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1. Abstract

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3. Background

3.1 Pet abandonment issue

According to the American Pet Products Association, in 2012, 72.9 million households in the U.S. own at least one pet, increasing nearly 10 million more than in 2000. According to the data above, there are 830,000 new pet owners each year. And this number does not include the ones giving who want to get pets but for some reasons they didn't get one in the end. The number of potential pet owners is huge. However, there are more pets being abandoned every day than people think just in NYC. For examples, NYC311 receives about six complaints regarding abandoned animals per day. And according to "Urgent," an organization created to help advocate for NYC's Death Row Dogs and Cats, the maximum number of cats they have to put down monthly reaches to 257 on September 2016. The maximum number of dogs they have to put down monthly reaches 95 in August 2016. Over 60 percent of mayors consider "animal control issue" top one on their list.

In the United States, there is the Animal Welfare Act and serves as a Federal Law— each state has its Animal Protection Laws that regulate penalty for people who mistreat animals, including abandonment. After the American Society for the Prevention of Cruelty to Animals (ASPCA) was established in 1866, many humane societies or private groups start to rescue animals, including neutering surgery and providing shelter for stray animals. However, both the law and human societies are fixing problems once they exist, meaning punishing those who intentionally harm animals and rescuing animals from streets. For this research, I would like to start from the

beginning to prevent animal abandonment and cruelty this from happening— before it is too late.

Although many reasons cause the situation for pet abandonment, such as overbreeding, this paper targets one specific abandonment reason: *irresponsible pet owners giving up their pets*. As an international student who is also a cat owner myself, I have heard a lot of students studying abroad and abandon their pets when going home. And I know an indoor cat like my cat who has no experience living on his own could never survive through weather, hunger, and danger in the outside world. Every time I think of that, I feel so upset. From my experience talking to eight interviewees, three of them stated clearly that their pets had a previous owner and abandoned them for various reasons. Three of them adopted their pets from the shelter. This also proves my hypothesis that irresponsible pet owners are causing a lot of pets being abandoned. It could because of “the nanny said her grand-daughter is allergic to the cat,” “my neighbor got pregnant and she could not take care of the dog,” or “my roommate’s friend just asked if we wanted a cat.” They don’t know enough about the animal nor themselves before deciding to take them home.

Although people generally agree that it is inappropriate to abandon pets, they often do not think about the reasons. First, the abandoned pet can harm public health. In urban areas especially, crowded with stray animals can spread illness because of the limited space in the city and high density of population of people. Moreover, some people feed stray animals from time to time; the trash and leftovers still attract animals. According to Palmer, Clare, in his “Placing Animals in Urban Environmental Ethics,” this situation would attract animals and make them gathering at where humans live. Although the stray animals are not responsible for a specific person, they

are still living directly or indirectly and depend on human beings. The fact that animals live near a human being increases the level of risk of spreading illness. According to Melanie Rock, only when the pet belongs to one person, meaning one person being responsible for the action of the animal, the cornerstone of the healthy city can be built.

The pressure for rescue groups is too much. Some organizations or individuals are willing to take care of the stray animals like ASPCA and Humane Society of New York. However, the number of animals are much larger than what they can handle. One of the most important tasks the rescue groups is what to do after rescuing stray animals, they do spay or neuter surgery. By doing so, it helps to control pet homelessness because animals can give birth to huge number of cubs for just one estrus season. And shelters will have to euthanize the ones they cannot afford.

Stray animals can also cause incidents of attacking human beings or other animals. Accidents, criminals can also hurt animals not under surveillance, extreme weather or even just from starving. When we first accept a pet, we are allowing a family member that trusts us and fulfills our lives. Most of the pet owners consider pet as their family members. As friends and family members who spend their day and day with us, they give us emotional support and helps us from stress. They react from our behaviors, and they also have emotions. Leaving pets behind can make them sad, just like humans do.

There are numbers of reasons why people abandon their pets, and they can be categorized into three: energy burden, financial burden, and social burden. Aggressive behaviors are mentioned

top one on the list in the conversation, such as elimination, destructiveness, and noise. Although most of the bad behaviors can be corrected, people have to put energy or dedication into their animals. For example, if dogs don't get enough exercises, they can be too energetic or active to cause damage to your home. If there is only one litter box for multiple cats, they might refuse to use it. A certain level of knowledge and time is required for your pet to behave nicely.

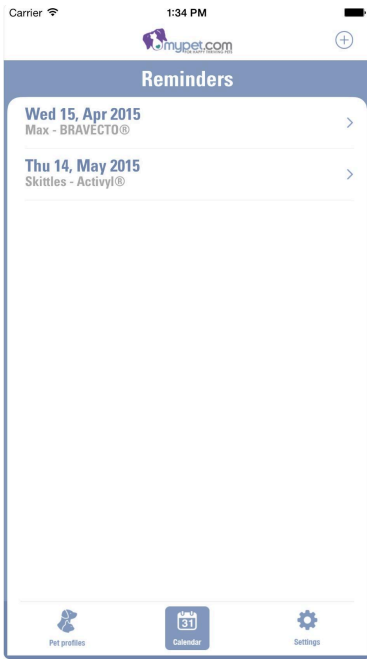
The cost of pet food, supplies, medical expenses, and babysitting can be enormous when adding them up. According to ASPCA, the total first-year cost of owning a pet is more than $1,000. Surgeries can cost up to several thousands of dollars, that is why medical insurance for the pet is always recommended. When sick, it is not only the medical expenses but also the time to see the vet and follow-up cares are required.

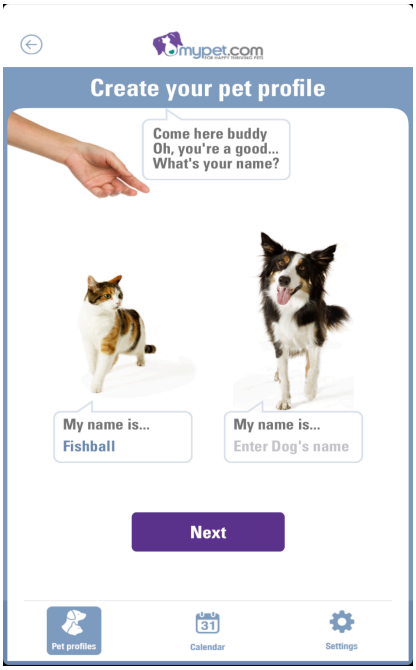
Owning a pet is also going to affect your relationship with others. According to 311 NYC, there are about six complaints per day reporting barking dogs in New York City. Pets with inappropriate behaviors can affect other people in your community and cause lawsuits, because owners are responsible for actions of their pets. It is also important to consider the influences on your family members or roommates because their lifestyle will change even though they do not directly own the pet. For example, when having a cat, it is hazardous to keep the window wide open. Cats can jump out of the window when chasing an insect. For people who need fresh air might think it is an issue.

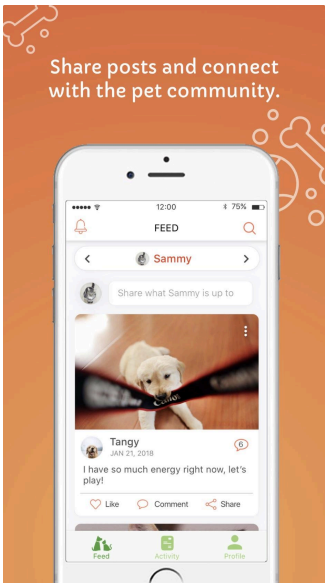
3.2 Targeted Audience

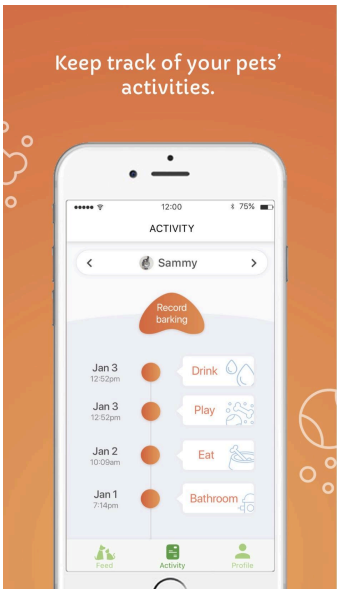
There are two primary means for people in the United States to obtain a pet, (i)adopting from a shelter or (ii)buying from breeders and pet stores. When people are trying to take animals from the organizations, they are often required to give information about themselves, such as the age of family members, unfortunately, families with some young kids are sometimes harder to get approved. And the organizations run specific investigations before approval and have some levels of requirements for candidates to meet. For example, if the candidate can provide stable housing for the pet is one of the necessary requirement. However, for breeders and pet stores, there is no consent of selecting pet owners yet. Although it is sad to admit, pet stores sell pets as comedies and as long as people pay the fair price, they will be able to take their pets.

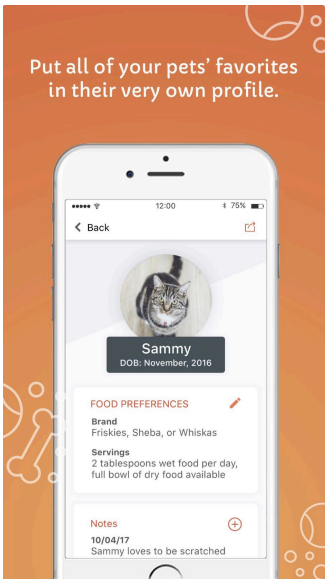
To improve the situation, more pre-work and investigations targeting interacting with pets are required to scope out irresponsible pet owners. For examples, it is not enough just to check criminal background or salary level for candidates. A better understanding of the outcome and dedication to take care of an animal needs to be emphasized before decision making for candidates who apply to adopt animals from shelters, or people who are willing to do it of his or her own accord before buying a pet. That is why designing an application for potential pet owners to receive enough information and do some activities is necessary.


Carrier
1:34 PM
mypet.com
Reminders
Wed 15, Apr 2015
Max - BRAVECTO®
Thu 14, May 2015
Skittles - Activyl®
Pet profiles
Calendar
Settings


mypet.com
Create your pet profile
Come here buddy
Oh, you're a good...
What's your name?
My name is...
Fishball
My name is...
Enter Dog's name
Next
Pet profiles
Calendar
Settings





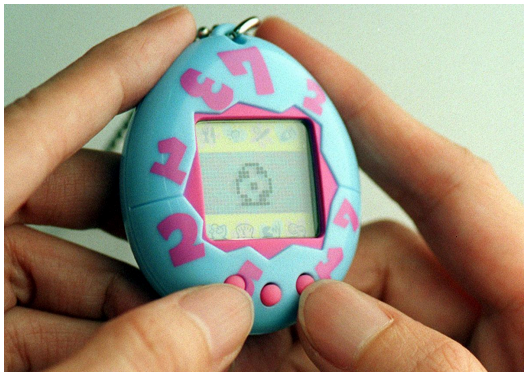


3.3 Competitor analysis

There are also a few mobile applications that target some part of my proposed service. For example, Mypet Reminders is an app that reminds the users about the important dates like their pet's appointment as well as medications. The user interface is very simple because they just focus on one feature which is the reminder. The copy of the profile page is fun to read. However, there is no difference between each breed and dogs and cats. And the users can't find information about how to take care of their pets. This app is good for owners who already have experience in taking care of their pets. The other app is called Kriddr which is trying to achieve more. It has a quite complete system for sharing short posts, communicating with friends, tracking pet's activities and developing the pet's profile. Both the app touch upon the aspect of taking care of pet but neither of them help people who are thinking about getting a pet but are not sure of it.

The other type of competitor is tamagotchi, a popular video game that simulating the process of taking care of a virtual pet. By pressing the three buttons locating at the lower portion of the machine, the user will be able to interact with the virtual pets like feeding, playing, even producing offsprings. This product is targeting on the simulation of the process of taking care of the virtual pet. The product is going to send notification from time to time, and the user needs to fulfill its needs by pressing the buttons. Missing the tasks might causes aftermath. The nice thing about this product is that it balances the rewards and the tasks. When completing tasks, the virtual pet is going to move around and give feedback to the users. So users are not going to be too annoyed to stop using this product.





4. Methodology

4.1 User-centered Design

Since my app is about asking people to think twice before making decisions, it has a strong relationship between users and the product. I would love to use user-centered design as one of the main methodologies to have a deep understanding of what are people thinking during the process. User-centered design involves the user into the design process including screener survey, user interviews, synthesizing data from the interview, design studio, building the prototype and usability tests.

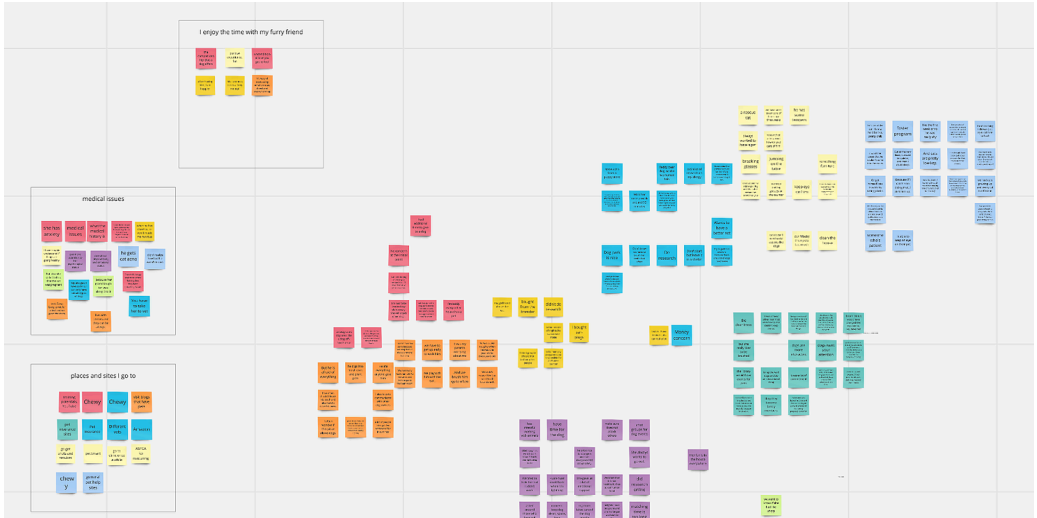
Screener survey which is my first step is about finding the right people to talk to. In this survey, not a lot of open-ended questions were asked. I just asked if this person has pets. If not, has this person ever thought about having a pet. And if this person has experience working in an animal shelter. Finally, if they have time for a short interview where I will ask more questions. Forty-four people responded and I have selected eight of them to talk to. I tried my best to even the number of dog owners and cat owners since my app is focusing on these two categories. Unfortunately, not a lot of people have experience in working in shelters, even they have, they were all several years ago and they can barely remember anything.

After the screener survey, I have conducted eight interviews and transcripted six of them word to word. During the interviews, I made sure to dig deep into people's lives with their pets. I asked open-ended questions to make sure they can speak more about the question but not answering by a simple "yes" or "no." I also tried to be a good listener and not interrupt interviewees.

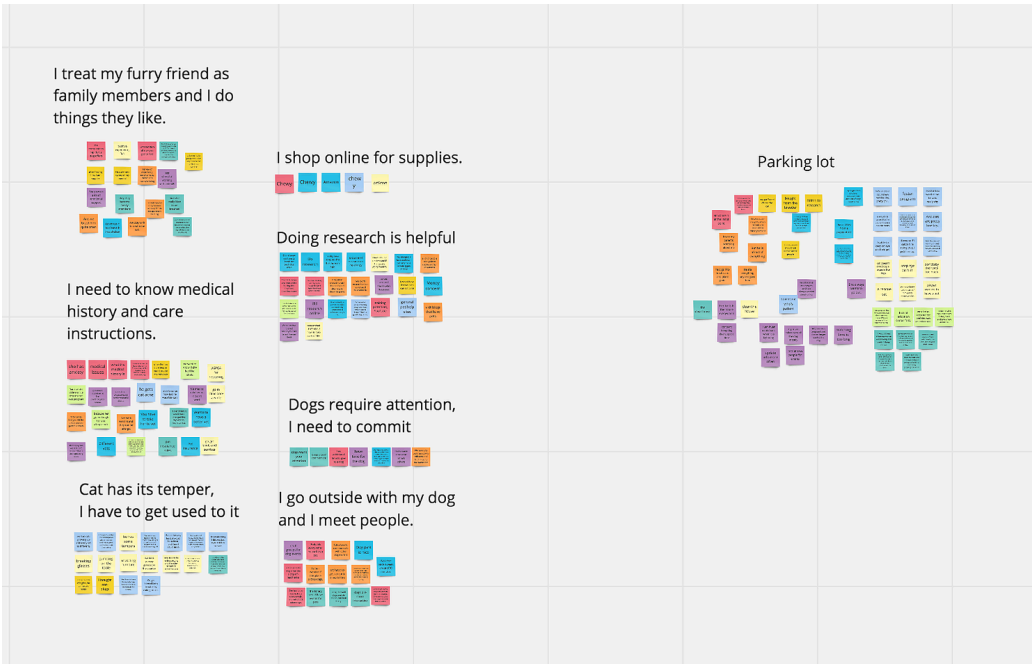
Besides that, it is also important to ask what people did instead of what they think they will do because there is always different about what people expect to do and what they actually do. Please see the research report attached at the end of the paper for interview script.

After documenting all the interviews, it is time to analyze them. I would highlight all the findings in the interview just like what I showed above and put all the findings in to post notes. Then I would group them by trends. Each participant has his own color so that if different colors gathering in the same place that means different people have the same thoughts. Sometimes one round of grouping is not enough and it can take several rounds to get the final results. After grouping them, I found several interesting insights from my interviewees.

Almost everyone mentioned that medical history and care instructions are essential information when taking care of pets. They are also willing to do things that entertain their pets such as brushing them and walking them. They also mentioned that doing research helps a lot in the process, however, sometimes they don't know which answer they get is the correct one.
One interesting thing I noticed is that dog owners and cat owners are thinking differently. Dog owners often mentioned the commitment they have to put into, but they also enjoy the feedback from their dogs. Cat owners, however, often think their cats need fewer attention. They also respect the personality of cats and don't usually forced them to be "ideal."



From there, I was able to form personas. Just like I mentioned in the background section, I have two groups of main users, one buying pets from breeders and pet stores and one adopting from shelters. However, based on the interviews I did, I found out dog owners and cat owners require different characters and taking care of a dog or a cat is different as well. From there, I put together two personas. Victor is a marketing assistant. He loves sports and talking to other people. His friend volunteers in an animal shelter and asked him if he wanted to have a dog. Victor would love to apply for adoption because he always loves the loyalty and companionship of a dog, and a lot of dogs in the shelter need a home. However, because owning a dog means a lot of commitment. He wants to know if his spare time is enough for a dog. He would also love



to talk to other dog owners in the community and attend events with his dog. His goals including finding the best dog that fits his lifestyle, meeting the requirement for adopting a pet and knowing more dog owners in the neighborhood. His frustrations are not sure about the time commitment, does not understand how to train a dog and he needs information about places for

dogs in the neighborhood. How might we help Victor understands if he has the **time** and **energy** for a dog and gets to **know more dog owners** in the community?

Stella, on the other hand, is a junior graphic designer who just started her career. She always wanted to have a cat, she loves how soft and chills a cat can be. She specifically loves ragdoll and she would like to find a certified breeder. Since she just graduated, she wants to know the estimated cost of keeping a cat before making the decision. Also, she and her family have no experience in taking care of cats so she needs to have access to caring instructions. She understands that every cat is different and a cat has its temper, but she wants to know how to deal with it when it happens. Her goals include finding a certified breeder, handling the basic needs of a cat and getting along with the cat. Her frustrations are not sure about the expense and need caring instructions for cats. How might we help Stella gain the **information about breeders** and how to take care of cat **from basic needs to potential issues** caused by a cat?

After re-defining my targeted users and forming the problem statement, I was able to put everything together and make a clickable prototype which I will describe more in the methods section.

The next part that involves users is the usability test, which happened after the second prototype was created in my case. I went to a Demo Day where the department of Integrated Digital Media of New York University, and asked some users to use my app. In order to test the features I would love to test, I have also created a usability test script which listed some of the scenarios and tasks for users to complete. Any thoughts or confusion during the process are

great resources for me to iterate. Please see the research report attached at the end of the paper fo the usability script.

4.2 Ludology

Ludology is the study of games and my app has some game aspect. First of all, there are actual games in the app. For example, the app is going to send the user notification about the the pet being alone and requiring attention. The user can tap to see more and play with the virtual pet by throwing a ball to the pet and let it fetch.

Besides that, the balance with “tasks” and “rewards” is a big reason why I brought ludology in. In video games, like RPGs, players often have to fight with enemies to get “experience” and become stronger. Game designers want their players to have fun but they want to extend the hours people spending on their games as well. That is why the designers make the activity of getting “experience” time-consuming. For players, the process of fighting enemies can be repetitive. They have to receive rewards before they quit. The moment of giving rewards can’t be too soon or too late. Like designers of video games, I face the same issue. I ask users to complete tasks and events can be time-consuming, and I need to provide rewards too. Since there is no way I can provide rewards as the user actually getting the pet, I have to find substance.

There are four different “rewards” in the app. First one is the knowledge of taking care of pets, since the reason why people first start to use this app is to know more about pets. The next “rewards” or “motivation” is the response from the virtual pet. Just like how Tamagotchi does, there is always a figure on the screen, and its actions change from time to time. Although the figures and animation are very simple, seeing it moves and responses to the actions people do

on the screen really gives users the impression of it is living inside the machine. Therefore, the user will be more willing to come back to the product. I would like to incorporate the same concept by adding animation of the pet on the home page. When there is no mood change, the virtual pet is going to wander around on the little “street” located on the top of the page and chill. When the mood increase because of some activities users complete, it is going to show heart symbol. Same with mood decreasing, the virtual pet will be crying or showing sad face.

The third “reward” is the achievement system that links to real world shopping experience. When the user has completed some tasks such as “complete all activities in day one,” he unlocks an achievement. After unlocking certain amount of achievements, the user can claim rewards that can be used in pet supply stores such as ten percent off coupon on chewy.com. By doing this, users can get advantage by using this app even after they finish the seven day challenge.

The fourth “reward” is receiving recommendation from the app to adopt pets in partner shelters. After the seven day challenge, the user will get a final report that contains the record of all the activities they did on the app. There will be a final score generated based on the how many tasks they finished. If the score is above high enough, the app is going to recommend this user to some animal shelters in the city. The user can show their report to the shelters and get credentials and make the adoption process smoother.

4.3 Participatory Design

Just like I mentioned above in the Ludology section, I would like to partner with shelters. And shelters can be my stakeholder and secondary persona who don't directly use this app but will be affected by it. It is necessary to bring the shelters into the design process. And this way of bringing stakeholders into design process is participatory design.

In order to get information about adopting, I have got in touch with several shelters in New York City. When talking about adopting pets, there are two ways, open adoptions and closed adoptions. Open adoptions are not requiring too much personal information and everything is based on trust. People working in the shelter will try to tell as much as information as possible to the candidates and trust they will make the right decision. And closed adoptions require more document including reference an landlord notice.

In order to know more about the adoption process, I have visited the Best Friends Pet Adoption Center located in SOHO. It is one of the shelters that does open adoptions. First the candidate will be asked to fill out a short survey asking about his experience with pets, and if the candidate has any preference with the pet he wants to adopt such as if the pet can get along with children. During the process, the volunteers in Best Friends Pet Adoption Center will make sure the candidate are told all of the essential information to be able to take care of the pets, and try their best to make a perfect match. Then, the candidate will be able to take the pet home. However, for dogs, the candidate is asked to bring all the residents living in the house to meet the dog before adoption. If things do not work out, they will take the pet back without asking reasons to better make sure the pets are well taken care of even if things happen.

5. Methods

5.1 Sketch & InVision Studio

Sketch is the one of the most popular tool in making prototypes. It allows users to make screens using simple geometries and it can also upload screens to InVision and make clickable prototype from there. I have built three iterations total. The first iteration I did was called mid-fi prototype which has no typefaces, colors involved and trying to focus on the structure of the design. The second iteration was built after talking to the thesis advisor. And the third iteration was built after doing usability test and iterated based on the feedback of users. The artboard size I chose was an iPhone 8 because iPhone 8 is still the most iPhone size people use nowadays compare to iPhone X series.

I started by asking people what type of pet they have. I put a title located on the upper of the screen and two choices below. One represents cat and the other represents dog. After choosing of the option, the user will be able to continue to the next step by tapping the arrow located on the lower side of the screen.

After that, I asked the user what the breed is. There are two ways of answering this question. The user can either tap on “type to search” or “help me find.” When the user inputs information on the container of “type to search,” there is going to be suggested answers appearing below the text container based on the text the user inputs. For example, when typing “corgi,” the system will find related item that contains the word “corgi.” In this case, there are two types of

corgi in the system: ”Pembroke Welsh Corgi” and “Cardigan Welsh corgi.” The user can choose either one by tapping the image or the text.

If the user is not sure about the breed, they can also tap on “help me find” to get more information. When doing so, there will be a screen coming out with three different options: “browse library,” “recommend by needs” and “identify by camera.” Based on the persona, Victor, who needs to find a dog fits his lifestyle, I would love to demonstrate the option of “recommend by needs.” Tapping on that, the next screen will be a survey about the lifestyle of the user. For example, the user will need to provide their housing information like how many people are living with the user, how much space does the user have which determines what size of dog this person can have. Another key information the user needs to provide is how much time does he have to be with the pet, as we all know the bigger the dog is, the more time it needs to exercise. The next question is about allergy which was found in my interviews. One of the dog owner who is allergic to dog hair eventually got teddy dog which would not make the situation worse. And the other person got her cat because the previous owner claimed her grand-daughter was allergic to cat hair. And if the user is allergic to dog hair than it will affect on the type of dog the app recommends. At the end of the survey, users need to put in their zip-code so that nearby information can be used for the app.

Once the user has filled out all the questions, the app will recommend based on the answers this user provides. There will be a few key words listed on top of the screen. The user can choose to start over the survey if they changed their minds. Below that, there will be a few “cards” with dog breeds and key words. For example, the result of this user is that dogs are

small, calm and easy-to-train fits his lifestyle. The system has recommended a few breeds have this characteristics. By tapping on the cards can take the user to a detail dog breed page.

In the detail dog breed page, there is a typical image of this breed with the name of the breed locating on top of the screen. Below that is a call-to-action button, tapping this button means the user would love to choose this breed as his pet. To provide more essential information for the user, this page also contains detailed information about this breed like breed characteristics including adaptability, friendliness, grooming, trainability, and activity level. Each category is rated in five stars and the user can click on the plus sign to know more. There are other information provided like statistic information such as adult size, history of the breed, general personality of the breed, health information, caring instructions and feeding information.

Once the users are satisfied to this breed, they can select the breed and give this virtual pet a name, a age and a gender. Then the users land on the landing page. On this page, on the top of the page has the avatar of the virtual pet. The background of the figure is a street view and the figure moves from one end to another when the user has this home page active. The figure can also show happy or sad face based on the actions users take. For example, if the user does not open the app and keeps ignoring the pet, the next time he opens the app will see the figure crying. Under that has the mood of the virtual pet which is going to be affected by the number of activities the users complete. If the users finish one task or fulfill to the needs of the virtual pet, then the mood will rise. On the other hand, if the users fail or miss the tasks, then the mood will reduce and effect on the final report of the user.

At the center of the screen is the content of the seven day challenge. Each day's challenges are put on a card format. When the day passes, the cards are going to shift to the right. Each day's tasks are different and targeting different aspect of taking care of pet. For example, the first day will be "know you and your dog" which is about some basic information about the owner and the dog. Users will be able to calculate time, cost and amount of food to feed the dog. They will also read a little history about the breed. Moving to the next day, the theme changes to "get along with your dog" and the activities will focus more on the interactions such as dog walking, training the dog.

Each activity is evenly distributed on the card. The user can click on the images locating on the left side of the cards with the title on it and enter each activity. After finishing the activity, there is going to be a checkmark located on top right of the image indicating it is completed. Meanwhile, the right of image will be a summary of the activity for users to reference. For example, after users complete "How much will you spend?," on the right side of the image will have a line of copy saying "the total first-year cost of owning a dog is $1,270. and well over $500 each additional year."

I have designed several activities in the seven day challenge to give a feeling. The first one is a budget calculator. According to the screener survey, one of the main questions people have in mind is how much money they will spend on having a pet.

5.2 InVision

6. Results and discussion

6.1 Usability Test Report

After the second round of iteration, on October 16th, 2018, the department of Integrated Digital Media at NYU Tandon has held a Demo Day that helps all the thesis students to test their projects. I was also able to find six participants and test out my product. There are several features that participants mentioned about the app that need to be changed. One is the first page of the app. People are confused about whether they are getting an actual pet when registering for an account. They were also asking to be able to see the level of importance when calculating budget. Besides those features, there are some minor adjustments I need to make such as font size and copies.

Three out of six people pointed out they didn't know the first page of the app can be interacted. In the first prototype, I made it simply by putting the icon of dog and cat under the questions. However, I think this way does not feel like it is the first page of the app. That is why I have changed it to two images both showing half of it and piecing together into one page. When users tapping on either image, the other image will get pushed and the image will take over the whole screen. For example, when the user taps on the dog side of the screen, he will see the cat image being pushed away and the screen becomes an image of dog. Then he can choose dog as his pet by tapping the arrow button. The user can tap the screen one more time to go back to the previous choice. That is also something confused by the users. That is why in the third iteration I decided make everything more obvious by adding buttons of cats and dogs

indicating tapping on that means choosing one of the pets. When the user chooses on pet, there is also a back button locating above the arrow button so that they can always come back if they change their minds.

The other thing people mentioned a lot is that they don't know if they are getting a virtual pet, a real pet or will get a real pet after seven day challenge. Especially when they have reached the point of giving pet a name. In order to fix that, I made it extra clear that it is a virtual pet that people are getting. For example, I have changed the copy from "Give your pet a name" to "Name your virtual pet."

When doing the budget calculation, some users have mentioned that they would like to know the essential level for those cost. They were wondering if there are some costs that are optional. Otherwise, there is no point for them just to add all the cost up. Unfortunately, all of the costs that being listed are essential. However, some costs might not reach average based on everyone's location and preferences. So I decided to change them into sliders so that people can adjust themselves. When the user first enter the page, the points will be set at average level and if the person would not want to spend a lot of money on "toy," he can manually move the slider to the left. The average point is still there for him as a reference so that the user will have a general idea of the cost.

6.2 Audience feedback

By doing the usability tests, I was able to receive feedback not only on the function and the flow of the project. I was also able to see users' opinions on the app. One comments I received a lot is that when people were using the budget calculator, they were shocked by the amount of money that is going to cost them to take care of a dog, not mentioning the amount of money of dog sitting and dog walking. I am satisfied to see people having this reaction because cost is an issue that pet owners have to face and most of them don't actually try to figure out. My goal is neither encourage people by giving the wrong information nor discourage them by scaring them away. Showing them numbers is one of the best way to help people know if they are ready for their pets.

Another feature people often commented on was the dog walking experience. A lot of participants mentioned that it was nice to know what is around the neighborhood. It isalso nice to be able to follow the random route that the app generates every time so that people and their dogs would not get bored. Besides that, because the time period is determined by the breed of the pet, people don't have to worry about the time being too long or too short. However, in my opinion, it is a shame that I didn't have chance to let people really spend the time to walk during the demo day. Otherwise, they will be able to have deeper understanding of how much effort do they need to keep their dog getting exercised.

During the process of testing, two participants were having totally different opinions on one thing, the time period of the challenge. One participants who claimed that he wanted to have a

dog said seven days are too long and there was a big chance that he could give up anytime during the process. In the meantime, a dog owner insisted that the time period is way to short. She was proposing twenty one days because twenty one days form a habit. She didn't think people can realize how difficult and how much responsibility they need to take to be a pet owner. I don't know which person was right, and it is one of the problem I want to test out in the next step.

7. Conclusion

7.1 Potential Contribution

7.2 Next Steps