

DESIGN CONCEPTS AND PROTOTYPES

Group: Alpha Cat
CSC318 Assignment 2

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0. Executive Summary

In this part of the project, we first considered different design alternatives for our product. To accomplish this, we designed a bunch of potential interfaces for our system. We generated sketches for each concept and used these sketches to gather informal user feedback including identifying the advantages and disadvantages of each design from the user's perspective. Additionally, we used the feedback to iterate on the requirements for our product and thus, we narrowed down the design space to a mobile game called "one family".

After we decide the final design concept. We designed a new interface based on what we have learned above. With two detailed low-fidelity paper prototypes of this interface, we've showed our work to both experts and users. Also, we present our ideas through a collection of storyboards of the different tasks that can be supported by our system.

1. Design Alternatives

1.1 Brief Introduction of Alternative Designs

1.1.1 Problem Statement

Based on our problem statement, our focus is to improve the frequency and the quality of social interaction between local people and immigrants who live in the same community. We believe that this will ultimately reduce conflicts between the two parties, and consequently, speed up the process of integration of immigrants which will be helpful to weave social fabrics between immigrants and locals.

1.1.2 Brief Introduction of Our Process

Before we started brainstorming, we highlighted important requirements that we had thought of before and aimed to build on them. Specifically, we were thinking about designing a system that increases the number of local community events and help people identify people with same interests or habits.

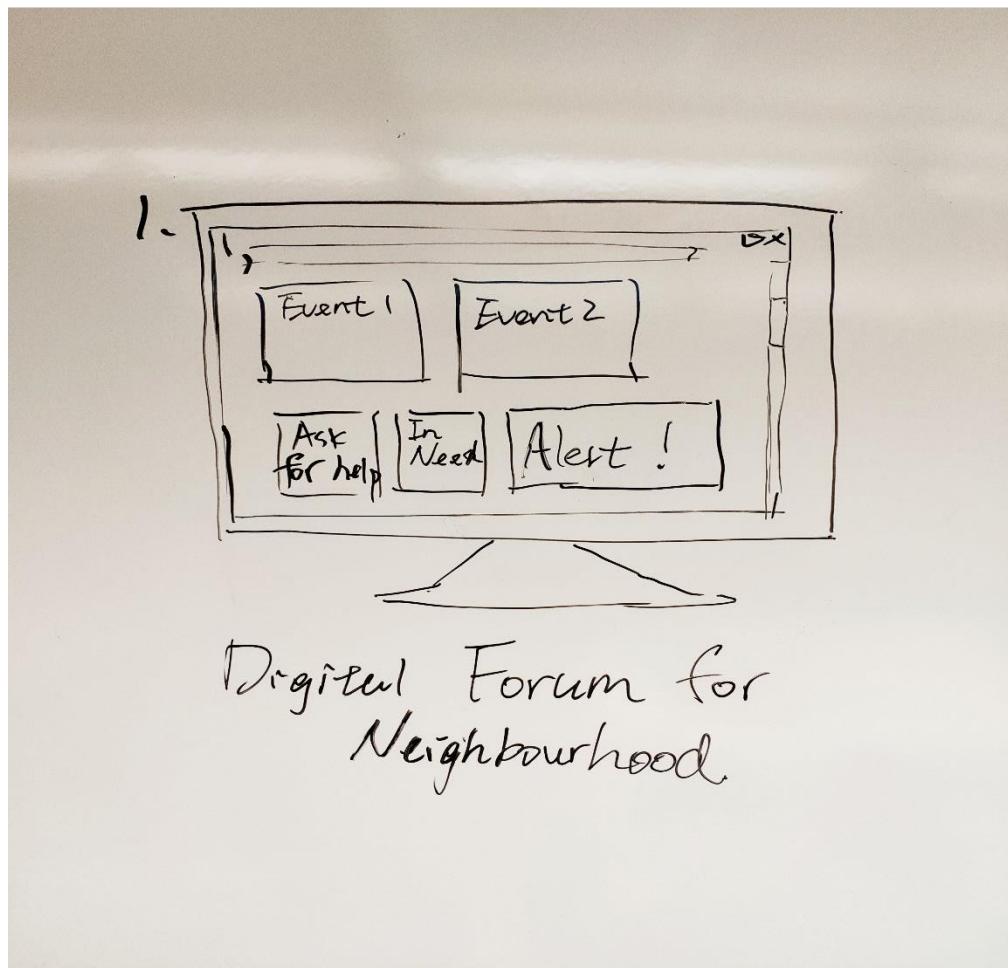
Each of our team members generated ideas that they thought would be suitable and eventually we got 12 distinct ideas. Then we held a free vote on these and the results were narrowed to 4. We then did variations on all of them, either integrating feature from other concepts that we think are valuable or adding features. We then did another vote to get the best 3 out of 4 which are the followings.

1.2 The Best Three Alternative Designs

The best three alternative designs are a bulletin board system application, a video blog application and a game application. We will go through them one by one.

1.2.1 First alternative design: BBS application on favor exchanging

1.2.1.1 Show a sketch



1.2.1.2 Description of what's our design

- This is a discussion board exclusive for community members with a focus on favor exchanging such that users will be able to post their requests with compensation or to return the favor. The system will prefer users to choose to return the favor since that facilitates further interactions between the two parties.
- It will be a chatting system for people to discuss the task in detail and for regular interactions as well. Additionally, we add in an interests-based group chatting rooms as a recommendation to users.

- By initially asking users to provide background information (binary options of immigrant and locals that defined clearly), and keep it private, the system subtly favors local people to take requests from immigrants and vice versa.
- Event-starting is also available as a form of requests that allow people to socialize with neighbors with the same interests.
- The application will also push notifications on community news from community or management office (for Condo or apartments) to convenient user's daily life.

1.2.1.3 Explanation of How our Design Works and How does it Relate to our Project Goal

The motivation behind this idea is that some people are overwhelmed with the job at hand and struggle to manage some small tasks at the same time, meanwhile other people may be free and open to finish the handy job for them. Although the kinds of requests vary, within residential areas, people's needs usually fall into similar categories that make the cost of help less effortful thus become more attractive to people internally. We want to construct an environment for people to ask for help at ease. However, it is noticeable that people may hesitate to reach out because of social awkwardness. Rather than asking help from people far away, neighbors serve a more convenient role if applicable. The requests act as icebreakers for immigrants to step out from their comfort zone. When negotiating the "price" for a task, users get to acquaint a neighbor who lives in the same neighborhood and establish a connection. Ideally, people will find common habits or same interests that upgrade and strengthen their relationships.

Compensation or favor returning can mitigate the psychological barrier for people, especially local people who can give a hand and prevent them from wasting of time.

1.2.1.4 A list of advantages and disadvantages we've found when choosing the final design

Advantages	Disadvantages

There are many mature frameworks available for reference on the web.	Less innovative and not original.
It is more acceptable as a classical approach.	It is not attractive to young people.
It is also multi-platformed that is flexible to use for all age.	It is hard to come up with rules on the legit type of requests and their details which makes it hard to monitor and regulate user behavior.
It integrates functions in breadth: services for trading like secondary market and move out sale, a poll for group deals call for participation etc.	Could be difficult to implement in a simplistic style due to excessive services that we want to provide.
Exclusivity ensure interaction between neighbors which fits our goal.	People may stick with their ethnic groups which deviates from our goal while deepen ethnic aggregation.
	Exclusivity may also hinder people from using the app because of its small range.

1.2.1.5 Some informal feedback from users

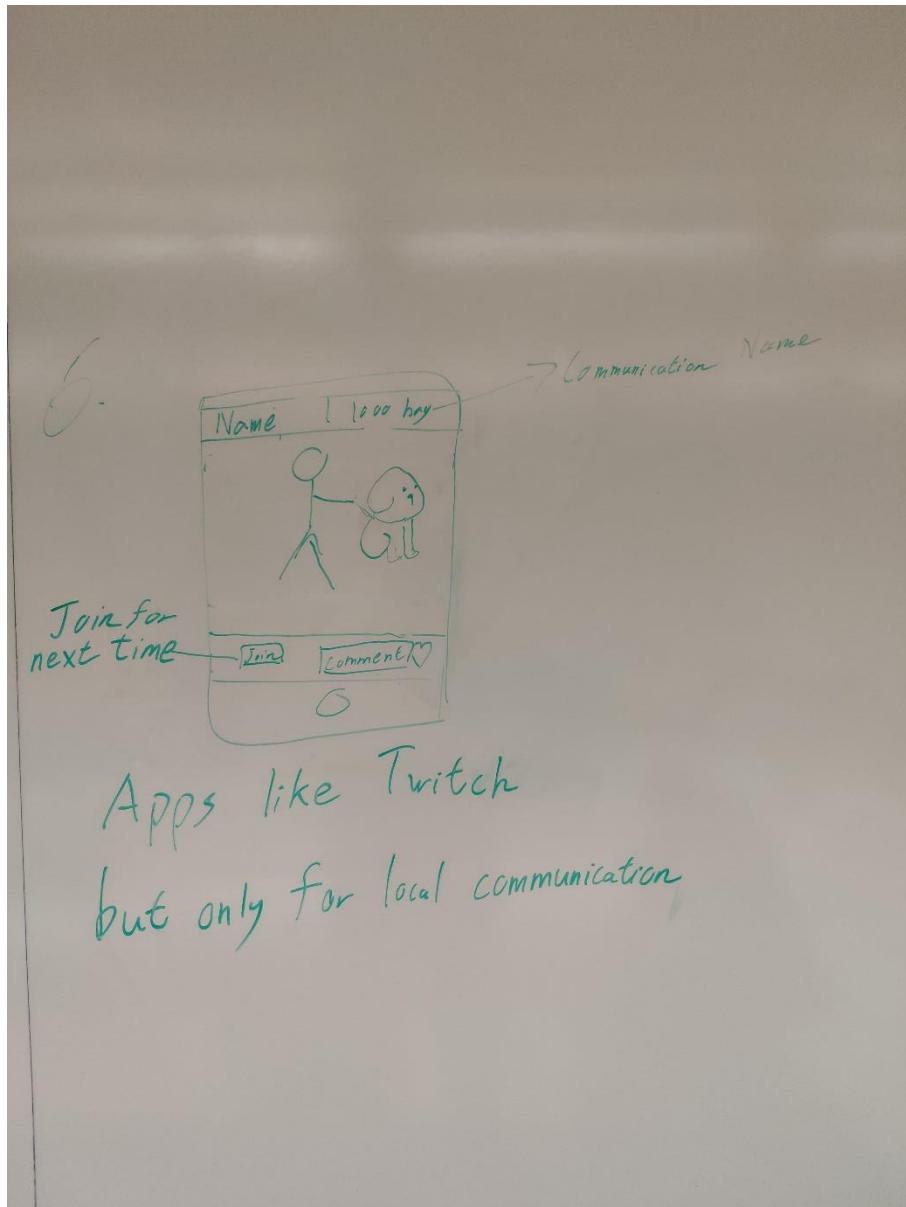
- People may interact with the neighbor only when necessary and not going into further connections, which may result in only weak fabric
- Favor returning is a great idea
- The system is too complex to search for useful information
- Lots of bot actions like advertisements
- Need a lot of sections to represent each neighbourhood because of its small scope

1.2.1.6 Insights we've found from those feedbacks

- We realize that the idea that we want to reduce the large size of a society into small neighborhoods to allow closer and in-depth bounds makes our design difficult. As the provided feedback says, it is really inefficient and useless to have multiple “copies” of the discussion board to divide neighborhoods. It is also hard to define a neighborhood within a text-based system.
- While the discussion board may foster online friendship, it is inevitable that words still keep a sense of distance. It is also heavily language based that may make people feel not as comfortable as using their own language.

1.2.2 Second Alternative Design: Video Blog Application

1.2.2.1 Show a Sketch



1.2.2.2 Description of What's our Design

- This is a short-video-sharing platform for neighbors to upload recorded videos or streaming to share their daily lives in the neighborhood. Users can upload videos to introduce themselves to the community and comment on other people's video that initiates connections with their neighbors.

- We will display videos according to labels/hash tags that make search quick and easy. We would also like to hold competitions to actively engage users.

1.2.2.2 Explanation of How our Design Works

According to our formative study results, even immigrants with a high level of language proficiency feel hard to fully express themselves in English. By video recording what they are currently engaging in and interested in, users can have an easier time to express themselves through performances without necessarily using language while viewers also gain an understanding of the uploader. Ideally, users find commonality in content and started interactions with others with the same interests.

Meanwhile, streaming introduces user's interests to the public. It is also a great way for people to start events and invite people to join with a clear introduction of the content of the event. It also reduces people's nervousness speaking in front of crowds by allowing free contexts.

1.2.2.3 A list of advantages and disadvantages we've found when choosing the final design

Advantages	Disadvantages
Since streamers are presenting in the video, viewers can verify and recognize uploaders in the neighborhood easily to prevent fraud.	Serious privacy issue that might cause crimes (e.g. attacks and stalking) in small neighborhoods.
An easier way to get to know a person(uploader). By watching the videos, the user has shared, viewers gain some understanding of the user's interests in life.	People with same interests may hesitate to participate in if there are already several popular and well-done videos uploaded.
Users feel more in ease to express themselves without having to be in front of crowds or in an uncomfortable environment.	It is time-consuming for users to edit the footage.

The system will be able to integrate a heavily used function.	There is the risk of not getting any response or receiving negative comments that frustrate the uploaders, which deviate from our goal to improve the frequency of communication.
	It also requires official rules on videos and users' comments.

1.2.2.4 Some informal feedback from users

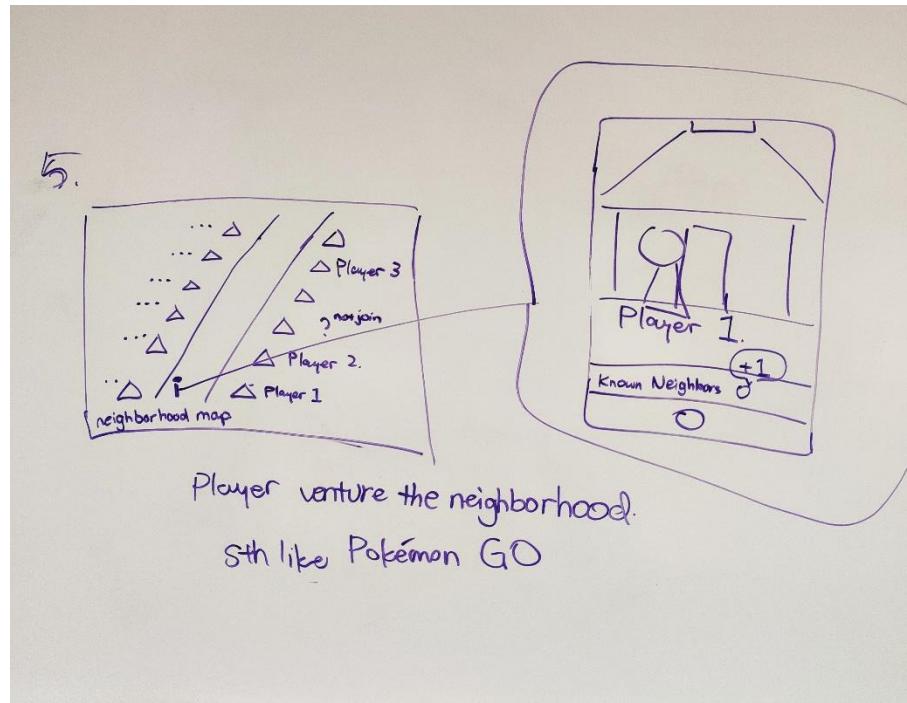
- Live sharing is good for people that are curious to community news.
- Video as a tool to exchange information sounds more genuine and impose a stronger sense of responsibility on users of their words.
- Streaming with interactive feedback is a good way of communicating, but also creates the possibility of cyberbullying.
- Videos may also leak too much privacy information of a careless user who does not intend to do so.

1.2.2.5 Insights we've found from those feedbacks

- There are many video websites out in the world that it is hard for us to make our design distinct from them and attractive to the users.
- This is a relatively new idea that is not popular among the older demographic.
- This idea may not necessarily emphasize on the interaction between immigrants and locals because people may have preferences on seeing videos uploaded by people from their own ethnic group or video about their own cultures, thus not facilitating integration but separation.

1.2.3 Third alternative design: An interaction game

1.2.3.1 Show a sketch



1.2.3.2 Description of what's our design

- This will be a real-world RPG like the adventurous game inspired by Pokemon GO to attract people to explore the neighborhood they live in and using AR technology to initiate a connection with neighbors. People will be identified by their home addresses to be allocated to corresponding neighborhoods. The system will also require background information (immigrants or locals). Initially, starting with a blank dark map, the game promotes people to go outside and lighten up the map to continue their journey in this game. While encountering unknown neighbors on the street, people can use AR technology to identify the location and perform “capture-like” action alike Pokemon catching before they make friends on the system, and hopefully the friendship can be extended to real life. An online chatting system will be added to allow communication. It will also implement an Achievement System to motivate people to know more neighbors and interact

with them. For example, the system rewards a badge to a user that acquaint 5 neighbors in 3 days in the neighborhood.

- The chatting system is available with friends on the system in the neighborhood.
- We add favor exchanging feature into this application as well, where user's friends in needs will have a display on the map on their housing or suite. Users may regularly see and receive help from neighbors within the same neighborhood only.
- An internal reward system is also implemented to give incentive to people for making friends from the counterparty and finishing requests posted by another. User's will have higher rewards for immigrants helping out or making friends with counterparties.
- We will also like to add Invitation System to introduce the app to isolated people. Users that invite them to gain extra reward thus motivate them to do so which creates a positive diffusion.

1.2.3.3 Explanation of how our design works

- The game makes interactions necessary for users to proceed onto the next stage because one has to at least say hi to another before making friends on the app.
- Our formative study results showed people's equivalent preferences on face-to-face interaction and online interaction, this game will emphasize and facilitate both forms.
- Our ideal reward system facilitates interactions between immigrants and locals not forcefully but subtly to encourage more voluntary contacts between the two parties. As one of our background researches indicate, interactions that happened in free time represent the level of closeness in relationships more accurately.
- The favor exchanging feature shall attract community members in all age to use the app because of its efficiency and benefits to people's daily life. It also serves as an ice-breaker now, it does not only serve as the first step of acquisition, but also help people to know more about someone since they are already friends both online and in real life.

1.2.3.4 A list of advantages and disadvantages we've found when choosing the final design

Advantages	Disadvantages
High attractiveness and strong interaction are our goals of the project.	It forces strong requirements on users. People who are not capable of using smartphones may have a hard time to participate in this game.
Being innovative while taking inspiration from the successful interactive application (Pokemon GO) before.	Older people may not be interested in the gaming feature and may not be able to understand how to use those to start a game in order to enjoy the favor exchanging feature later in the game.
It provides intercultural challenges and interests in receiving help and offers the value of returning the favor or giving compensation.	Trespassing and privacy issue could raise some level of concern.
Invitation system ideally maximizes our number of users and creates a large virtual community, which will extend to the actual community gradually in real life.	People may be bothered or interrupted by the invitation system.
Getting help is universally appreciated and useful for integration into a new environment and strengthen social fabrication.	It is hard to come up with rules on the legit type of requests and their details which makes it hard to monitor and regulate user behavior.

1.2.3.5 Some informal feedback from users

- We received feedback that marks insufficient incentive structure of the game.

- It is very difficult to complete address verification, which is the required part of the application. In addition, it is very hard to capture those condominium contexts which move in and out constantly, and also the family members or roommates that living in the same suite or house.
- The quality and legitimacy of the posted request are in questions. Due to the nature of compensating behavior, people may use it as a platform to get hired to complete jobs rather than using it as a socializing tool that deviates from our goal.
- We were advised to add in daily challenge feature to motivate people to go out and meet neighbors.
- The ability to see the user's address or confidential information should be a decision up to the user, i.e. whether the user allows information to be public or friends only or self only.

1.2.3.6 Insights we've found from those feedbacks

- We decided to add in pedometer and achievement to encourage people to go out regularly, which would improve their chance of meeting new people and interact with them. This also promotes a healthy lifestyle.
- We will have a priority system and a monitor system on requests that are posted to reduce the chance of having illegal activities.
- The privacy problem regarding the main issue that people care about thus we should design a privacy system carefully.

1.3 Brief Conclusion

The above three design all fit our goal of the project appropriately, with each of their strengths and weaknesses. Again, we aim to increase the frequency of interactions between neighbors within the same neighborhoods, especially between immigrants and local people.

While the first idea, BBS for favor exchanging, is moderate and practical, it seems too commonplace and is already implemented in all modern BBS application. People may still remain quiet and unwilling to speak up in such environment that really did not help to implement our goal of the

project. On the other hand, the second concept, Vlog, is more novel and encourages people to communicate with each other. But it is vulnerable to the negativity such as cyberbullying. The last design, the interactive game, is ambitious and requires a lot of attention to finalizing details. For example, GPS, google map's API will be used for location verification which is challenging.

2. Paper Prototype of the Current System Design

2.0 Paper Prototype



2.1 Brief Introduction of Our Current Design

In part one, we have illustrated three best design concepts we chose after generating a dozen ideas and sketching experiences. Each of those three different design concepts has their unique advantages and disadvantages. After an intensive group discussion, we decided to choose the mobile game design concept over the other two. From our perspectives, there are some unique benefits in using a cellphone game to promote communications between locals and immigrants in a residential area (neighborhood):

- the cost will be reduced in communications
- high viscosity of game users
- deeper level of interactions
- games are robust platforms to integrate other functions which may be the advantages of our alternative design concepts

We will articulate all the details in our design concepts and discussion of its advantages and disadvantages in the following sections.

2.2 System Designs and Design's Motivations

2.2.1 System Design's Motivation

Based on the results from our previous stage of study - User Needs & Analysis Report, we found that it usually takes years for immigrants to finish integration process and a good portion of immigrants still found hard in having a deeper level of interaction with locals. From our formative study's result, our team discovered that immigrants rarely have frequent and meaningful communications with neighbors. Moreover, interactions with locals could help immigrants better integrate themselves into a diversified society. Therefore, our group decided to design an interactive system, a mobile game app called "One Family", to increase communications between locals and immigrants who are currently living in the same neighborhoods by promoting our users to have more and meaningful interactions between each other through our app.

2.2.2 Major Design Features

The most important three design features in our app are:

- First, for any neighborhood, our app is restricted and exclusively for people who are currently living in this neighborhood.
- Second, not only the gaming system manager can post tasks or organize events, but also our users can post neighborhood-wide tasks or host events.
- Third, we have a reward system to promote interactions between users, especially the interactions between locals and immigrants. Interactions include but not limited to know some unknown neighbors, attend system-posting or other user-posting events, finish system-posting or other user-posting task and refer our game to unregistered neighbors.

2.2.3 Details in Design Features

We will explain the above essential features in detail, especially in the aspects of how our design meets potential users' need.

2.2.3.1 Design Feature One: Design of Restrictions on Neighbourhood

Based on the results from our User Needs & Analysis Report, we restricted our app to be used only in a neighborhood area. Besides the reasons that we mentioned before in 2.1 System Design Motivation. Neighborhood not only helps in establishing a more profound connection but also could bring users a higher level of trustworthy. Those two critical features contribute to enhancing social integration.

However, it's hard to define a neighborhood properly. If our users are living in an apartment or condo, then a neighborhood can be defined as the building that users are living in. For example, COLLEGE PARK NORTH TOWER is a condo on 763 bay street, Toronto. Therefore, it's reasonable to consider all the users who are currently living in this building as residing in the same neighborhood. On the other side, for people who are living in the houses/townhouses, since there won't exist such constraint on defining a neighborhood, we need to come up with a new definition of a neighborhood instead. We first considered using postal code or electoral district to represent neighborhoods. However, this

design may discourage people who are living on/near the boundaries of a postal code or electoral district from communicating with others. For instance, if some of our users living near the boundary, then for others who are living close to them but from another side of the boundary may not be treated as their neighbors in this design with fix-boundary neighborhoods.

To avoid this shortcoming, we decide to use “dynamic neighborhoods” instead. Dynamic neighborhood means that we define a neighborhood as a circle which centered at users’ house with a radius of 1000 meters. In this design feature, we successfully avoided fix-boundary neighborhood’s disadvantage. And our design still fulfills our project goal in promoting communications between locals and immigrants.

2.2.3.2 Design Feature Two: Design of Posting Tasks and Organizing Events

Since neighborhoods may be entirely different from one another, it is unrealistic for the game manager to post customized events/tasks for different neighborhoods. Game manager may only post events or tasks from a high-level perspective. Therefore, we have user-posting events/tasks in addition to further promoting interactions between users. Besides, the freedom for users to post tasks or organize events will contribute to weaving social fabric better, comparing with system-posting tasks/events. When users post “favor for favor” tasks or “money for favor” tasks, they are giving their trust to their neighbors. This kind of tasks will ultimately help in creating a higher level of integration. Therefore, through events and tasks, users become familiar with each other and eventually social fabrics would be enhanced.

For the system-posting tasks/events, those tasks could base on incoming festivals or common interests. For example, Christmas is on December 25th. People usually start to decorate their house from the beginning of December. Before Christmas Eve, our game system can post a task to ask users to upload their decorations for Christmas and vote for the most creative one. The winner will have some virtual rewards which we will talk about in the next design feature. In this example, through a creative competition task, our system helps to promote online communications between neighbors. Another example I would like to make is related to common interests. During summer, our system can organize summer BBQ events. After recurring people who can provide space and people can help, the

system will send this event's invitation to all neighbors. In this example, through helping in organizing a neighborhood-wide event, our system helps to promote face-to-face communications between neighbors.

For user-posting task/events, user-posting events will be very similar to the system-posting events. However, user-posting tasks would be more interesting but less straightforward. There are two significant kinds of user-posting tasks: “favor for favor” tasks and “money for favor” tasks. Favor for favor task won’t involve real money or any kinds of physical rewards. It’s a long existing way for neighbors to help each other. For example, Ben needs to mow grass twice a month. However, one day, Ben needs to go out of town for work. It’s natural for Ben to ask one neighbor helping him mow his land. And Ben will return the favor after he comes back. Another type of user-posting task is “money for favor” task. By its name, it’s a task with payments. For example, Ben may need to walk his dog every day. However, he got injured one day and can’t walk at all. Since it may be quicker to pay for a dog-walking service rather than trading favors, it’s reasonable for Ben to post a “money for favor” task in the app.

As a conclusion, neighbors can post or accept tasks through our app and this function will not only increase communications between different users but also adding extra benefits to attract new users by providing a more effective platform to find help.

2.2.3.3 Design Feature Three: Design of Reward System

In our game, we use a reward system to promote preferred activities. It’s one of our core design features since it could help to shape our users’ behaviors. Our reward system has three different components: Points, Elite Status, and Collections. Points are rewards for any activity through the game such as organizing events, attending events, posting tasks, accepting and finishing tasks and even logged into the system. Users can exchange Points for coupons of local supermarkets. Elite status depends on the overall historical earning of the Points and how long this user has lived in the current neighborhood. So, Elite Status shows how active this user is. And collections such as medals and skins are rewards for some special circumstances or events. For example, if a user helped more than four people

per month in the last year, he/she will be rewarded a "helper medal". When people are looking at this user's profile, they will see this medal which proves that this user is friendly and helpful. Skins are a virtual decoration of users' house in the game. For example, if a user attends a system-posting event such as Halloween party, this user may get a Halloween style skin for his/her virtual house as a reward for attending such events.

After this short introduction of our reward system, I will show some examples of how we shape our users' behavior and thus increasing communications between locals and immigrants.

- Every user needs to indicate whether he/she is immigrant or local when he/she registers an account. So, we can target some activities to increase communications between locals and immigrants. But the status of being immigrants or locals won't be disclosed with other users through the app.
- There will be weekly and monthly system-posting events and system-posting tasks for users. If they try any system-posting activity, they will get special gifts such as skins as their rewards.

[increasing user viscosity]

- There will be daily, weekly and monthly log-in rewards for users. The system will offer extra rewards for continuing log-in.

[increasing user viscosity]

- There are more rewards for event organizers or task-finisher than event attendants or task-poster.

[promoting organize events and finish tasks]

- When a native neighbor finishes immigrants' task, there will be double Points reward for this native neighbor. Vice versa.

[promoting communication between locals and immigrants]

- When immigrants attend an event organized by a native neighbor, there will be double Points reward for those immigrants. Vice versa.

[promoting communication between locals and immigrants]

- When referring our game to a neighbor who lives in the same neighborhood and currently unregistered to our system, referrer will get special rewards such as Collection rewards plus a considerable amount of points.

[increasing user's benefits]

- Users can exchange Points for local supermarkets' coupons.

[increasing user viscosity]

2.2.3.4 Other Design Features

We do have some other less important design features such as:

- Design of Friend Adding Function

We use friend adding functions to promote face to face conversation. In our game system, a user can only add another user through face-to-face friend adding function, which requires both users to press on “make new friend” button at the same time.

- Design of Integrated Chatting Function

An integrated chatting system helps users keep in touch (online interaction) after adding each other as friends.

2.3 How We Pilot Our Instruments and Improve it

After having all the design features done, we made our first paper prototype. To pilot our instrument, we invited two friends to do two pilot tests. Those two tests were only for problems in the aspect of usability. After pilot tests, we've found some flaws in our system design:

- First, we forgot to ask users to provide a login password in register page.
- Second, showing the address of users' and their friends' in the game's home screen may violate their privacy.

To improve the first one, we added a password input box on the page of the register account. To improve the second one, we will let users choose whether their home address is visible to their friends in the setting.

2.4 Advantages and Disadvantages of Our Current Designs

2.4.1 Advantages of Our Current Design

- A mobile app could help reduce costs, both time and money, in communications between locals and immigrants. Reasons are listed below:
 - It's very popular to have a smartphone nowadays.
 - The learning time for our game is limited.
 - Users don't need to pay the extra cost of playing our game.
- Game users usually have high viscosity. We listed everything in detail in section 2.3.4.
- Our design promotes a deeper level of interactions within a neighborhood. Since when people post a task for others, they put their trust in our app. Also, our design of reward system focuses on the interactions between locals and immigrants, which helps enhance weak social fabrics.
- Our game is a robust platform to integrate other functions which may be the advantages of our alternative design concepts. For example, in part 1, it was mentioned that a digital forum could help people who are sharing common interests to hang out together. We integrate the idea into our design as the function of user-posting events.

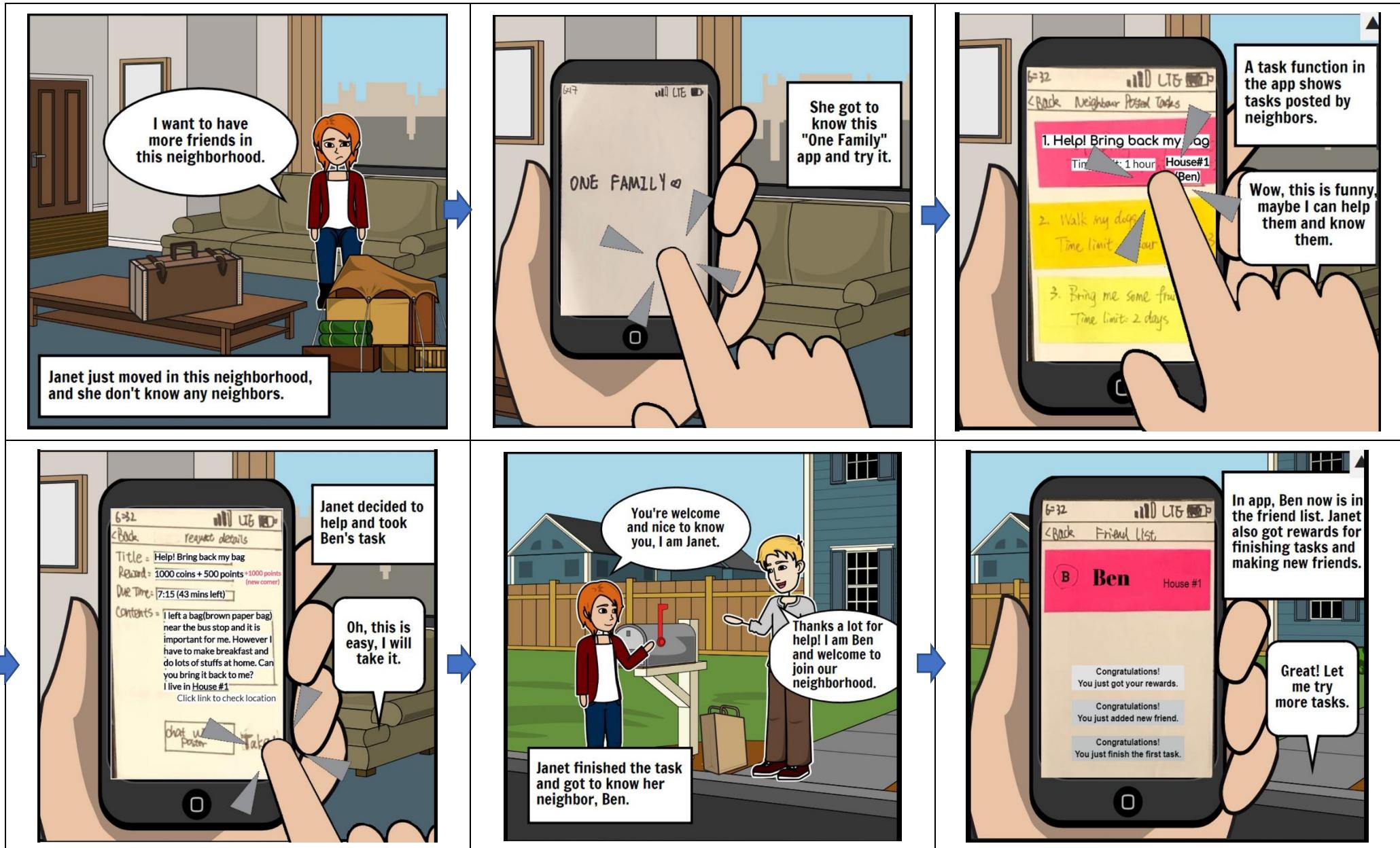
2.4.2 Disadvantages of Our Current Design

- Malicious users may abuse our app. For example, if one of the users accept some tasks on purpose and leave all tasks unfinished, it will harm all task-posters' trust.
- There are privacy concerns since each user's account will associate with their home address. Even though they can set their home address are only visible to their friends in-game. There is still a risk of violating users' privacy.

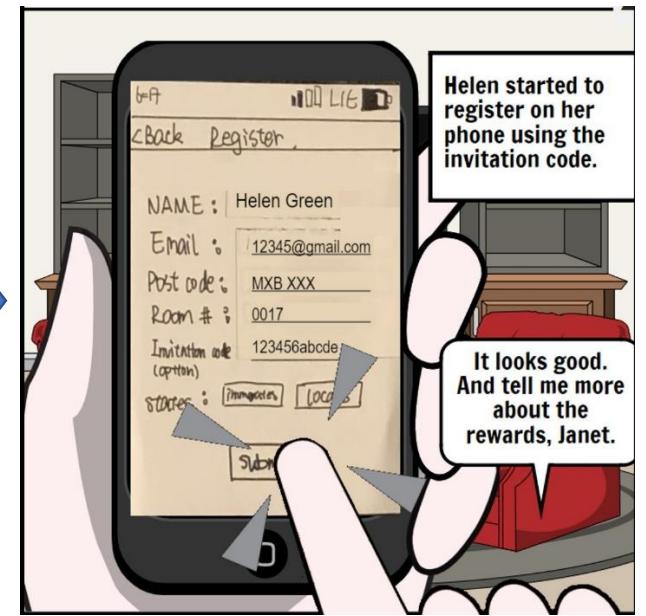
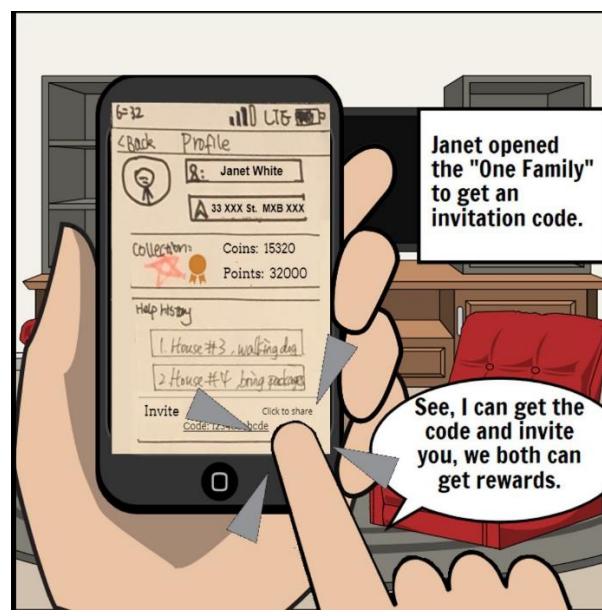
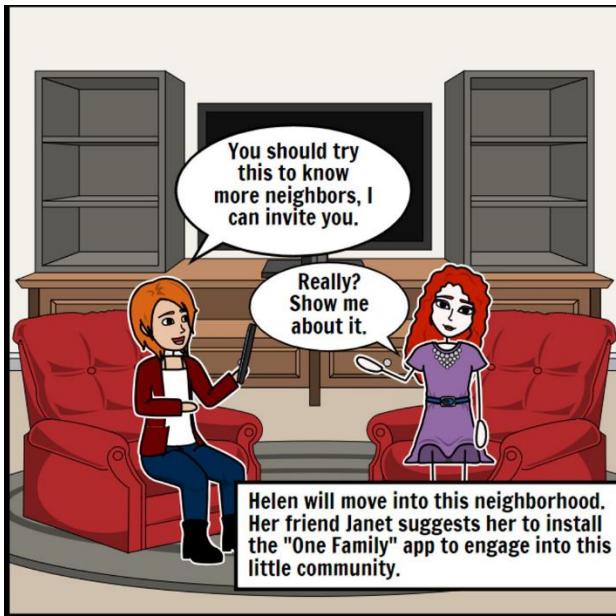
- We have not designed a penalty system yet to prevent abuse of our game. We should create such a system to penalize bad behaviors as the top priority.
- The frequency of using our game may be very low. Unlike news app or chatting app, a game may not be a daily using app.
- The design of our game may be a little unfriendly for the elders since our idea is more straightforward for younger generations.
- People who don't have a smartphone can't get involved.

3. Storyboards of the current system design

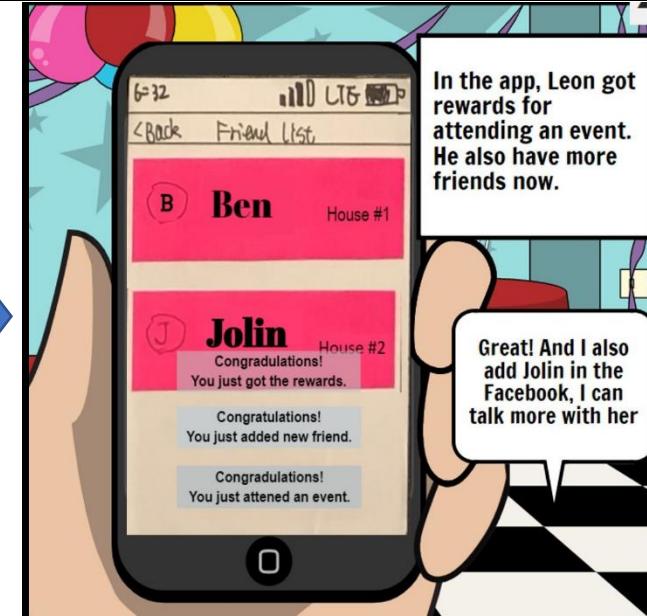
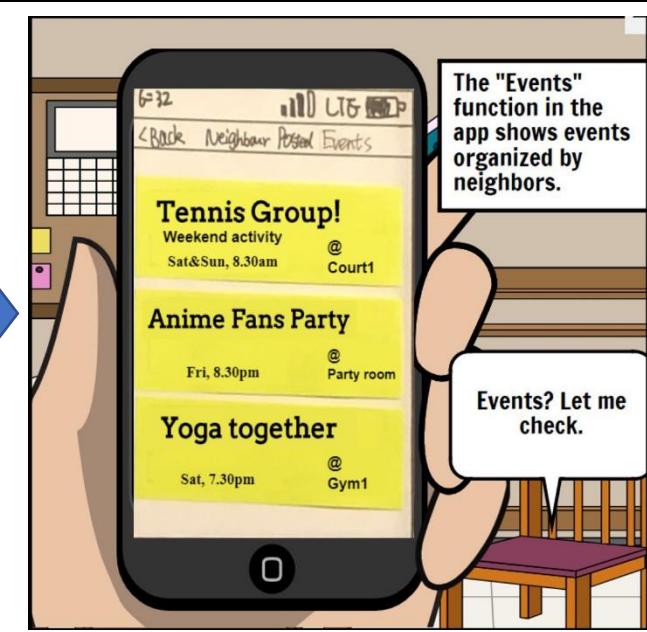
We have multiple functions and we present 5 storyboards to show those functions. As users will make use of different functions at the same time, we show stories in that way. The stories focused more on the functions including “Tasks”, “Events”, “Making Friend” and the rewarding system.



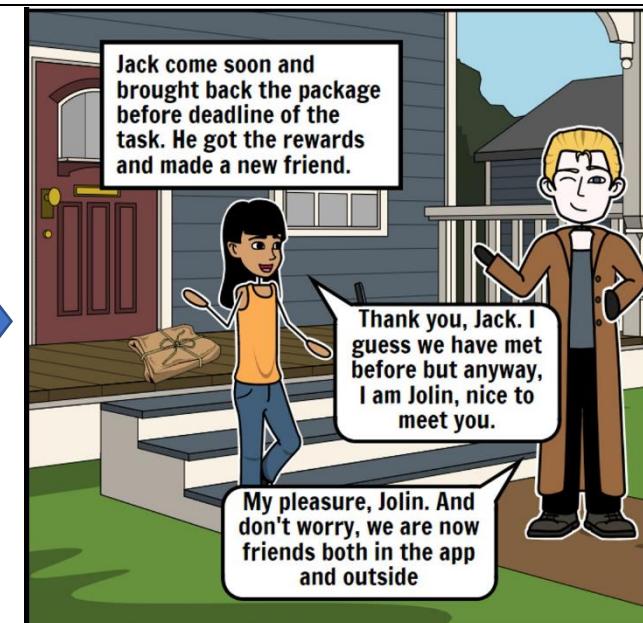
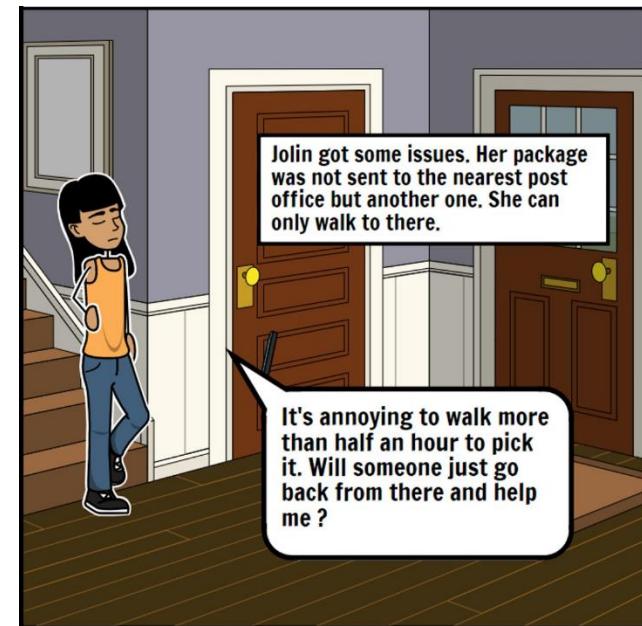
A help hand is always good as a starter of the friendship, especially for new comers. Here we have “Task” function to help them find and take tasks. Also a friend list for better connection. Rewards are given to encourage them.



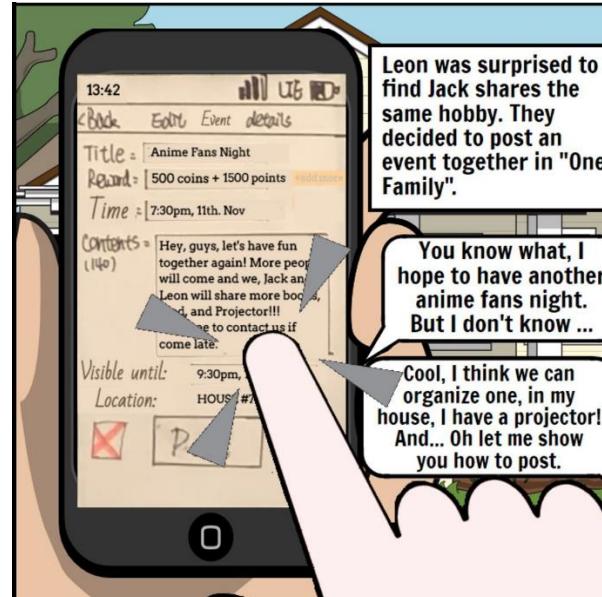
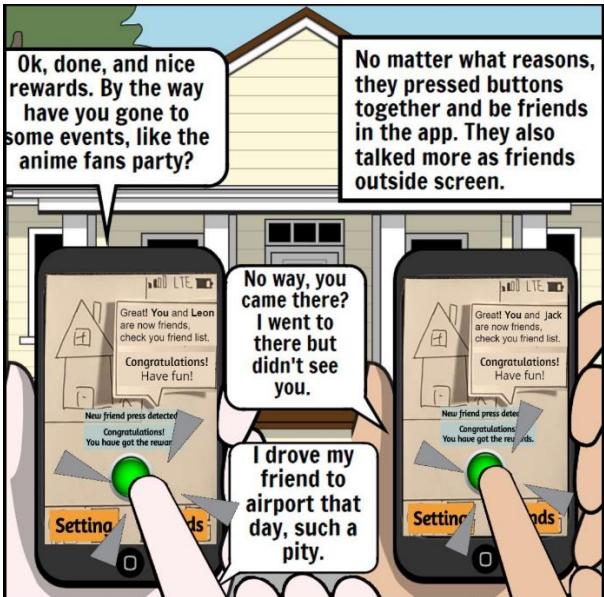
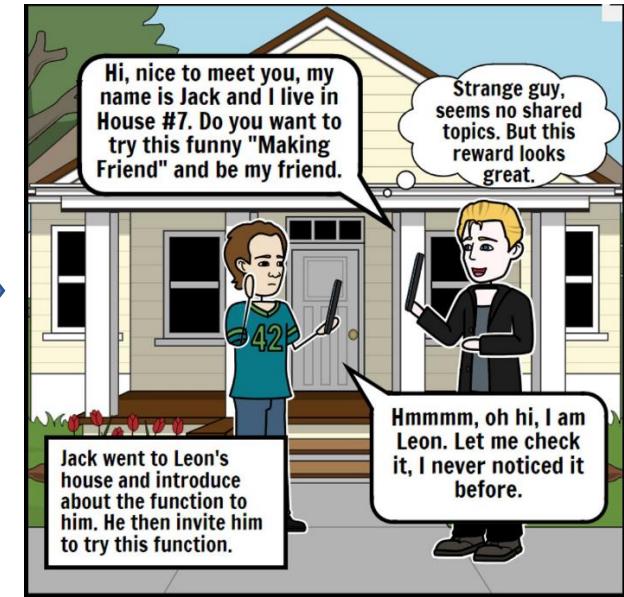
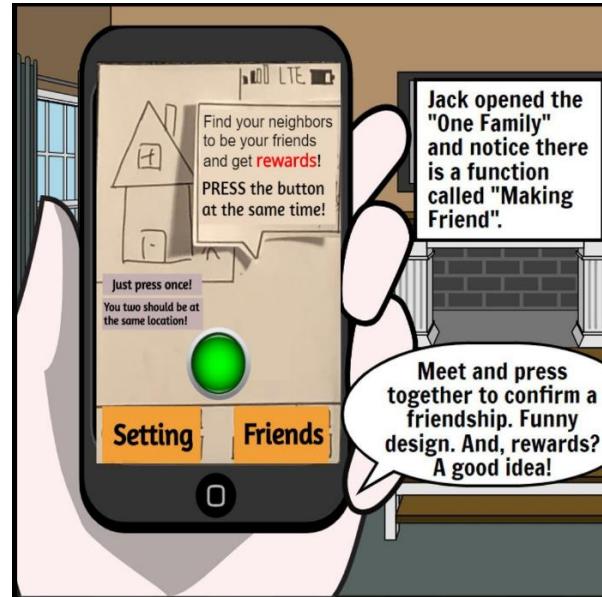
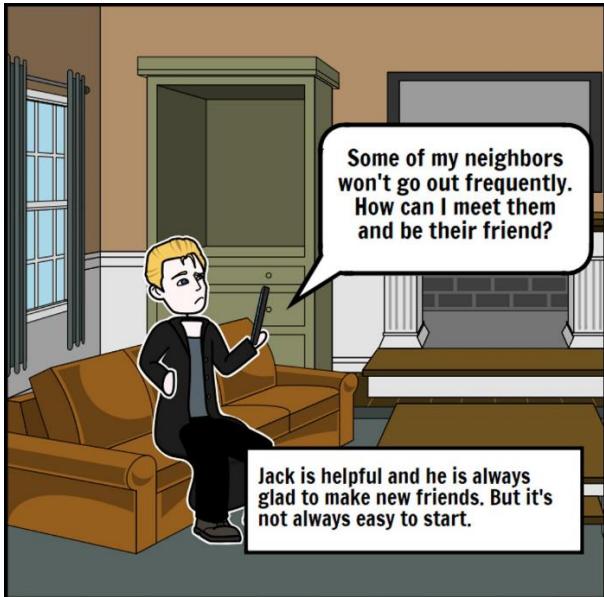
One important way to encourage people to use an app is "Invite" function with "Rewards" given. We here present register, main and self-profile screen and more importantly, what are the rewards and how will invitation steps be like.



As our study result showed, shared interests helped people make more friends. Here we showed the "Event" function and "Friend list" function. Through the events for shared hobbies, people know more neighbors.



Users not only take the tasks but also can post requests if necessary. Above shows that people use the app to find helpers and also make friends with those people.



Direct friendship establishment is hard. So we decided to set interesting methods with rewards. Pressing button together gives more interactions for people. We also show how to organize an event and manage it within "Event" function.

4. Evaluation of the low-fidelity prototype

During our think aloud section, we have conducted 8 participants to run our application on paper prototype. Several ideas below to improve our application are generated based on participants' reactions and thought during evaluation.

4.1 Ideas Related to Design Features

- Try to improve the reward system to make it reasonable.
- More messages or reminders for the interaction steps. (such as instruction)
- Need to solve security issues for the contents of the tasks or events.
- May use alternative methods for the “Making friends” part, such as scanning QR code.
Instead of using the AR system.
- Should include sending pictures/videos in chatting part for not only better communication but also better introductions to tasks or events as this will attract more users to join events which enhance our social fabric.
- We should allow the poster to dismiss current taker with valid reasons (for example, if the previous task taker was unable to finish the task or he offends the task poster) so another people will be able to assign the task and replace him.
- When users went through our app, P1, P2, P3 asked they want to know who is post taker and want to see post taker’s profile, so user can have preview of post taker’s rating and feedback. They suggest we should add the notifications of who accepted the task. It may show a sentence along with the picture of the task poster. (Such as “your task is accepted by ___ (and picture of taker)”)
- Once people accept a task, our system should show him how to get to the location of a task by providing him a direction on the map.
- We need show a mark on the map for functions of events, such as the events you are going to or some events which attracted a lot of neighbors to attend.

- See who is coming to the event list, we should add a function to drag down the list in “My Posted event” which shows attender’s name.
- Add function in order to make available for those attendees of an event leave a message to organizer and show in a message box in “My Posted Event_ Detail page” in order to improve the quality of the future events
- Difference between “tasks” and “events” is not clear, need to be clarified since it might lead to confusion
- P5 suggested reward System should include not only actual money but also virtual reward.
- In “Make friend” page we should add a “make-friend requests”, they need to accept the request before people can become the friends and share their profile, in order to prevent people from been harassed or harmed by his unknown neighbor.
- Two users suggest we should add a button called “common interest”, so people are able to find neighbors with a shared interest.

4.2 Discussion over Methods Used

During studio 5, with 8 experts help, we used the Heuristic Evaluation method in order to improve the quality of features in our design. The reason why we chose the Heuristic Evaluation over Cognitive Walkthrough is:

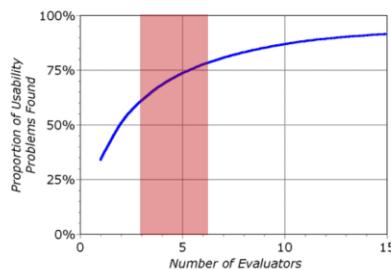
1. The cognitive walkthrough will be helpful to provide feedback for those designs with tasks that require a specific complicated sequence of operation. However, it is not suitable for our design since it has several different features, and there does not exist a sequential relationship between these features.

To be more specific, in our design, for example, we can post a task to seek help from neighbor and post events to provide the opportunity to hang out with people who have shared interests. There is no strictly steps that we have to follow, in order to achieve these functions.

2. The main purpose for the cognitive walkthrough is for experts to evaluate the ease of learning.

Although it somehow fits the purpose for our design (since we want to design an app that easy to handle for a larger the target users)

However, after our team and some users conducted an informal comparison between our design with some commonly used apps, such as “uber”, “snapchat”. We got a conclusion that none of our functions require a more complex step to operate than those main-trend apps. On the other hand, since almost all the features in our app is using an interactive system. Conducting the Heuristic evaluation will provide more useful insights that we need for our design in order to ensure our interfaces are basically competent and detect the potentially problems in our design by analyzing with Jakob Nielsen’s Heuristics.



Theoretically, we will find around 80% of usability problems with 8 evaluators.

4.3 Suggestions from Experts

4.3.1 General Suggestions

- E1 and E5 believe that the “augmented reality” was a good idea to attract user and bring a good experience for users to connect from reality to fictitious. However, this feature does not suit the design closely. Most functions can be achieved without using them.
- E3 thinks we should set up some functions which will only allow the permitted friends to see the exact address in order to prevent people’s address be leaked to the strangers.

- E8 suggests we should give people option to do the translation for the content in our design.

Although some functions might be easy to understand for people who do not speak well English. However, if we can translate some information such as the contents of tasks that other people posted, this will provide them with huge help when using our app.

4.3.2 Suggestions Related to Register & log-in

- E2 indicates that during the register phase, we should add a column for the user to write down the password when they created the account, which was a result of negligence when we design the low-fidelity prototype.
- E7 suggests we should also provide the user an opportunity to upload their profile picture during the registering step, which will be easier for neighbors to recognize each other, makes the personal profile looks more impressive and also perform a better connection between fictitious and reality

4.3.3 Suggestions Related to Features

- After stimulated the feature of “Post tasks”, E2 suggested that since some of the tasks posted by the users might need help from more than one people. On the other hand, since the purpose of our design is to provide people with the opportunity to start a connection with more neighbors. By adding this feature, it will encourage people to meet and cooperate with more of their neighbors when they doing tasks.
- E3 suggests we should improve the reward and add a punish system in our design. Although task posters will use real money to reward people who help them, we still lack the reward (either fictitious or real monetary) to encourage people using our system to make the new friend and hold events.

- And we also need to set up a couple rigid rules in order to punish people who use our system doing illegal activities, or when they do actions that harm the cohesion of the society, for example, pick up a dispute with a neighbor for no reason.
- E6 indicates that in the map of the system, it would be better to display the currently community events that lot of people are attending in a local area. By doing that, it will attract more people to go out of their room and join.
- E7 and E1 suggest we should add a feature to Display community news and notifications.
- E8 indicates when people living in a Condo, it will be hard for the system to display their exact location, so we should revise our map so it can display the number of floors that users' living.
- E3 and E2 think we should improve our chatting system. People should be notified if someone who recently moved to that place, so they are able to greet with each other with our app.

5. Lessons Learned and Implications for Design

We have conducted 8 successful think aloud sections with 8 participants individually to play with our application on paper prototype. Several ideas to improve our application are generated based on participants' reactions and thoughts during evaluation.

5.1 Important Lessons Learned

- During our evaluation, there are four participants—P1, P2, P3, and P6 all had a hard time looking for their own house on the map. As this problem happened in the beginning of each evaluation, we conclude that a quick and clear access to user's own house should be provided in our map. The result is that a home-marker will be added to highlight user's own house on the map.
- Although provided with the explanation of our application before evaluation began, four users – P1, P5, P7, P8 still keep asking on instruction of how to get into one of our functions when using application. A simple result is to add a question mark on each page which shows off description and instruction on our main page.

5.2 Lessons Learned from Login & Register Functions

- P2 asked about what he could do if he forgot his password. Since this is an universal standard, a password recover function should be included in our login page.

5.3 Lessons Learned from Page Design

- Even though we had explained the visual problem about the size of buttons on main page, P2, P4, and P7 still complaint about having too many buttons on the main page during evaluation. As we have post task (organize event) and view task (event) separately now, it comes to the result that we should combine corresponding buttons together.

5.4 Lessons Learned from Design Features

- When users went through our app, P1, P2, P3 asked if they are able to know who takes the request and want to see this person's profile, so they can have preview of post taker's rating and feedback. We decide to provide functions of notification when task is taken and allow Poster to access Post-taker's rating and feedbacks on the post detail page. Based on feedback from other users who encounter some other notifications problems during evaluation, we will be implementing a complete notifications system.
- In evaluation with P3, our user intended to find out who would join the event that he posted, and user would like to be able to view messages left by event participants. Our team have decided that displaying event-participants' list and give participant a choice to leave message to event organizer will be a good result to improve our system.
- P5 had difficulty understanding difference between payment and reward on the ‘task-detail’ page. Our result to fix this is to separate “reward” and “payment” in “task-detail” page and maybe change the name for “reward” to something meaningful that allow simple interpretation.
- P8 wanted to send some event picture/video to provide a better introduction for event participants to attract more users to join events. We also find it useful and expressive that would enhance the event starting function to foster more social interactions. So, we will add an button uploading picture or videos which shows up on detail page.

5.5 Bright spots

- The main page is designed in simplistic style with all functions provided.
- The design is interesting and innovative where users enjoy exploring.
- The use of map provides users with a clear idea of what is happening, and they are able to extend to the real world

Appendices

A1. Who did What

1. Benjamin (Zongmo Yang) (19.5 hours):
 Paper prototype of the current system design. (the rationale behind the different design features)
 4.5 hours
 describe the evaluate method
 1.5 hour
 Evaluation of the low-fidelity prototype, organizing the insights from both 8 experts and 8 users
 7.5 hours
 idea generation
 2 hours
 design alternatives
 4 hours
2. Janet (20 hours)
 ideation
 7h
 design alternatives (sketch, description etc.)
 7h
 write “Lessons learned and implications for design”
 6 hours
3. Chaohan Zhu(20 hours):
 Alternative design ideas generation
 1 hours
 Idea sketches
 1.5 hours
 Make paper prototype of the best system/ prepare for Studio 5
 6.5 hours
 Storyboard of the current system design
 10 hours
 Think aloud evaluation
 2 hours (Two users)
4. Leon (19.5 hours):
 Think aloud with 6 users and organizing the result
 10 hours
 Make paper prototype of the best system/ prepare for Studio 5
 8 hours
 idea genaration
 1.5 hours
5. Derek (20 hours):
 Organizing all meeting; Breaking down and distributed tasks
 Paper prototype of the current system design (advantage,rationale and description)
 10 hours
 idea generation
 7 hours
 Lessons learned and implications for design
 3 hours

A2. Links to Think Aloud

- 1: <https://youtu.be/hdJeyQjXfsM>
- 2: <https://youtu.be/-bOLrvTJvNU>
- 3: https://youtu.be/Lj_zIUDJ4r8
- 4: <https://youtu.be/73B2hAbwf3k>
- 5: <https://youtu.be/d66VokAORFY>
- 6: <https://youtu.be/xMHahqfjl8E>
- 7: <https://youtu.be/eMoof2WqV-0>
- 8: <https://youtu.be/UI5VWg9VKQE>

A3. Protocol and Consent Form

1. **Project Title:** Think Aloud.

2. **Investigators:** Liu, Xueyang
Yang, Zongmo
Zhu, Chaohan
Liang, Zhitong
Du, Zilun

xueyang.liu@mail.utoronto.ca
zongmo.yang@mail.utoronto.ca
mikelq.zhu@mail.utoronto.ca
Zhitong.liang@mail.utoronto.ca
Zilun.du@mail.utoronto.ca

3. **Purpose:** The purpose of our think aloud is to gain understanding into the users' evaluations of our low fidelity prototype. A brief description of our design is a gaming app that interacts the user with the people neighborhood providing with functions like posting requests and starting events.

4. **Process to be followed:** We will briefly explain to participants about the purpose of our evaluation process and ensure that they agree to participate. We will then conduct participants into an evaluation process for about 20 minutes.

5. **Participant selection:** Participants will be chosen from random people.

6. **Data selection:** Data collected from participants will all be analyzed to improve our design.

7. **Relationships:** We will have no relation to participants (randomly selected).

8. **Risk and benefit:** There will be minimal risk to the participants, for example that they feel that they have wasted their time. The only benefit will be to contribute to the education of the investigators. Participants are free to withdraw before or at any time during the questionnaire without the need to give any explanation.

9. **Compensation:** Participants will receive no compensation.

10. **Information sought:** The information to be sought is described in attached protocol.

11. **Confidentiality:** Information and video recording will be kept confidential by the investigators. The only other use will be to include excerpts or copies in the assignment submitted for academic use in the University of Toronto, csc318 Design of Interactive Computational Media. 2018Fall.

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by Lei for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

I agree to participate in this study, the purpose of which is improve interactions between immigrants and locals.

I understand that

- The procedures to be used are usability evaluation.
- I will receive no compensation for my participation.
- I am free to withdraw before or any time during the study without the need to give any explanation.
- All materials and results will be kept confidential, and, in particular, that my name and any identifying or identified information will not be associated with the data.

PARTICIPANT

Name (please print) Yanleng Zhu

Signature Yanleng Zhu

Date Nov. 2nd / 2018

INVESTIGATOR(s)

Name (please print) Zilun Du

Signature Zilun Du

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by Zihun Du for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

I agree to participate in this study, the purpose of which is ^{to} improve interactions between immigrants and locals.

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PARTICIPANT

Name (please print) Yan Wang

Signature ZHD

Date Nov. 21/2018

INVESTIGATOR(s)

Name (please print) Zihun Du

Signature Zihun Du

CONSENT FORM

Consent Form: Think Aloud

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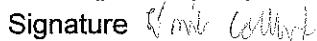
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PARTICIPANT

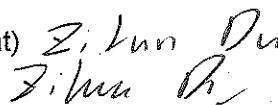
Name (please print) David Collard

Signature 

Date Nov. 3/2018

INVESTIGATOR(s)

Name (please print) Zilun Du

Signature 

CONSENT FORM

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PARTICIPANT

Name (please print) Jackie Chen

Signature Jackie Chen

Date 03/11/2018

INVESTIGATOR(s)

Name (please print) Zilun Du

Signature Zilun Du

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by 7eo for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

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PARTICIPANT

Name (please print) Raymond Chen

Signature ZLun

Date NOV 3rd, 2018

INVESTIGATOR(s)

Name (please print) Zihnn Du

Signature Zihnn Du

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by Leo for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

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I understand that

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- All materials and results will be kept confidential, and, in particular, that my name and any identifying or identified information will not be associated with the data.

PARTICIPANT

Name (please print) Mark De Leon

Signature Mark De Leon

Date Nov 3, 2018

INVESTIGATOR(s)

Name (please print) Zifan Du

Signature Zifan Du

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by Afhalat for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

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PARTICIPANT

Name (please print) *Pu bingxiong Wei*

Signature *魏炳雄*

Date *Nov. 2nd.*

INVESTIGATOR(s)

Name (please print) *Chashan Zhu*

Signature *Chashan Zhu*

CONSENT FORM

Consent Form: Think Aloud

I hereby consent to participate in a evaluation conducted by AlphaCat for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

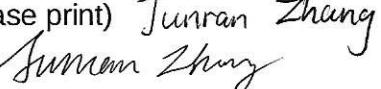
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I understand that

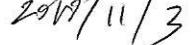
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- All materials and results will be kept confidential, and, in particular, that my name and any identifying or identified information will not be associated with the data.

PARTICIPANT

Name (please print) Junran Zhang

Signature 

Date 29/11/13



INVESTIGATOR(s)

Name (please print) Chaojun Zhu

Signature 