Medium-Fidelity Prototype

Video Prototype Description

This prototype shows the interface of our Smart Pet-caring System. Among all of the pets, our system focuses on cats. It connects a robot via Bluetooth or Wi-Fi to help the users complete different tasks automatically. According to the design requirements that we summarized from the user research, we designed four main functionalities in our system: feeding, cleaning, interaction and health. These four functionalities are all at the bottom of the main page (Figure 1).

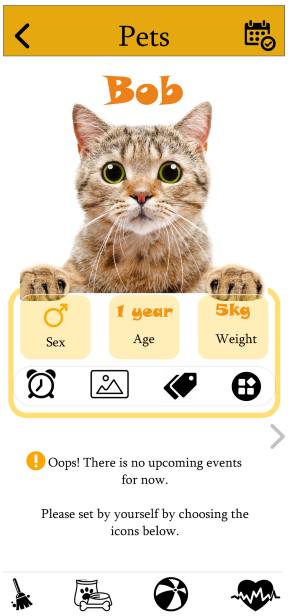

Figure 1: Four main functionalities

In the feeding part, the users can choose the time and amount of food to feed their pets (Figure 2&3). After they click the start button, the robot will repeat the feeding schedule every day until the users pause the feeding schedule or modify it. Thus, this design meets the first requirement, the auto-feeding functionality.

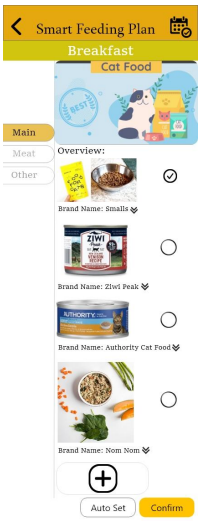

Figure 2: Choosing the food

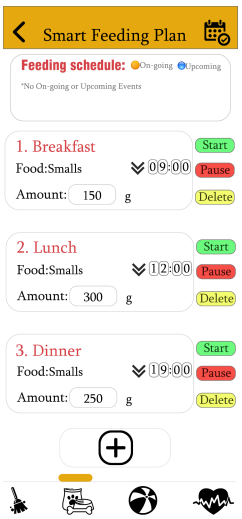

Figure 3: Setting time

In the cleaning part, the users can set the frequency of cleaning their house and their pets so that the robots can help them do cleaning regularly. Also, they can click the ‘clean manually’ button if they want to do the cleaning themselves (Figure 4). Thus, it meets the requirement of automatic cleaning, which can save the users plenty of time.

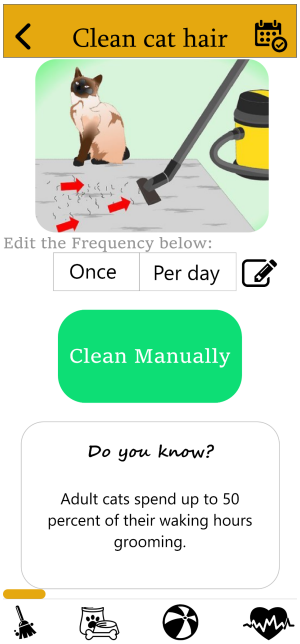

Figure 4: cleaning

In the interaction part, the users can monitor the behaviour of their pets when they are not at home. The camera installed inside the robot can capture the motion of their pets. The users can take photos or take videos of the pets. They can also control the robots to play with their pets (Figure 5). This functionality meets the requirement of monitoring the pets in real-time. Also, the users can interact with their pets remotely.

Figure 5: interaction

Finally, for pets' health, our system can detect the real-time temperature, respiratory rate and heart rate of the pets. Also, it will record the food consumption and keep track of the weight of the pets (Figure 6). In addition, the users can also book a vaccination and view the vaccination history of their pets using this interface (Figure 7).

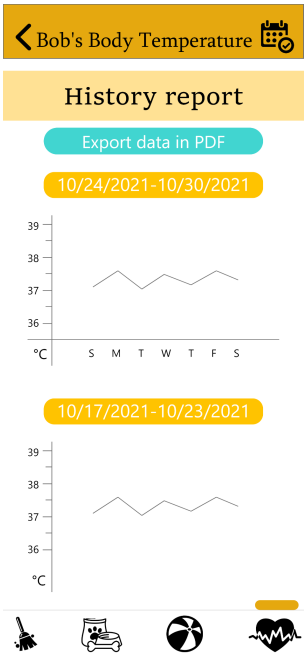

Figure 6: health information

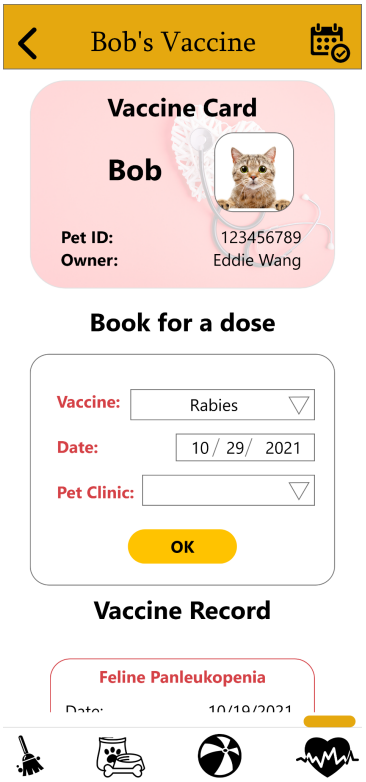

Figure 7: vaccination

After the users set up the tasks, the schedule will be shown on the reminder (Figure 8). This feature satisfies the requirement of notification which reminds the users of the critical dates about their pets.

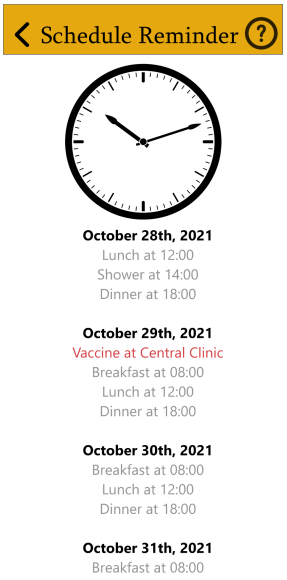

Figure 8: reminder

User Evaluation Plan (outline)

- **The goal of evaluation?**

  Firstly, to figure out if our interface meets the expectations of the users. That is, do we still need to add other functionalities to our interface or are there some unnecessary functionalities in our interface?
  Secondly, the users are unfamiliar with our interface. Therefore, they may discover some design problems that we overlook in our interface. For example, they might be confused about some of the buttons or get lost in our interface and do not know how to get to the right place to complete their tasks.
  By gathering feedback and suggestions from the users, we can improve our interface and make it more satisfactory for the users.

- **Evaluation methods and why those methods?**

  The evaluation method we chose is In-person Usability Testing. Firstly, this method is moderated, which means that we can offer help to the users when they encounter some difficulties. Secondly, when the users are doing a task, we can communicate with the users frequently and get their feedback about every detailed design of our interface. Also, we can know the feelings of the users by observing their facial expressions. Finally, the participants for the evaluation are all our friends who are pet owners. Therefore, they are the potential users of our interface, and their suggestions will be constructive for us in order to find some more opportunities.

- **How to go through a single evaluation session with steps?**
  For the evaluation, we design four tasks for the users:
  1. Set a feeding schedule for your pet. For breakfast, select the 'auto setting' option for food and set the time to 9:00. For lunch, pick 'Ziwi Peak' cat food and set the amount to 250 grams. Set time to 12:00. For dinner, select the 'auto setting' option for food and set the time to 18:00. Click the start button to start the schedule.
  2. Set a cleaning schedule. For cat-hair cleaning, set the frequency to once a day. For replacing cat litter, set the frequency to once a day.
  3. Check the health information of your pet and export the data in a PDF.
  4. Go to the interaction area to monitor your pet in real-time. Take a photo of your pet, and then take a 10-second video of your pet.

  Evaluation Steps:
  1. Briefly introduce our interface to the user and provide the list of tasks mentioned above for him to complete using our interface.
  2. Let the user read the task sheet and explain to him if necessary.
  3. When the user is ready, start screen recording and voice recording.

4. When the user is doing a task, ask him the feeling about each sub-part of the interface.
5. If the user encounters some difficulties, ask him what they are trying to do and how it would be intuitive in his opinion to accomplish it. Then, provide support for him and write down the problems.
6. Observe the facial expression of the user and take notes.
7. When the user completes the tasks, ask him to rate how easy or difficult each task is on a numbered scale. Finally, ask him if the interface meets his expectations and get suggestions for improving our design.

- **Any problems or challenges?**

  If several participants do the tasks simultaneously, they may influence each other, resulting in the inaccuracy of the evaluation. For example, maybe one of the users is confused about the feeding page, which indicates some problems in our interface. However, he gets hints from other users who figure out how to use this page and still successfully finish the task.

- **Remedies for those problems?**

  We can assign participants to different rooms to complete their tasks.

- **What kinds of data to collect?**

  1. Screen recording: to capture the whole process of the users completing several tests using our interface.
  2. Voice recording: to get users' feedback and suggestions about our interface.
  3. Hand-written notes: to write down the difficulties that the users meet while using our interface as well as their feelings.