Xi'an Jiaotong-Liverpool University
西交利物浦大学

CPT208 Portfolio
Individual Report

Nom Guru

知本味

Module:	CPT208 Human-Centric Computing
Group ID:	Group F7
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Submission deadline:	**9:00 a.m. Thursday 2 May, Week 10**

1. Introduction

In the modern city of the information age, for many young people, food issues often stem from factors such as cost, taste, and location, limiting their choices. While a healthy diet may only fulfill physiological needs for three meals daily, the psychological impact goes beyond this. Kim's research indicates that a poor diet not only poses health risks but also contributes to a lack of motivation at work and a decrease in willingness to help others [1]. The current delivery software usually relies on algorithms to analyze users' preferences and suggest similar dishes. However, this approach is limited as users are often confined to their likes and dislikes, making it difficult to explore new flavors that they have not yet encountered [2]. Moreover, the existing application of randomly recommending food lacks personalization and the user interaction is poor because it is just simply seeking the next dish, which is not the optimal solution (Appendix 1).

Therefore, we intend to design an application that acts as a diet recommender that can help users make dietary decisions based on personal preferences and a combination of objective factors. According to Zhu's paper, consistent interaction and high-quality responses will lead to a stronger human-computer interaction experience of emotional and idea exploration [3]. Thus, Nom Guru, a human-computer interaction (HCI) based diet recommendation application is our solution.

2. Analysis of Requirements

To gather requirements, we utilized a variety of methods that we believed were appropriate. Our goal is to obtain a comprehensive understanding of the user's needs and expectations, which would effectively guide the development process.

2.1. User Stories

Through user stories, we can get a more intuitive understanding of informal descriptions of a feature or functionality [4]. We conducted quick verbal interviews with peers around team members to obtain user stories, which were as follows:

1. As a user of the Nom Guru, I want to explore **new** and exciting food options so that I can break the monotony of my usual meals.
2. As a user seeking variety in my meals, I want suggestions for **different** cuisines and dishes that I have not tried before so that I can expand my culinary experiences.
3. As a user, I want there is a **convenient** way to discover tasty food choices in the vicinity so that I can easily find satisfying meals while on campus.
4. As a food enthusiast, I want to have a tool to help me decide which dish to try **next** so that I will not be overwhelmed by the abundance of delicious food options available.

2.2.Persona

The personas help us empathize with users and understand their motivations, goals, and pain points. Thus, we invited several team members' roommates to make more detailed user portraits. The detailed persona can be checked in Figure 1.1 and 1.2:

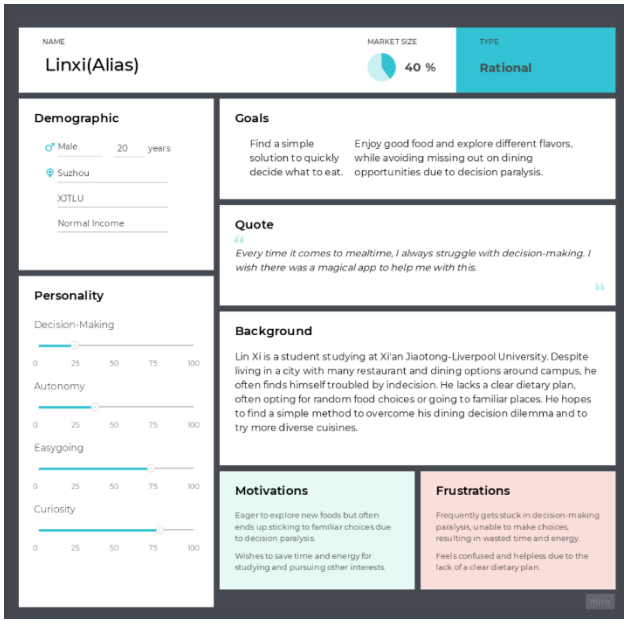

Figure 1.1 Persona of Rational Users

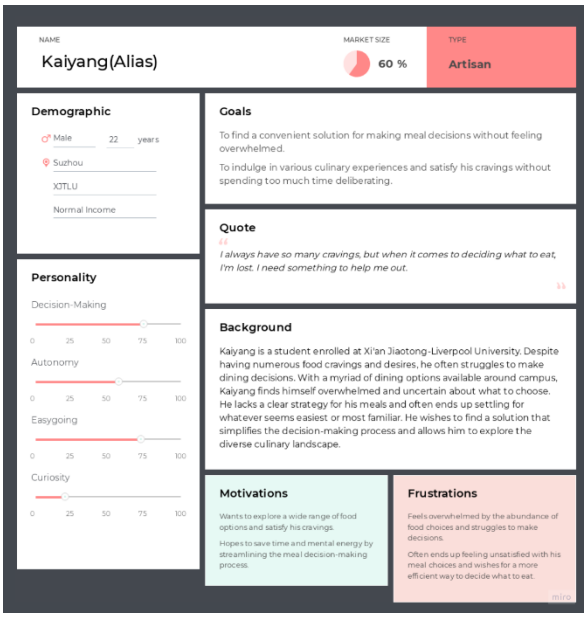

Figure 1.2 Persona of Emotional Users

The following aspects are mainly considered in our Persona design: Goals，Background，Motivations，Frustrations. These elements can help us design recommendation models that are closer to user needs and goals and avoid user barriers. We summarized the collected portraits into two types of personas, one of which is rational, and the other is emotional. Both reflect two types of our target users, so it's important to analyze their personality, desires about diet, and related background.

According to Figure 1.1, rational users pay more attention to making a quick decision about what to eat in a brief period, but they also want to avoid the negative impact of the decision on the eating opportunity. Thus, they look for diet recommendation products that offer a fast and efficient experience.

According to Figure 1.2, emotional users pay more attention to convenient interaction experiences, which reflects that they also need time-saving recommendation models. At the same time, these users are more likely to choose unfamiliar foods, so their desired food recommendation app should focus on providing recommendations for foods that they have not yet tried.

2.3. Analysis of Requirements based on data

Based on the research we've done; we created a survey with the help of a predetermined scenario and a targeted user group. The main goal of the questionnaire was to explore possible needs that we hadn't thought of and to identify user needs with greater certainty. The main goal of the

questionnaire was to explore possible needs that we hadn't thought of and to identify user needs with greater certainty. Therefore, we selected the results of the most valuable questions in the questionnaire as the analysis data, including the place of eating, food preference, and feeling unsure about what to eat.

A total of 77 participants took part in the survey. The findings of this survey have been analyzed and compiled below:

The data depicted in Table 1.1 reveals that a huge portion of our respondents lack clear dietary goals, with many beginning to contemplate their food choices during or around lunchtime, making rushed decisions based on software recommendations. This is also similar to the rational group in Persona.

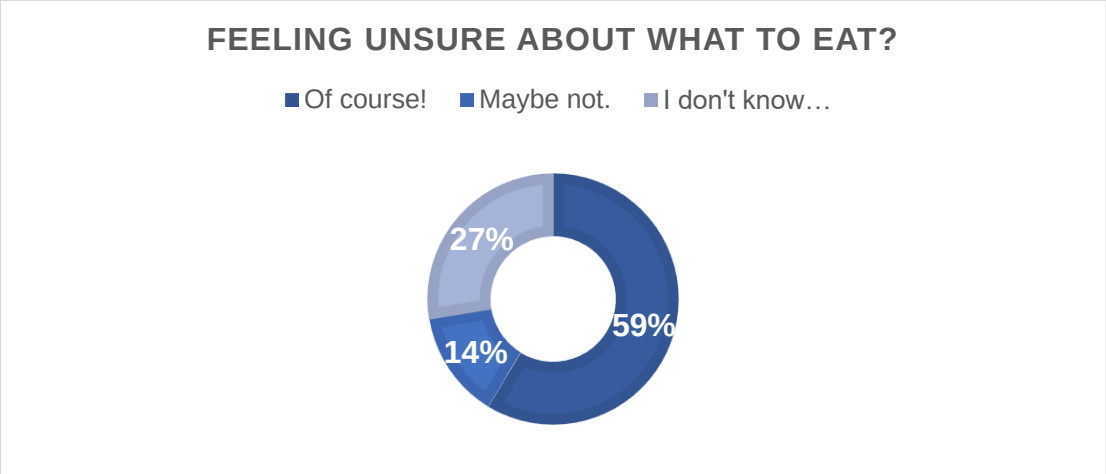

Table 1.1: Feeling unsure about what to eat?

Based on the data provided in Table 1.2, it is evident that only a small part, approximately 10%, prefer fast food, which typically offers simpler dietary choices. In contrast, a larger proportion of people towards other cuisines such as Chinese or lighter food, presents more challenges in making specific dietary selections. According to Angelos' paper, such foods have more dietary characteristics, so people who prefer them are more likely to experience diet dilemmas [5].

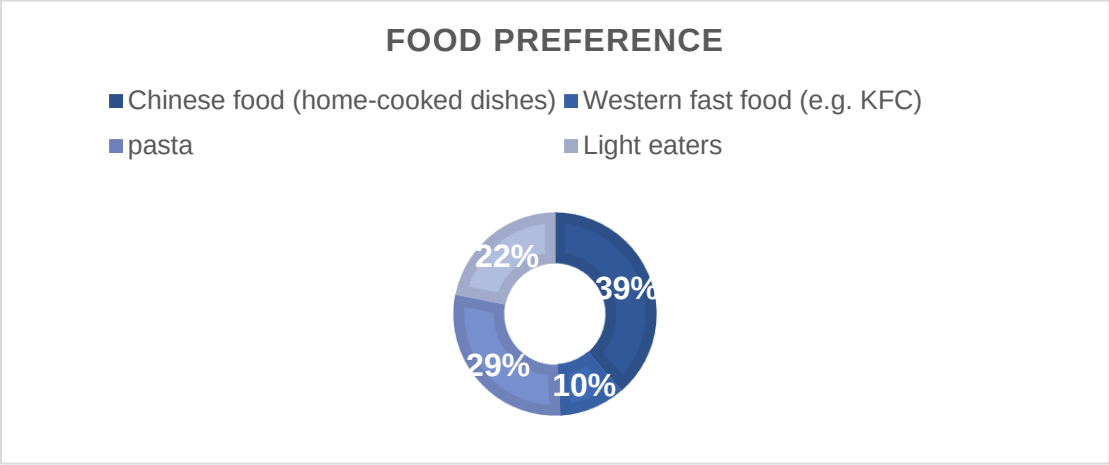

Table 1.2: Food preference

Based on the statistical data presented in Table 1.3, it becomes evident that the majority of respondents choose takeout when unable to dine at home. Consequently, individuals are more likely to be tricked by exaggerated advertising from businesses, lacking direct insight into their meals for the day. Over time, this can lead to palate fatigue, failure to satisfy psychological needs, and impacting physical health [6]. Thus, there is a clear need for solutions that provide more transparent and reliable information about food choices.

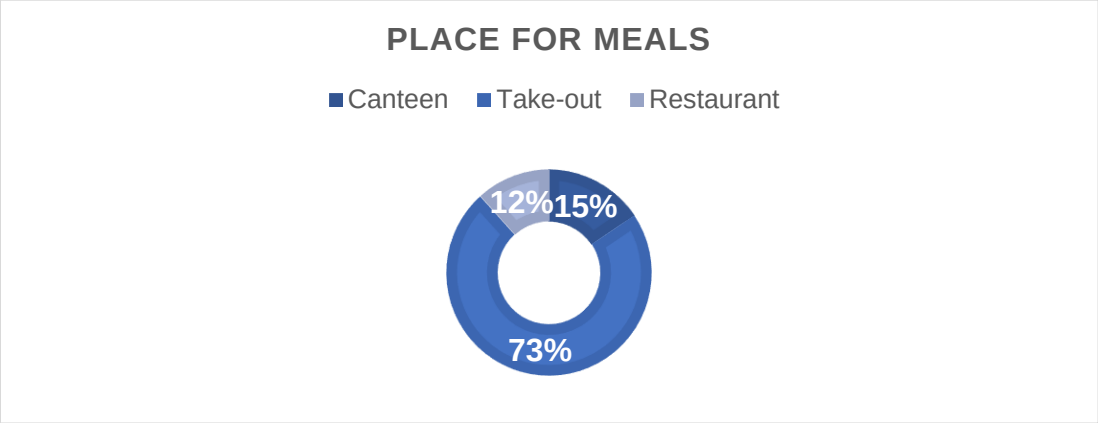

Table 1.3: Place for meals

In summary, based on the analysis above, we have found that our main target users are young people aged 18 to 30 who live on their own and have limited time or cooking skills. They either live alone or with a partner who is similarly unable to cook extensively, relying on takeout and dining out for all meals. They face numerous challenges in daily food decision-making, so we are designing our software to help them with a friendlier and more interactive approach.

3. Design Alternatives and Prototypes

3.1. Design Goals

Based on the Analysis of Requirements, we conclude the following design goals:

1. As the target users are time-constrained young people, the recommendation process should be designed to take place within 1 minute. Additionally, the interaction process should be simple and convenient, which means that the learning costs are low, and users can quickly onboard.
2. Compared to existing diet recommendation products, the recommendations of Nom Guru should better align with users' real needs. Therefore, the recommended results of the product should be of high value, genuinely addressing users' dietary challenges.
3. The design should conform to the specifications of HCI, so the core of the application should be interaction, which makes user input more valuable. Based on this basic strategy, explore the user's eating trend as much as possible.

3.2. Design Ideas

Based on the design goals, during the initial conception phase, our team put forward three different solutions, representing three different ideas.

Firstly, in Filtering Picker, users filter items according to specific conditions and gradually discover the diet that they are interested in. This concept relies on an extensive categorization of food, encompassing ingredients, flavors, preparation methods, and more. It enables customers to search for their desired food taste using only a few broad keywords. Since the terms of the same class are easy to be clustered, the software will gradually build the fuzzy food features of the user after the user interacts with the software [7]. So, the workflow should be the user selects the terms in line with their needs step by step, and finally, the software collects these terms and combines them to provide the user with diet recommendations. More detail can be found in the Appendix 2.1.

Secondly, in Flavors Digger, users are asked to input past food records, and then users select a few simple options to get the final recommendation. This idea is relatively simple compared to the first one because some basic flavors and preferences can be detected by past diet records. Users only need to provide a simple option like the previous taste or new teste to help the application generate better recommendations. More detail can be found in the Appendix 2.2.

Thirdly, in Game-based Flavor Digger, provides users with simple interactive games to extract users' dietary trends. After a selection input like in idea 2, the user can interact with the software through a game to provide information containing dietary trends. Games can be in the form of drawings or text, and the game process should involve short-term, ongoing interactions. Specifically, users make special inputs based on prompts, like drawing a certain shape related to food, and the software updates the prompts based on the drawing content. The interaction proceeds multiple times, gradually guiding software to discover users' true dietary needs. Finally, the software can give a specific recommendation based on users drawing content. More detail can be found in the Appendix 2.3.

3.3.Design Evaluation and Alternatives

For the three proposed ideas, we evaluate their advantages and disadvantages from the HCI perspective and get some initial results. The first idea is time-consuming and interactively tedious because it needs to select the appropriate option from multiple options multiple times. But the results it produces are generally valid. The second idea may provide invalid results since the recommendation results are derived only from records and simple options. Like other algorithm-based recommendations, it does not solve the diet dilemma. The third idea is the most interactive and promising to solve the dilemma because it mines users' real diet trends. But it may take more time than idea 2.

To find ideas for prototypes, we made a questionnaire and collected 18 results from students. To improve the efficiency of collection, we used face-to-face collection, so each participant agreed to an Informed Consent Form (Appendix 3.1). The questionnaire presented our three ideas and asked participants to rate the user-friendliness, convenience, feasibility, and interest of the ideas (Appendix 3.2). We obtained the following data, which also confirmed that idea 3 has higher user-friendliness and effectiveness:

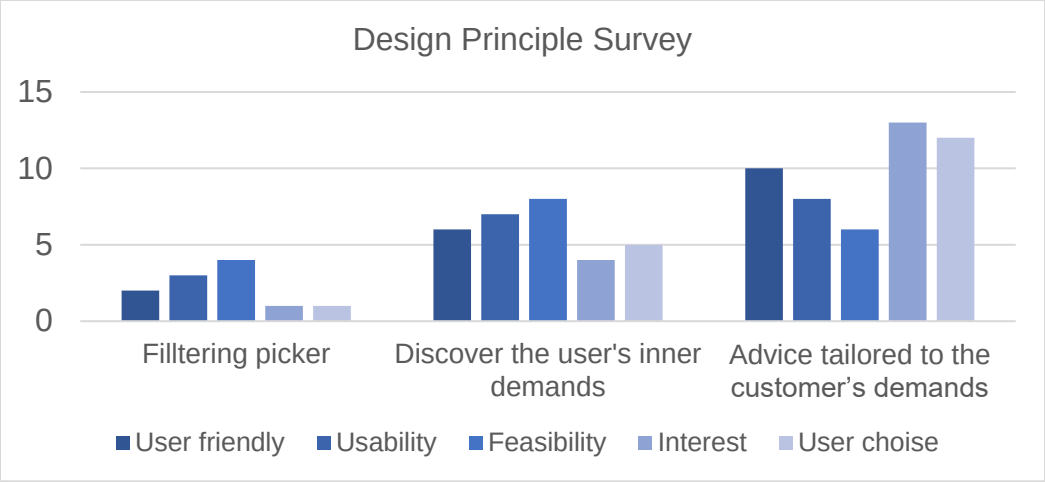

Table 2: Data of design principal survey

After analyzing the questionnaire results, we decided to integrate Idea 2 and Idea 3 for a more balanced recommendation idea. This allows the system to establish a baseline based on the user's past diet history, and then use the game to discover preferences in more detail, where the software learns from their interactions to fine-tune recommendations. By combining them, we avoid inadequate food feature extraction with overly time-consuming game interaction. Consequently, we provide users with a personalized diet exploration platform that accommodates both those who have a clear grasp of their dietary patterns and those who prefer the element of surprise.

3.4. Prototype

The idea 3 we selected was transformed into the prototype, which was mainly divided into four parts: yesterday's diet record, today's mode selection, game session, and recommendation result display. The overall UI design of the software relies on the "*Human Interface Guidelines*"[1] from Apple, which helped us design a great experience to enhance user interaction and streamline navigation.

In the first step, the user is asked to give yesterday's food to help the software understand the user's eating tendencies. As shown in Figure 2.1(left), the user needs to enter the food to proceed to the next step. In the second step, the user needs to choose today's eating style, including the old style and the new try, displayed in Figure 2.1(right). In the third step, the software will first give the user a prompt, such as: what is the first fluffy object that comes to mind? After the user draws it, the software uses deep learning to analyze the drawing and then fine-tunes the prompt, such as: drawing the hierarchical structure of the fluffy object. After a few rounds of interaction, the user gets a recommendation, as shown in Figure 2.2.

[1] https://developer.apple.com/design/human-interface-guidelines

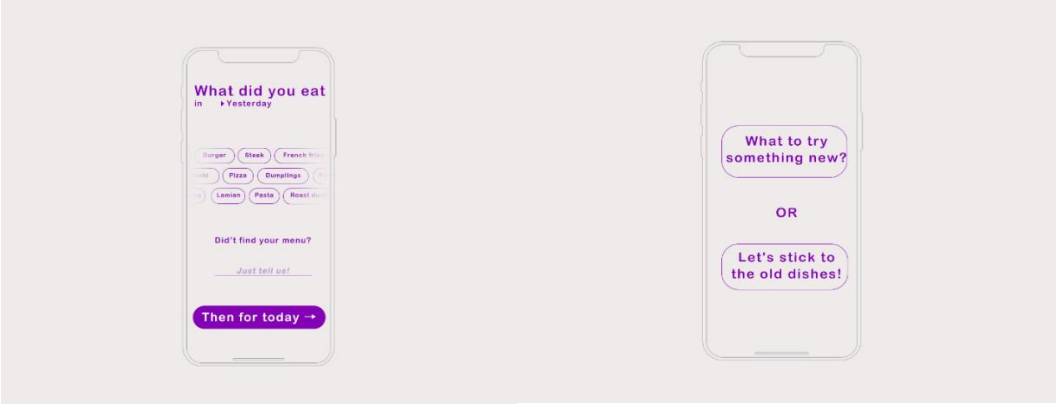

Figure 2.1: Beginning step of prototype 1(left) and eating style step of prototype 1(right)

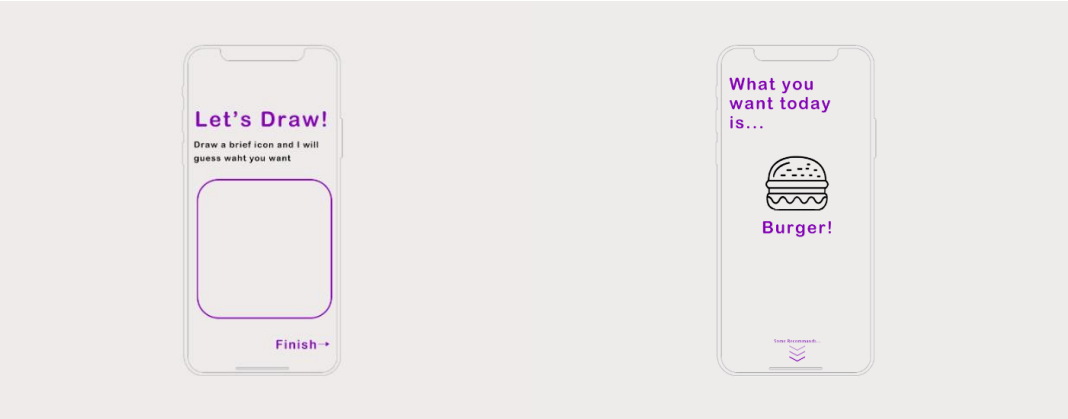

Figure 2.2: Drawing game step of prototype 1(left) and result of prototype 1(right)

In the second iteration, we optimized the following features, which can be found in Figure 3:

1. When selecting past food, we provided the user direct option to save typing time.
2. After a recommendation, give the user a "play again" button.
3. After getting the recommendation, the system will provide a list of surrounding restaurants based on the recommendation content.

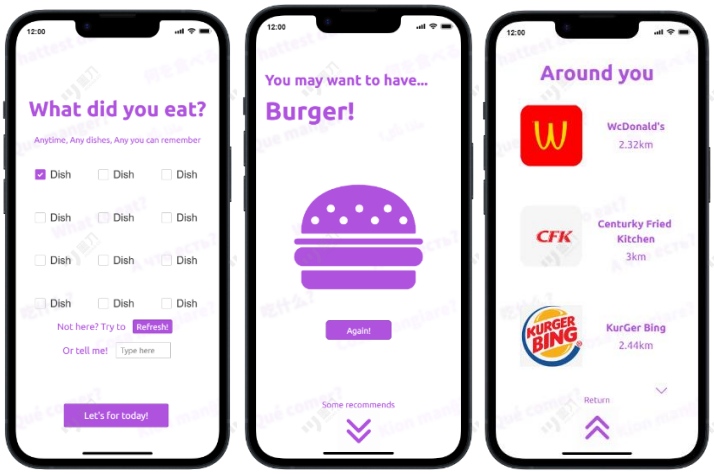

Figure 3: Prototype after iteration; selecting past food iteration (left); recommendation iteration (middle); further information about recommendation iteration (right)

4. Evaluation: Data Collection and Results

4.1. Evaluation methods and data collection

After the second iteration, our first version of the prototype is available for evaluation. We used three different evaluation methods, including a questionnaire and an interview for usability testing, and heuristic evaluation.

For the usability testing, after 9 uses over 3 days, we sent out questionnaires to participants and selected several for brief interviews. The questionnaire considers the following aspects: User Experience, Functionality, Interaction, and Overall Satisfaction, details can be found in the appendix 4. For the interview, it is mainly about the user's feelings and expectations. For the heuristic evaluation, we apply established design principles: user control, consistency, and recognition rather than recall, which we believe are valuable to analysis at this stage. We independently reviewed our prototype based on these criteria and aggregated the results for discussion.

4.2. Participants

For the questionnaire, we chose 20 students who participated in the previous persona session and design idea questionnaire, who are the target users of the prototype. For the interview, we interviewed 2 students who participated in the persona section. For the heuristic evaluation, the participants are the prototype developers.

4.3. Analysis results

Based on the statistical findings presented in Table 3, the responses for q4 and q7 indicate dissatisfaction. Combined with the open-question feedback, the suggestion is that the game interaction feedback is weak, which means the user does not know the current state of the drawing result. The recommendation is not specific enough, specifically, the list display recommendation is not intuitive enough.

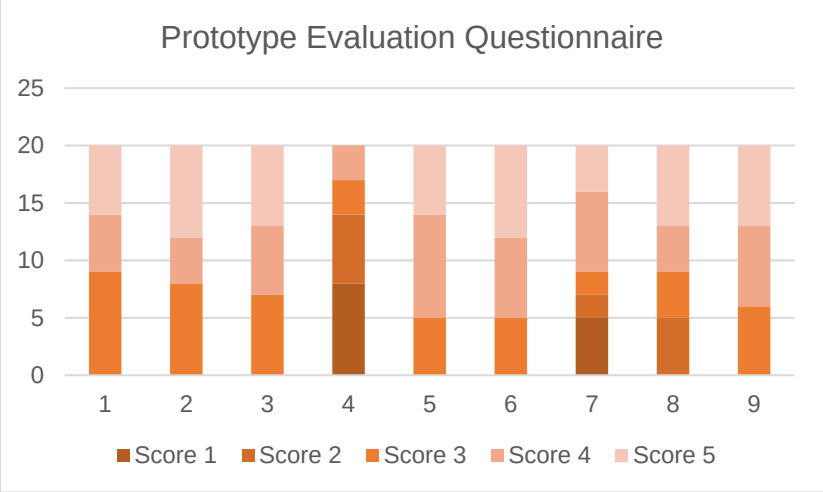

Table 3: Prototype Evaluation Questionnaire

For the interview, participants agreed with the recommendation ideas and raised the following problems: repeated recommendations, unclear restaurant information, the necessity of a map to make it easier to get to the restaurant, and weak feedback during game interaction. The interview details can be found in Appendix 5.

In the heuristic evaluation, some issues about UI and usability are identified based on the heuristic principles. For user control, in the interactive game, the user is always drawing pictures but does not know the recommendation of the software, so the user has a weak cognition of the software process. For recognition rather than recall, the position and size of the guide text are not fixed, increasing the user's memory burden. Besides, for consistency, the design elements of the system and the way of operation are kept consistent, so the prototype has good consistency.

4.4. Iteration based on evaluation results

After the evaluation, we iterated the prototype to try to solve the problems identified by the evaluation. Our iterative improvements focus on three parts:

1. Improve the home start button, which is larger than other buttons to facilitate one-handed use (Figure 4 left).
2. The comparison between the drawing results and the predicted image is added, which use the visual interaction to further convince the user to trust the recommendation results.
3. The recommendation results are displayed using a map.

The detail of the iteration is shown below:

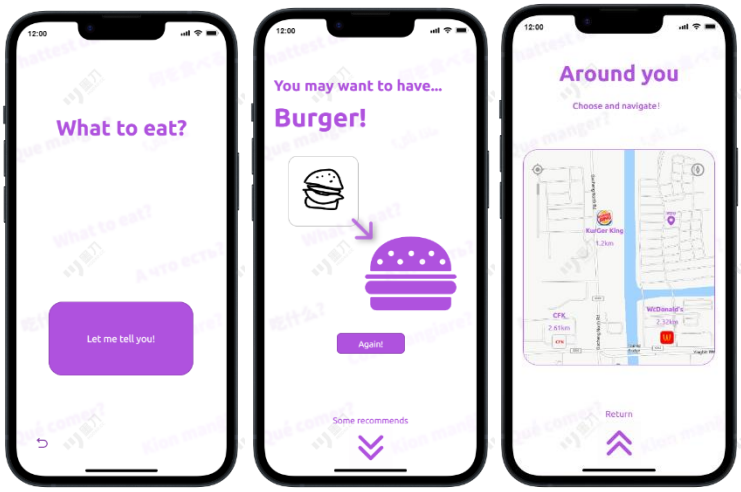

Figure 4: home start button upgrade (left); comparison between the drawing results and the predicted image (middle); map recommendation function (right)

5. Discussion and Reflection

5.1. Novelty and implications

Compared to the existing diet recommendation implementation, our Num Guru has several innovations.

1. **Fresh perspective:** The traditional diet recommendation implementation is based on random recommendations or past diet records, which is not enough to reflect the real thoughts of users, so it is an inefficient recommendation method. To explore the users' real thoughts on diet, we believe that users have an inherent tendency to diet that cannot be expressed, so we consider using psychological approaches to solve the problem of an inexpressible diet situation, which can be achieved by using some HCI strategies.
2. **Novel interaction:** The conventional diet recommendation interaction is weak because the user's input is fixed (a set of past diet records, boring options), so we propose a new interactive idea: a diet trend game based on image recognition. The user draws the first impression figure according to the prompt. The software modified the prompts to further guide the user to draw a more detailed figure representing the real dietary trend.
3. **More specific target groups:** The existing recommended products are usually designed for all age groups or everyone, but they are not effective for specific target groups. On the contrary, our Num Guru focuses on young people with less time who struggle to solve their diet dilemmas and enrich diet diversity at the same time.

At the same time, our Num Guru also has the following considerable implications.

1. For people who need a quick meal solution, it only takes one minute to find the meal that best suits their hearts by using our Num Guru
2. For people who need to change their eating style, our product offers more scientifically based and personalized diet recommendations that can effectively aid in the discovery of new dietary styles, because the recommendation results come from interaction between the user and the computer, which allows for a more seamless and personalized experience for users.

3. Our software makes it easier to promote valuable restaurants because only users whose preferences align can discover certain 'treasure' restaurants. This situation provides these restaurants with additional exposure.

5.2. Limitations and future work

In the current software design, our analysis and recommendations heavily rely on user input, which presents some limitations:

1. **Inadequate local support:** When users travel to new cities, our current software does not provide recommendations tailored to local cuisines, resulting in a poor user experience during their trip. Additionally, if food and drink data from the non-resident city is recorded, it may affect recommendations when the user returns to their resident city.
2. **Initial input problem:** For inexperienced users, without prior data collection, our software can only offer random suggestions initially. If these random suggestions do not meet the user's needs within the first few days, it may decrease user engagement and result in user attrition.
3. **Interaction variety:** As users become familiar with the logic of the software, they may get bored with input methods, so we should explore more than just drawing.
4. **Disability barriers:** In the current stage, we failed to consider users with disabilities, such as color-blind or visually impaired users. Specifically, they may need features like color-blind mode or voice output, so they can use our software smoothly.

To address these issues and enhance user experiences, we plan to implement the following features in the future:

1. Design a dedicated traveler mode to assist users in exploring local flavors when visiting new cities, offering opportunities to experience food more aligned with local eating habits.
2. Obtain user location information using technical means, search for restaurants within the user-defined range, and provide services based on the restaurant information.
3. Explore more interaction patterns, such as voice as input, and determine user eating tendencies through feature extraction of the voice.

5.3. My contribution to the project

During our collaboration, each team member participates in every part, but we still have a division of tasks to improve efficiency.

1. In the proposal constructing stage, I analyzed and agreed on the project proposal put forward by another team member.
2. In the discovery requirements stage, I completed the data collection and production of the persona and participated in the analysis of existing product problems and requirement questionnaire results.
3. In the idea design stage, I pointed out the obvious problems in one idea, and completed the idea evaluation questionnaire and data collection of it.
4. In the prototype stage, I commented on the prototype made by the team members based on requirements and idea design.
5. In the evaluation stage, I made the evaluation questionnaire and completed the heuristic evaluation, analyzed the results, and communicated with the prototype makers to improve.
6. I made the full group presentation representing the group.

5.4. My team members' contribution to the project

1. In the proposal constructing stage, one group member proposed the initial idea, and the other group members supplemented it.
2. In the discovery requirements stage, one team member completed the requirement questionnaire, and one team member found the reasonable and appropriate existing design. All members were involved in other processes of requirement analysis.
3. In the idea design stage, the other three group members each completed an idea.
4. In the prototype stage, the other two team members completed the prototype and iteration.
5. In the evaluation stage, every team member was involved in the whole evaluation process.

References

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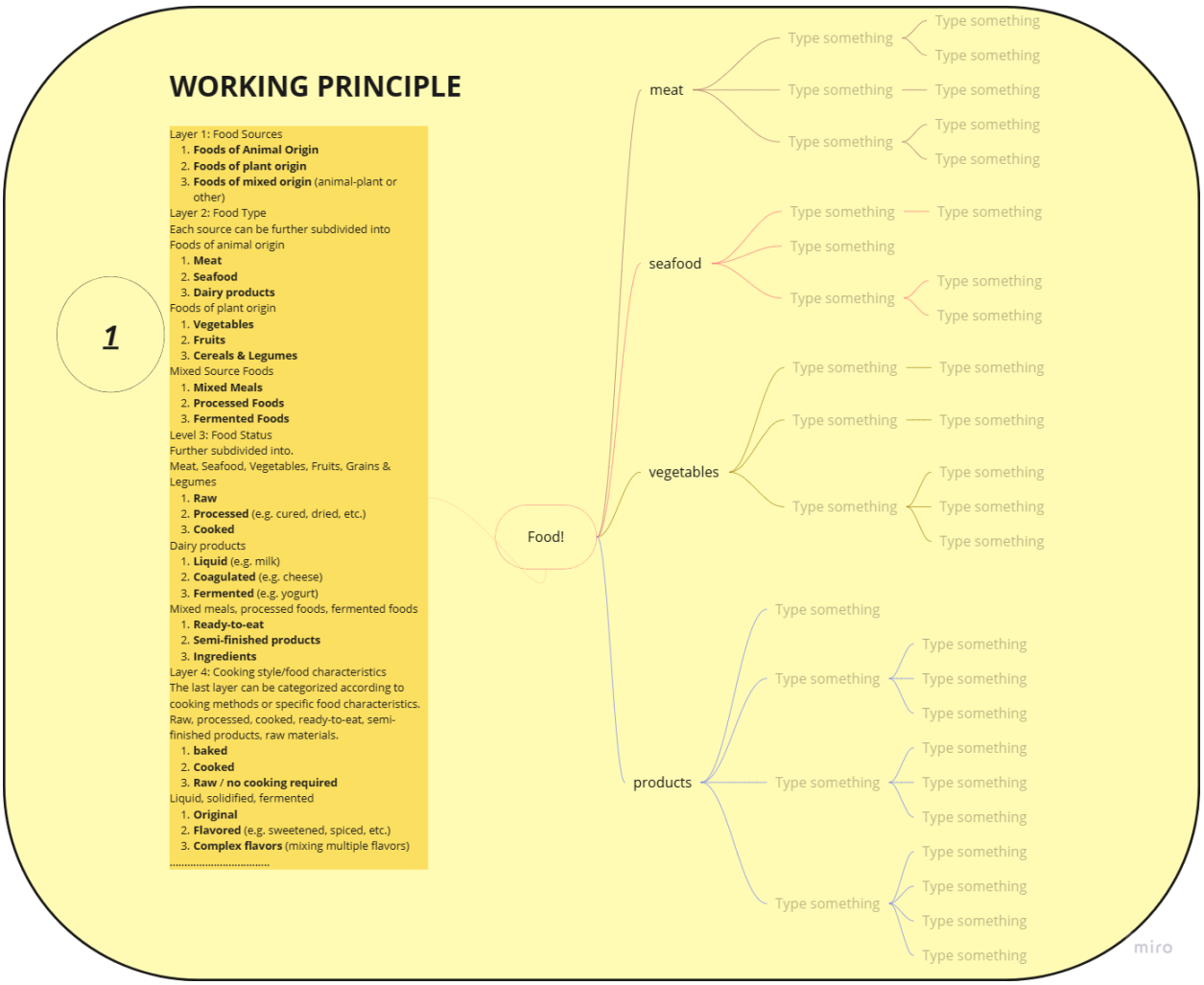
Appendix

1. Existing food recommendation design

Appendix 1: Existing food recommendation design

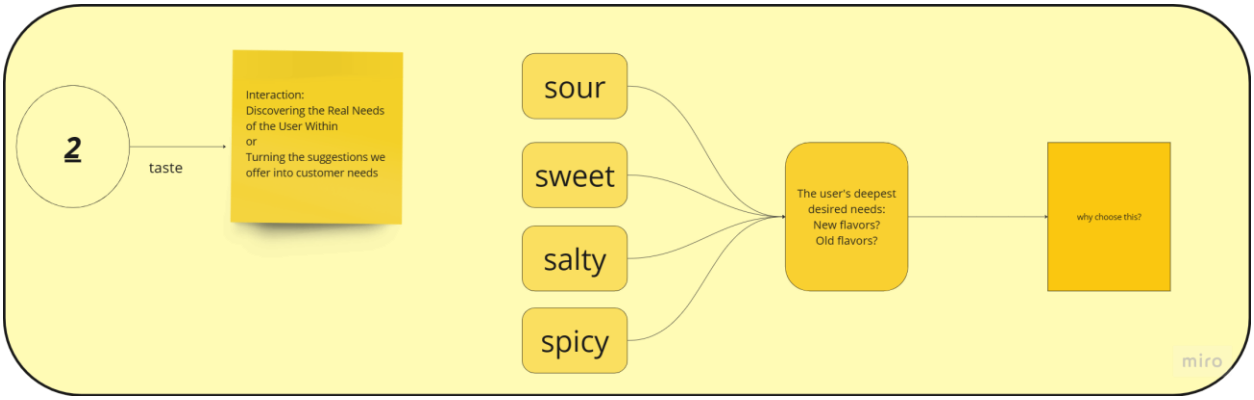
2. Design Ideas

2.1. Filtering picker



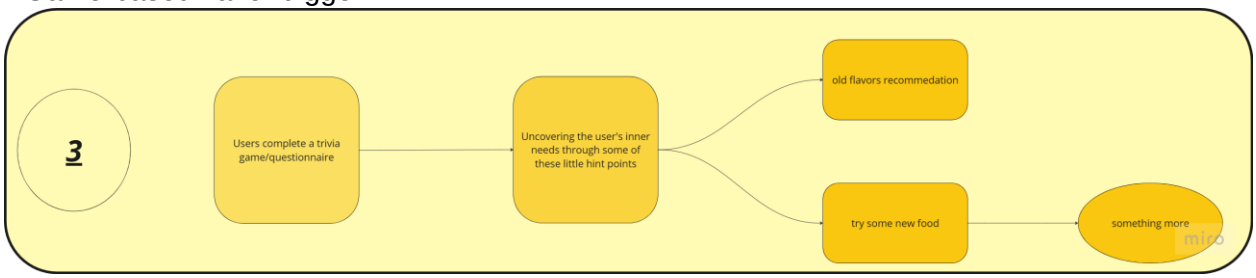
Appendix 2.1: Filtering picker

2.2. Flavor digger



Appendix 2.2: Flavor digger

2.3. Game-based flavor digger



Appendix 2.3: Game-based flavor digger

3. Questionnaire 1

3.1. Informed Consent Form of Questionnaire 1

Xi'an Jiaotong-Liverpool University
西交利物浦大學

INFORMED CONSENT FORM (SRR)
知情同意书

***Title of Research Project:** 项目名称：	Nom Guru Design Alternatives Survey
***Researcher(s):** 研究人员：	LiMingyuan, LiJunjie, NingXujia, ZhaJingxin, LiShengkai

Please initial box

1. I confirm that I have read and have understood the information sheet dated [4.6] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
   本人确认已于[4.6]阅读并了解了该项目相关研究信息，并已从项目负责人处得到考虑、提问的机会，且得到满意答复。 ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected.
   本人知晓对该项目的参与为自愿，且可以随时退出，无需任何理由，同时权利不会受任何影响。 ☐
3. I understand that I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish.
   本人知晓可随时要求获取或销毁所提供的个人信息。 ☐
4. I agree to take part in the above study.
   本人同意参加此项研究。 ☐

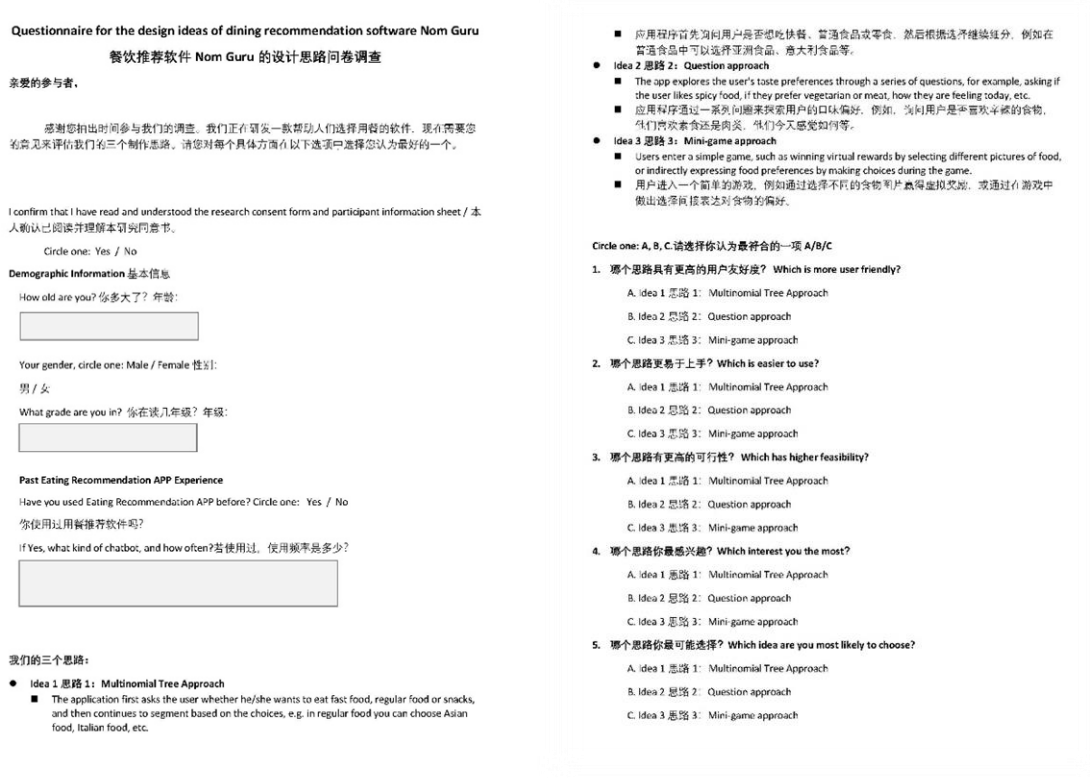
Participant Name 参与者	Date 日期	Signature 签名
Name of Person taking consent 知情同意书提供者	Date 日期	Signature 签名
Researcher 研究人员	Date 日期	Signature 签名

***The contact details of lead Researcher (Principal Investigator) are:**
项目负责人的联系方式如下：Mingyuan.Li21@xjtlu.edu.cn

[Contact Details, including Telephone, Email and Work Address]
[联系方式，请包含电话号码、邮件地址及工作地址]

Appendix 3.1: Informed Consent Form of Questionnaire 1

3.2. Questionnaire for the design ideas of dining recommendation software Nom Guru



Questionnaire for the design ideas of dining recommendation software Nom Guru

餐饮推荐软件 Nom Guru 的设计思路问卷调查

亲爱的参与者，

感谢您抽出时间参与我们的调查。我们正在研发一款帮助人们选择用餐的软件，现在需要您给予意见来评估我们给三个制作思路。请您对每个具体方面在以下选项中选择您认为最好的一个。

I confirm that I have read and understood the research consent form and participant information sheet / 本人确认已阅读并理解本研究同意书。

Circle one: Yes / No

Demographic Information 基本信息

How old are you? 你多大了？ 年龄:

Your gender, circle one: Male / Female 性别:

男 / 女

What grade are you in? 你在读几年级？ 年级:

Past Eating Recommendation APP Experience

Have you used Eating Recommendation APP before? Circle one: Yes / No

你使用过用餐推荐软件吗?

If Yes, what kind of chatbot, and how often?若使用过，使用频率是多少?

我们的三个思路：

- **Idea 1 思路 1：Multinomial Tree Approach**
  - The application first asks the user whether he/she wants to eat fast food, regular food or snacks, and then continues to segment based on the choices, e.g. in regular food you can choose Asian food, Italian food, etc.
  - 应用程序首先询问用户是否想吃快餐、普通食品或零食，然后根据选择继续细分，例如在普通食品中可以选择亚洲食品、意大利食品等。
- **Idea 2 思路 2：Question approach**
  - The app explores the user's taste preferences through a series of questions, for example, asking if the user likes spicy food, if they prefer vegetarian or meat, how they are feeling today, etc.
  - 应用程序通过一系列问题来探索用户的口味偏好，例如，当问用户是否喜欢辛辣的食物，他们喜欢素食还是肉类，他们今天感觉如何等。
- **Idea 3 思路 3：Mini-game approach**
  - Users enter a simple game, such as winning virtual rewards by selecting different pictures of food, or indirectly expressing food preferences by making choices during the game.
  - 用户进入一个简单的游戏，例如通过选择不同的食物图片赢得虚拟奖励，或通过在游戏中做出选择间接表达对食物的偏好。

Circle one: A, B, C.请选择你认为最符合的一项 A/B/C

1. **哪个思路具有更高的用户友好度？ Which is more user friendly?**
   - A. Idea 1 思路 1：Multinomial Tree Approach
   - B. Idea 2 思路 2：Question approach
   - C. Idea 3 思路 3：Mini-game approach
2. **哪个思路更易于上手？ Which is easier to use?**
   - A. Idea 1 思路 1：Multinomial Tree Approach
   - B. Idea 2 思路 2：Question approach
   - C. Idea 3 思路 3：Mini-game approach
3. **哪个思路有更高的可行性？ Which has higher feasibility?**
   - A. Idea 1 思路 1：Multinomial Tree Approach
   - B. Idea 2 思路 2：Question approach
   - C. Idea 3 思路 3：Mini-game approach
4. **哪个思路你最感兴趣？ Which interest you the most?**
   - A. Idea 1 思路 1：Multinomial Tree Approach
   - B. Idea 2 思路 2：Question approach
   - C. Idea 3 思路 3：Mini-game approach
5. **哪个思路你最可能选择？ Which idea are you most likely to choose?**
   - A. Idea 1 思路 1：Multinomial Tree Approach
   - B. Idea 2 思路 2：Question approach
   - C. Idea 3 思路 3：Mini-game approach

Appendix 3.2: Questionnaire for the design ideas of dining recommendation software Nom Guru

4. Prototype Evaluation Questionnaire

Nom Guru Prototype Evaluation Questionnaire

餐饮推荐软件 Nom Guru 原型问卷调查

亲爱的参与者，

感谢您抽出时间参与我们的调查。我们正在研发一款帮助人们选择用餐的软件，现在需要您对我们的原型提供宝贵意见。请您对每个具体方面在以下选项中选择您认为最好的一个，并提供宝贵意见。

Your feedback is invaluable to us in improving our product. Please take a few minutes to answer the following questions honestly and thoroughly.

I confirm that I have read and understood the research consent form and participant information sheet / 本人确认已阅读并理解本研究同意书。

Circle one: Yes / No

Demographic Information 基本信息

How old are you? 你多大了？年龄:

Your gender, circle one: Male / Female 性别：男 / 女

What grade are you in? 你在读几年级？年级:

Past Eating Recommendation APP Experience

Have you used Eating Recommendation APP before? Circle one: Yes / No

你使用过用餐推荐软件吗?

If Yes, what kind of chatbot, and how often?若使用过，使用频率是多少?

Circle one: A, B, C.请选择你认为最符合的一项 A/B/C/D/E

User Experience:

1. **原型的界面可用性是高效的？ Is the interface usability of the prototype efficient?**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同
2. **使用原型时轻松地完成了所有功能？ Were you able to complete tasks easily using the software?**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同
3. **原型中的引导易用 The navigation of the prototype is easy to use**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同

Functionality:

4. **原型提出的推荐是合理的 The prototype makes reasonable recommendations**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同
5. **原型提出的推荐是否符合特性化偏好 The recommendations made by the prototype are consistent with the preferences**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同

Interaction:

6. **原型中的游戏的交互是简单的 The interaction in the prototype game is simple**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同
7. **原型中的游戏的交互是有趣的，不单一的 The interaction of the game in the prototype is fun and non-monolithic**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同

Overall Satisfaction:

8. **原型是否解决了问题？ Does the prototype solves the diet dilemma?**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同
9. **对整体的满意度如何 How satisfied are you with the overall prototype**
   A. Strongly Disagree 强烈不同意 B. Disagree 不同意 C. Neutral 中立 D. Agree 同意 E. Strongly Agree 强烈认同

Open questions:

请对我们原型的交互或推荐模式提供建议 Please provide suggestions for interaction or recommendation patterns of our prototype

Appendix 4.2: Prototype Evaluation Questionnaire

5. Interview of the prototype evaluation

Nom Guru Prototype Evaluation interview

Interview Topic: Feelings about the restaurant recommendation software model after use
Interview Date: 2024/4/30
Interview Method: Face-to-face
Interviewee: Linxi, a sophomore student at Xi'an Jiaotong-Liverpool University, has few ideas about eating what.

Question 1: What are your thoughts on this software model after using it?
Answer: After using this software model, I feel that it has provided me with many new restaurant and dish options, allowing me to try some cuisines I had not experienced before. Its recommendation algorithm is also quite accurate and aligns with my taste preferences.

Question 2: Do the food recommendations from this software model meet your expectations?
Answer: Most of the time, the food recommendations from this software do meet my expectations. It takes into consideration my preferences and dietary restrictions to offer suitable suggestions. However, sometimes there are repetitive recommendations, and I hope this can be further optimized.

Question 3: If this software model were to be released, would you use it every day?
Answer: I might not use it every day, but I would use it as a convenient reference tool. I would rely on it to discover new restaurants and food recommendations when needed.

Question 4: In your opinion, what are some areas where it could be improved?
Answer: I think this software model could be improved in terms of user experience. For example, it could provide more accurate recommendations for users with specific dietary habits or food sensitivities. Additionally, incorporating a feedback feature would allow users to evaluate and adjust the recommendations based on their experiences.

Interview Topic: Feelings about the restaurant recommendation software model after use
Interview Date: 2024/4/30
Interview Method: Face-to-face
Interviewee: Kaiyang, a sophomore student at Xi'an Jiaotong-Liverpool University, has too many ideas about what to eat.

Question 1: What are your thoughts on this software model after using it?
Response: Using this software model has been a refreshing experience. It introduces me to new dining options and culinary adventures that I wouldn't have discovered otherwise. The algorithm seems quite accurate in predicting my preferences, which adds to the overall satisfaction of using this tool.

Question 2: Do the food recommendations from this software model meet your expectations?
Response: Generally, the food recommendations meet my expectations. They align well with my taste preferences and dietary requirements. However, there are times when the suggestions could be more diverse to avoid repetition and cater to a wider range of culinary interests.

Question 3: If this software model were to be released, would you use it every day?
Response: While I may not use it daily, I would definitely incorporate it into my dining decision-making process. It's a valuable resource for discovering new places to eat and can serve as a helpful guide whenever I'm unsure about where to dine out.

Question 4: In your opinion, what are some areas where it could be improved?
Answer: One area where this software model could be enhanced is providing clearer restaurant location details. Sometimes, the recommendations lack specific information about the restaurant's address or exact location, which can make it challenging to find the recommended places. Including more detailed location descriptions or integrating with mapping services could greatly improve the user experience and make it easier to navigate to the suggested restaurants. This improvement would ensure that users have all the necessary information to visit the recommended dining spots confidently.

Appendix 5: Interview of the prototype evaluation