to go back and edit the uploaded meal.

4.1.4 Notification

No.	Main verification	Description
1	new notification alert	The software alerts the users if there is any new notification.
2	check notification	The software allows the users to check all the available notifications on the notification page.
3	distinguish between read and unread	The software assigns different color themes to read and unread notification.

	notification	
4	delete notification	The software allows the users to delete any notification display on their notification page.

4.1.5 Plan calendar

No.	Main verification	Description
1	load information	The software loads the data that is required for the calendar page from the Amazon cloud database and displays them on the calendar.
2	display calorie goal status	The software displays the calorie goal status to the day that is associated with it on the calendar.
3	distinguish color between calorie goal status.	The software assigns different colors to the day according to the calories goal status.
4	detail information provided	The software provides detailed information regarding the calorie intake on the selected day on the calendar.

4.1.6 Saved food

No.	Main verification	Description
1	delete saved food	The software allows users to delete any of the saved food on the save page.
2	add picture	The software allows users to add pictures of their food during the saved food process.
3	uploaded to Amazon cloud database	The software updates the Amazon cloud database once the users have finished completing their saved food process.

4.1.7 Personal Information

No.	Main verification	Description
1	edit personal information	The software allows the users to edit any of the personal information displayed on the me page.

2	daily meal information	The software displays the current day meal information on the me page.
3	total calories for today	The software displays the total calories for the current day on the me page.
4	current day ingredients display	The software displays all the ingredients that were recorded on the current day meal on the me page.
5	ingredient nutrition facts	The software displays all the nutrition facts associated with the ingredients displayed on the me page.

4.2 Performance requirements

No.	Main verification	Description
1	data save speed	The software saves any of the new data to the Amazon cloud database under 20ms.
2	data save failure rate	The software failure rate for saving any of the data to the Amazon cloud database is under 0.005%.
3	data fetch speed	The software fetches the data from the Amazon cloud database under 20ms.
4	data fetch failure rate	The software fetch data from Amazon cloud database failure rate is under 0.005%.
5	credit card payment success rate	The software success rate in processing credit card payment is greater than 99.95%.
6	ingredient identifying accuracy	The software accuracy for determining all the visible ingredients is greater than 95%.
7	calorie calculation accuracy	The software accuracy to calculate the calorie of the meal is greater than 95%.
8	AI training	The AI training rate in the software is incremental.
9	nutrition facts accuracy	The software accuracy to provide the nutrition facts associated with the identified ingredients is greater than 95%.
10	calorie calculation speed	The software speed for total calorie calculation is under 30s.

4.3 Usability requirements

4.3.1 Effectiveness

- The AI training model encompasses more than 100 different ingredients as well as their different forms (diced, sliced, grinded, …).
- The notification feature is implemented to keep users engaged.
- The system can calculate the user's daily progress in meeting their calorie goals.
- The system implements an AI model to recognize food ingredients from several photos of the meal.
- The AI model can recognize the weight and dimensions of the meal from several photos.
- The system uses the user's age, gender, height and weight to determine their personalized calorie goals.

4.3.2 Efficiency

- The system can calculate the total number of calories in a meal within 2 seconds for over 80% of test runs.
- The system can identify the ingredients from the user's images within 3 seconds for over 80% of test runs.
- The system can generate the individual meal information page within 5 seconds after meal images are uploaded for over 80% of test runs.
- The system can save the user's most frequently eaten meals.
- The system can generate the meal history calendar within 5 seconds for over 80% of test runs.

4.3.3 Satisfaction

- User reviews are enabled on the Google Play Store and Apple App Store.
- The upgrade button is in the main menu so users would know how to upgrade.
- The notification feature is implemented to keep users engaged.

4.3.4 Avoidance of harm

- User data gets encrypted before getting stored in the database.
- The system notifies the user if they are under- or over-eating.
- The system utilizes the user's personal information to set realistic personalized calorie goals.
- The notification messages are friendly and do not have condescending tones.

4.4 Interface requirements

4.4.1 External Interface

- The system uses licensed APIs from the credit card companies to complete user payments.
- The system uses AWS as the sole cloud provider and is configured with the ability to serve to all clients regardless of location.
- The source code is stored on Git.
- The app is live on the Apple App Store and Google Play Store for all worldwide users.

4.4.2 Internal Interface

- The login page asks users for their username and password.
    - The login error page tells users that their login credentials are incorrect.
- The user information lists the user's age, gender, weight and height along with their progress on their calorie goals.
- The saved foods page lists the user's saved meals.
    - The user can add more meals to the saved foods page.
- The notification page lists the most recent notification sent to the user.
    - The notification page can be cleared by deleting each message.
- The calendar page features a scrollable calendar.
    - For each day on the calendar, the user's progress on their daily calorie goals is displayed. This will be shown as a percentage marked with red or green. Red indicates over- and under-eating. Green represents a healthy diet.
- The home page lists breakfast, lunch and dinner meals.
    - The home page displays the user's progress on their daily calorie goal.
- The subscription page prompts users for their credit card information.
    - When the user successfully purchases the premium subscription, they will have access to all Pro features.
- Users can share their meals using social media buttons.

4.5 Logical database requirements

- The database is live and stored on AWS.
- The database contains all attributes as outlined in 3.5.4 and integrity constraints in 3.5.5 are actively enforced on the front-end and back-end.
- Users have restricted access to only their own data.
- 6 months after a user deletes their account, their user data will be permanently deleted.

- Data encryption is implemented.
- SSL is implemented.
- Database logs are available.

4.6 Design constraints

4.6.1 External standards

- The app does not violate the app publication guidelines for Android [4] and iOS [5] platforms.
- The app uses the coding styles stated in the Google Java Style Guide [6] and Swift's API Design Guidelines [7].
- The database follows the SQL standards in ISO/IEC CD 9075-1 [8].
- The handling of credit card information is compliant with the PCI Security Standards [9].

4.6.2 Regulatory requirements

- The handling of user data adheres to the standards in British Columbia's Personal Information Protection Act [10].
- The app's "Terms and Conditions" is established.
- Users are made aware of the "Terms and Conditions" at sign up.
- The app's "Privacy Policy" is established.
- Users are made aware of the "Privacy Policy" at sign up.

4.6.3 Project limitations

- The app's training model includes blurry images.
- The app's training model includes images of ingredients in multiple forms (sliced, diced, grinded, …).

4.7 Software system attributes

4.7.1 Reliability

- A CI/CD pipeline is established.
- Integration tests are implemented.
- Failed builds alert the author.

4.7.2 Availability

- The app is scalable.
- Monitoring tools are enabled.
- A collaborative space for runbooks has been established.

4.7.3 Security

- (Please refer to Section 4.5 for database-related security.)
- Logging for server monitoring is enabled.
- The system uses licensed APIs from the credit card companies to complete user payments.

4.7.4 Maintainability

- Enabling automatic syntax reformatting is stated in the developer environment set-up documentation.
- Git is used as version control.
- A mandatory check for 2 approved reviews for new code is enabled on Git.
- There is a maximum of 1 component in one code file.

4.7.5 Portability

- The app is written in Java and Swift.
- There is a maximum of 1 component in one code file.
- The API calls are shared between the Android and iOS versions of the app.

5. Appendices

5.1 Assumptions and dependencies

The speed requirements for Android and iOS devices shall be based on the Samsung Galaxy S21 and iPhone 11 models, both 128GB.

The ingredient training images shall be taken from an iPhone 11.

5.2 Acronyms and abbreviations

AI	Artificial Intelligence
PCI	Payment Card Industry