SUMMATIVE EVALUATION REPORT

Group: AlphaCat

CSC318 Assignment 3

Contents

1. High-fidelity Prototype

1.1 Brief Introduction

Our goal of this project is to design a user-centred interactive system that helps to increase the frequency of communications between locals and immigrants who are living in the same neighbourhood. With a higher frequency of communication, the more and stronger social fabrics will be weaved. Indeed, the integration process of immigrants will be sped up.

To meet our goal, we have developed two prototypes: Adobe XD prototype and Android prototype.

Adobe XD prototype is a non-functional prototype but with a higher level of completeness. We finished as many functions as possible in our XD prototype. However, due to the Adobe system's limits, we can only simulate the interactions between users and our system through XD prototype. In other words, all functions in XD are non-functional and just for demonstration.

Android prototype is a functional and installable prototype but limited level of completeness. We tried to develop as many functions as we could before the deadline. However, there are plenty of features are still missing in our android prototype and some of them are even essential functions to our design.

1.2 Instructions of how to Install and Launch our Prototype

Adobe XD Prototype

- XD prototype can be accessed through the browser, and no installations are required. Access Link: https://xd.adobe.com/view/799fbf3d-7919-4cfe-5092-553a75520e76-0fae/

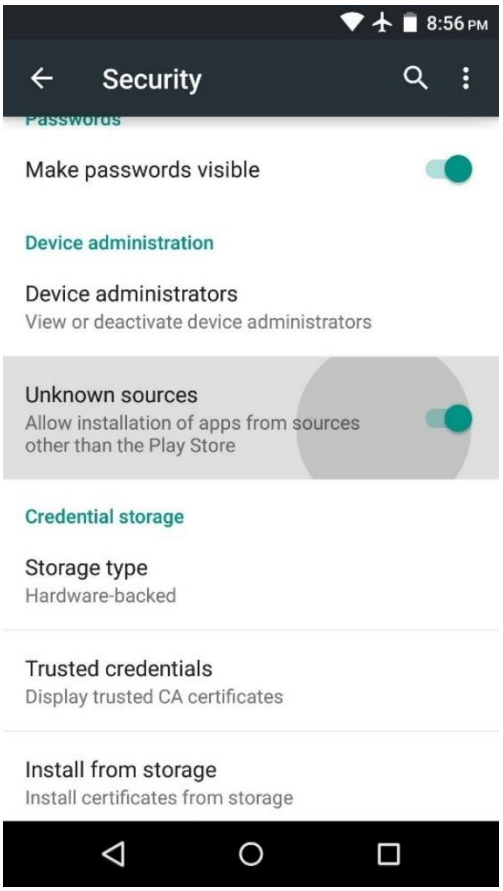
- Just in case if you are interested in our prototype arrangements and interactions' logic, you can find our Adobe XD file on our Github: https://github.com/mikeig/OneFamily-beta/tree/master/XD_UI

Android APK Prototype

- Android prototype will need users to first download the onefamily.apk file from the following link: https://github.com/mikeig/OneFamily-beta/tree/master/Android_app

- Just in case if you are interested in our source code, you can find it on our GitHub: https://github.com/mikeig/OneFamily-beta/tree/master/Android_app

- Install the downloaded apk, if the installation failed, please allow app installation from unknown sources as the graph on the right side.



1.3 How our Prototype Supports our Functional Requirements and Job Stories

Our prototype supports most of the job stories and functional requirements. We will articulate how our prototype work to meet the requirements case by case in the following:

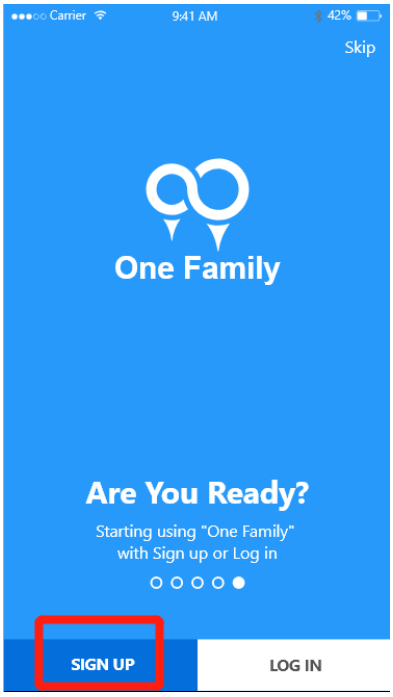
1.3.1 Case One: Job Story One

Description of Job Story One

When I first came to a community with few acquaintances, I wanted to have more interaction with my neighbours so that I could get the necessary assistance from them when needed in the future. Therefore, I hope to acquaint with them by participating in some community activities, like family gatherings, volunteer activities and so on.

How our Prototype Works?

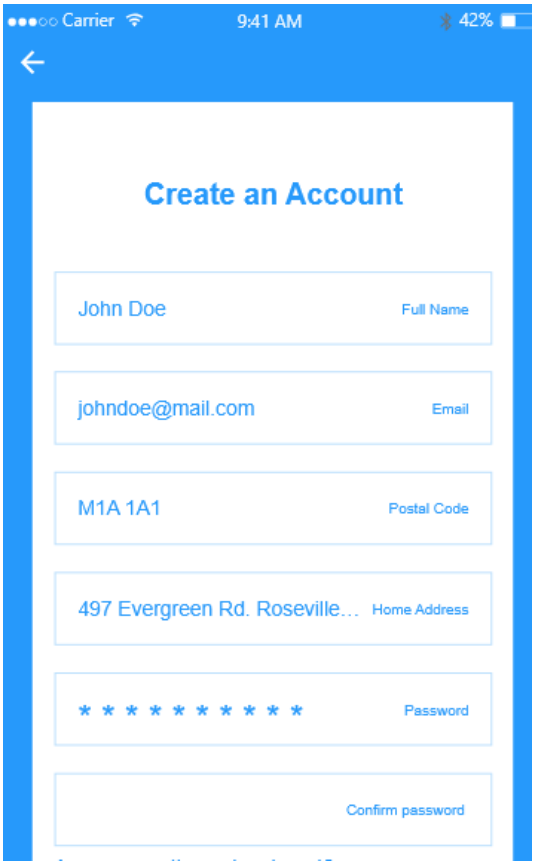
In our prototype, we have built-in functions that allow users to publish, find or attend a community-wide event. All event participants are neighbours to each other. Therefore, our platform is a tool for newcomers to speed up the integration of a neighbourhood.

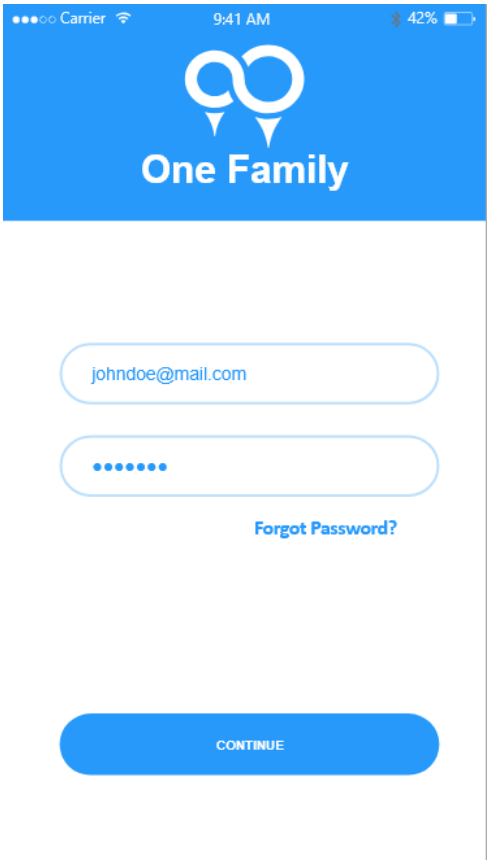


The Walkthrough of our Prototype's Related Functions

Step One

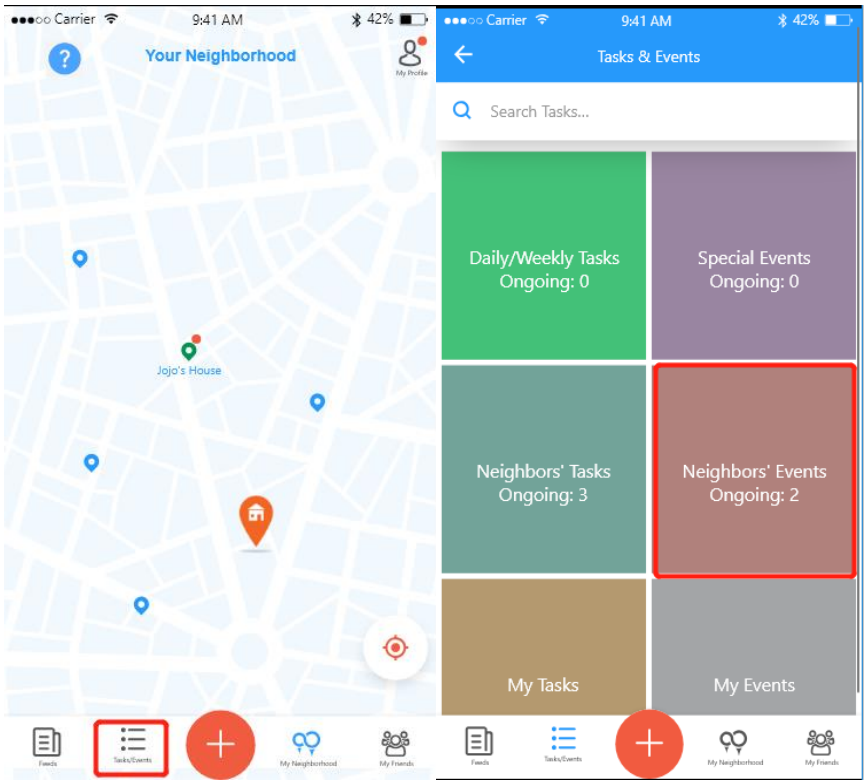
After moving to a new community, newcomer shall download our app, sign up an account and log into our app.



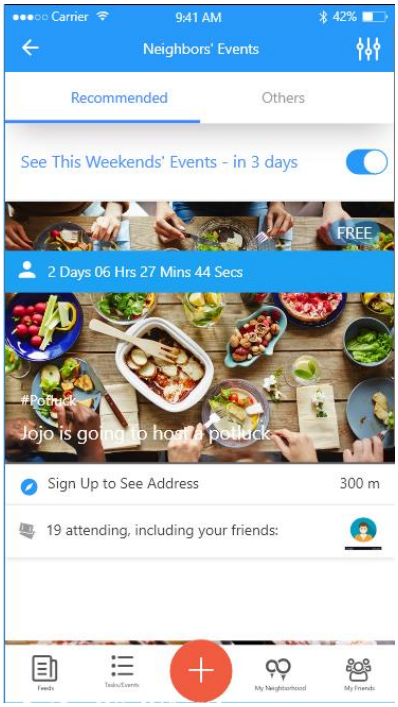


Step Two

Press on the "Tasks/Events" button on the navigation bar, and the newcomer can find current public events immediately.



As we can see in the right picture, one of the neighbours is going to host a potluck at her house this weekend. Our newcomer can sign up for this event, and this is an excellent opportunity for her to know her neighbours better.



1.3.2 Case Two: Job Story Two

Description of Job Story Two

When I met a neighbour in the community, I want to know him/her so that I can go social with them and get some unknown but helpful local news from them or purely exchange information with them. As a result, I need to find a topic to start a conversation with him/her. For example, I may observe the activities he/she is involved in and then approach him/her with related topics, which can help to ice-breaking.

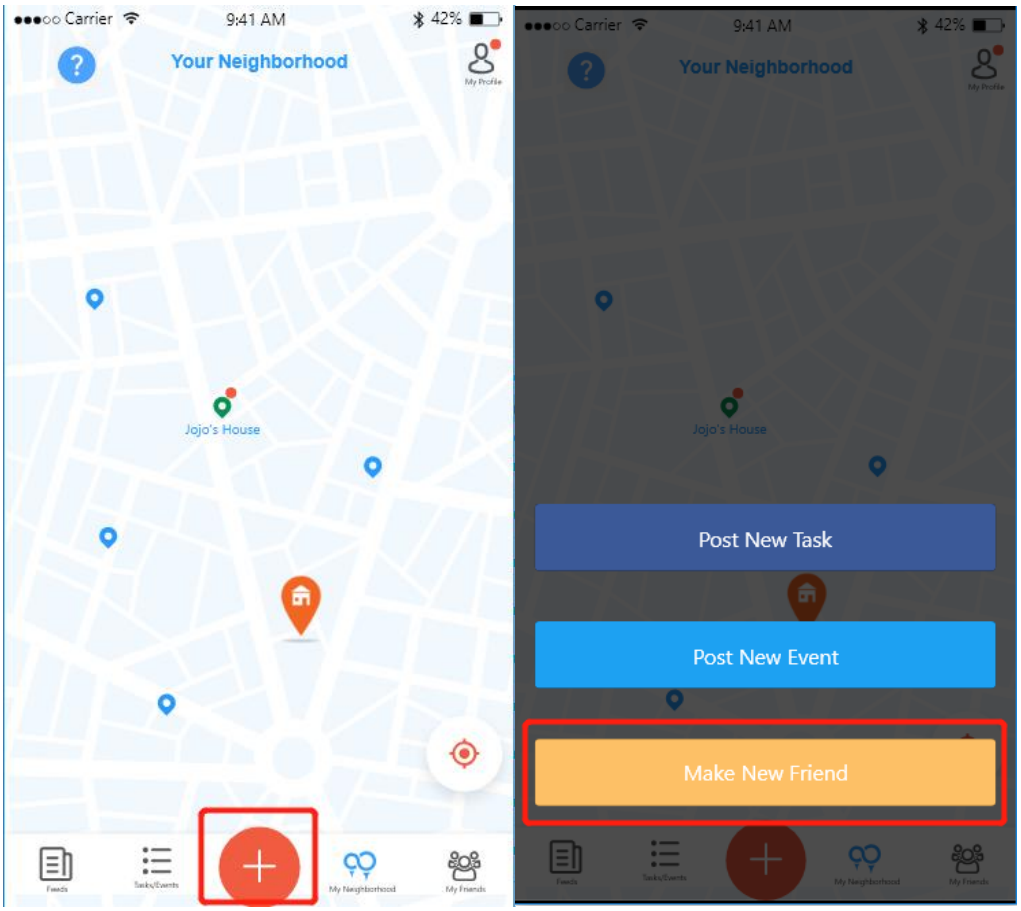
How our Prototype Works?

Job Story Two demonstrates the needs of people in exchanging information. People usually need a topic to start a conversation with strangers. And in our prototype, we provide opportunities for users to know their neighbours better and therefore, lower the barrier in finding a topic to start a conversation. Users are suggested to write some hashtag related to their hobbies, work or anything they would like to share. Therefore, when adding a friend, our user can find a topic to start a conversation immediately.

The Walkthrough of our Prototype's Related Functions

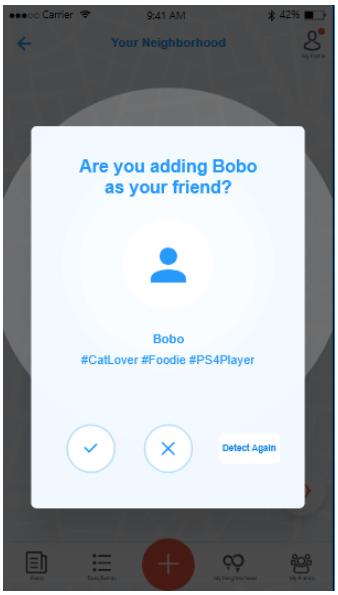
Step One

You and your neighbour could press on adding button at the same time when you would like to add each other as a friend through our app.



Step Two

The system will automatically detect and match two people who are pressing adding button at the same time and location.



We can see in the left picture the hashtags Bob wrote about himself. Those hashtags are all great topics to start a conversation since that is the information Bob would like to share with their neighbours.

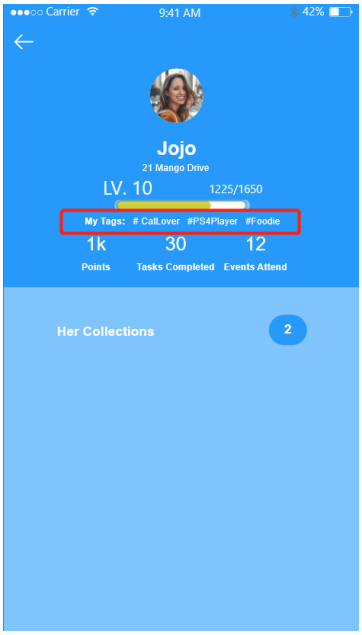
1.3.3 Case Three: Job Story Three

Description of Job Story Three

When I just land in Canada as a new immigrant, I want to develop friendships with more local people who have similar interests, hobbies or even shared activities with me to colour my life experience; therefore, I will try to make more local friends starting with people who have some shared interests or activities with me.

How our Prototype Works?

As we've mentioned in Case Two that people can determine whether their neighbours have common interests through their self-wrote hashtag, on the other hand, we've designed our reward system in a way to encourage interactions between immigrants and local people. When our user registers this application, they will be asked whether they are an immigrant or a local. This information will be confidential to other users. However, when locals are making friends with immigrant users, there will be extra points rewards for both parties. Vice versa. When immigrants post a task for help, if the problem-solver is non-immigrant, extra points will be rewarded for both parties. Vice versa. Our reward system



will give additional point rewards for any meaningful activities if the participants are not only immigrants or locals. In other words, we will use our reward system's design encourage more interactions between locals and immigrants to weave social fabric.

1.3.4 Case Four: Job Story Four

Description of Job Story Four

When I am living in a diversified neighbourhood, I want to live with everyone peacefully, so I learn more about other races' customs and cultures in my community to avoid any controversial behaviours or topics which may cause conflicts.

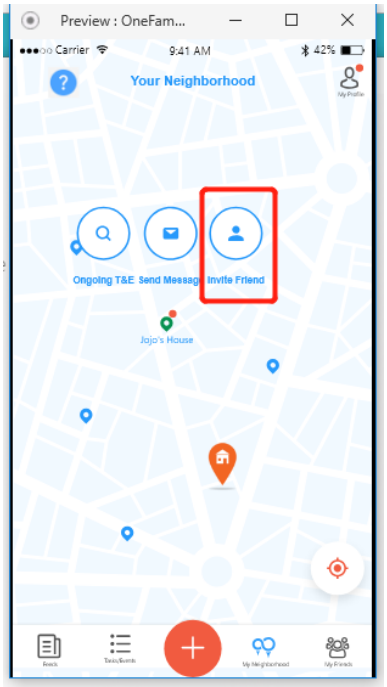
How our Prototype Works?

In general, conflicts are usually caused by misunderstanding based on our background research in User Needs & Analysis Report. Our app dedicates to provide neighbours with more opportunities to better know each other. If people have more communications with other races, they will be imperceptibly influenced by what they saw and heard. Therefore, they can develop a better understanding of each other's culture, customs and religions, which further helps in reducing controversial behaviours and speeches.

1.3.5 Case Five: Job Story Five

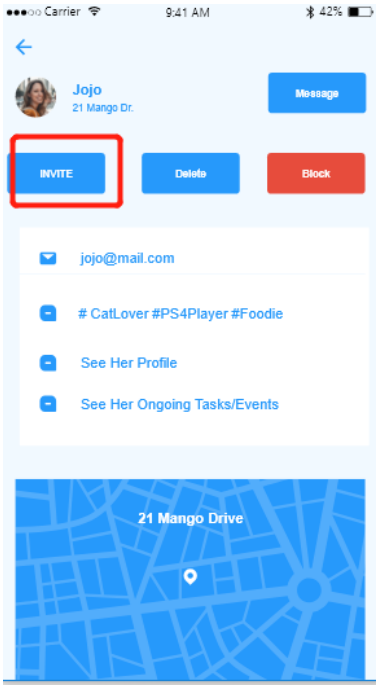
Description of Job Story Five

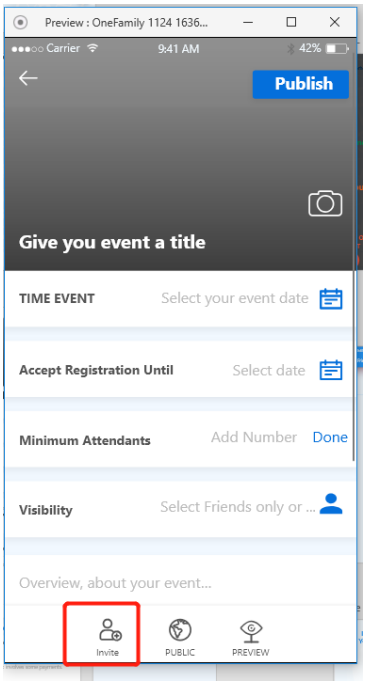
When I succeeded in establishing a long-term relationship with one of my neighbours, I want to have more interactions with him/her by attending more events together, so that we can maintain our relationship and have more opportunity to extend our friend zone by making more common friends from the events.



How our Prototype Works?

Since our app has a built-in "invite" function, our users can conveniently invite their friends who are living in the same neighbourhood to join an event together. So, this function will provide users with an easy way to maintain their friendship with their neighbours by inviting them to attend an event together. Also, if two people attend an event together, and both of them have brought their own friends, it's an excellent opportunity in merging two friend zones into a larger one so that friends of a friend become a direct known people. That's precisely how people networks with each other. While our team didn't invent such feather, we integrated it into our





app and made it easy to use. Besides, as we mentioned above, we can always use system tasks and rewards to encourage users to do so. That is how our prototype works in this job story.

1.3.6 Case Six: Functional Requirement One

Description of Functional Requirement One

Our application should provide more opportunities for people in building connections with their neighbours.

How our Prototype Works?

In Case One, we explained two core functions in our design: tasks and events posting. Those functions will provide more opportunities for people to build connections with others.

1.3.7 Case Seven: Functional Requirement Two

Description of Functional Requirement Two

Our application should provide more opportunities for people to get to know their neighbours who have common interests or hobbies.

How our Prototype Works?

In Case Two, we explained the built-in mechanism to help users find neighbours with common interests in Case Two.

1.3.8 Case Eight: Functional Requirement Three

Description of Functional Requirement Three

Our application should assist both new immigrants and locals to avoid conflicts with their neighbours, especially in a diversified neighbourhood.

How our Prototype Works?

In Case Four, we explained the built-in mechanism to avoid conflicts.

1.3.9 Case Nine: Functional Requirement Four

Description of Functional Requirement Four

Our application should help immigrants and the locals start a conversation with each other.

To be specific, providing them with more opportunities and incentives to get to know each other; therefore, increase the interactions between immigrants and locals.

How our Prototype Works?

We've have demonstrated how our app meets this functional requirement in Case One and Case Three. In Case One, we showed that immigrants could find opportunities to start a conversation with locals through attending open events. In Case Three, we introduced our reward system which will encourage locals and immigrants interacted with each other.

1.3.10 Case Ten: Functional Requirement Five

Description of Functional Requirement Five

Our application should help people maintain relationships with their neighbours by providing a variety of neighbourhood activities. Also, our application should keep users informed encourage them to attend those events.

How our Prototype Works?

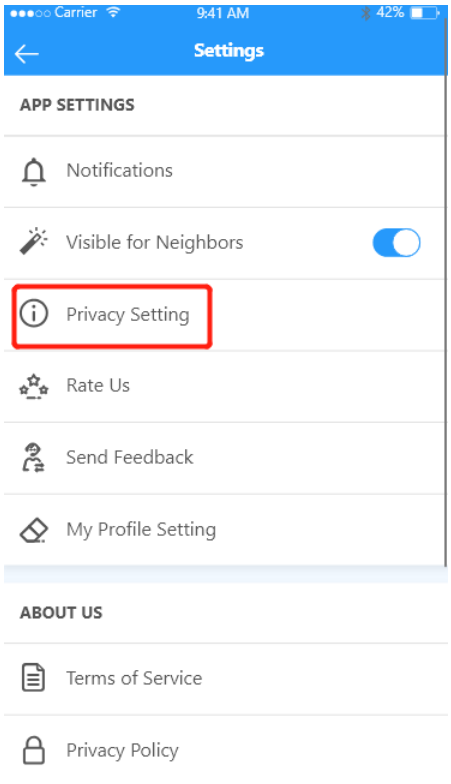
We have demonstrated how our app helps users maintain their friendships with neighbours in Case Five. And we introduced our reward system works to encourage users in Case Three.

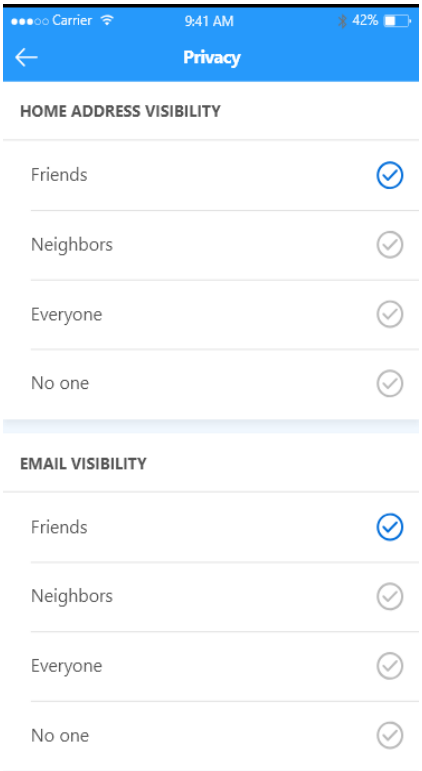
1.4 Effectiveness in addressing all identified issues from Design Alternatives & Initial Evaluation Report

There are some insightful identified issues mentioned in our Design Alternatives & Initial Evaluation Report. We summarized those issues as representative opinions of both experts and potential users first and modified our design to address those issues. The following examples are the most important issues and how we modified our system to deal with it.

1.4.1 Issue One: Privacy Concern

Since our app provides location-based service, users and experts are concern about their privacy. They are afraid that their home address or contact information will be accessed by malicious users since such information are required to sign up an account. Moreover, in our paper prototype, we designed adding friend function as people need to use their cellphone's camera to enter Augmented Reality mode in the front of their prospective friend's house. And that's very inconvenient and awkward for many people.

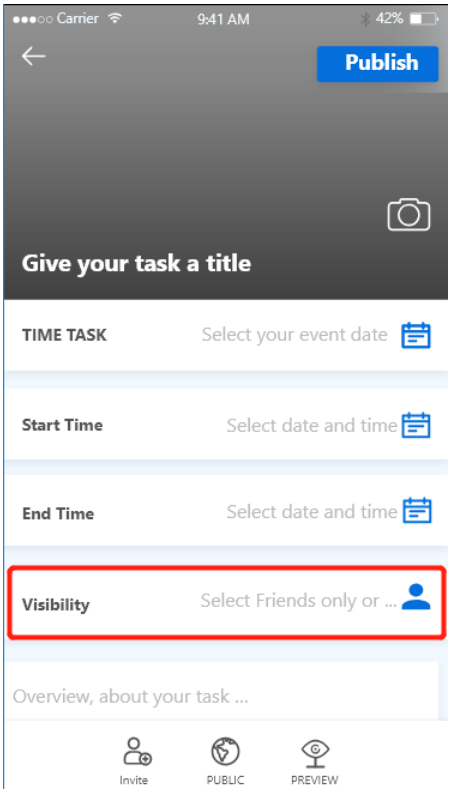


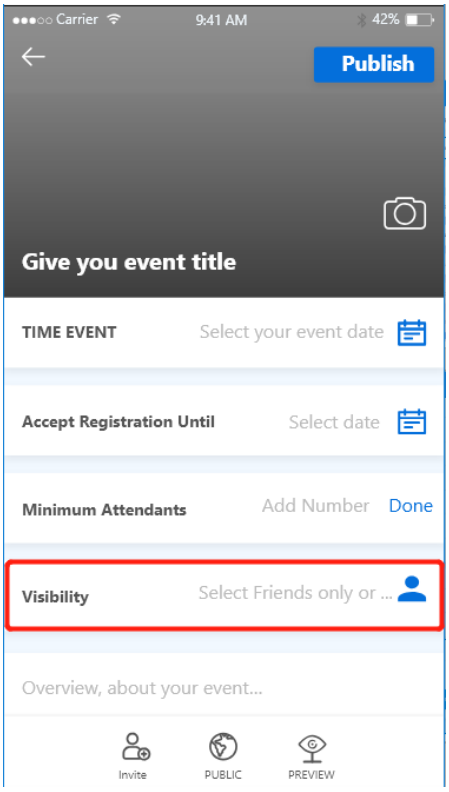


To address this issue, we added separated privacy setting which gives our

users the freedom to choose whichever information they would like to share with others through our app.

In addition, we give users more freedom in choosing people to attend their event or accept their tasks. We can see those options in the following task posting and event posting interface.



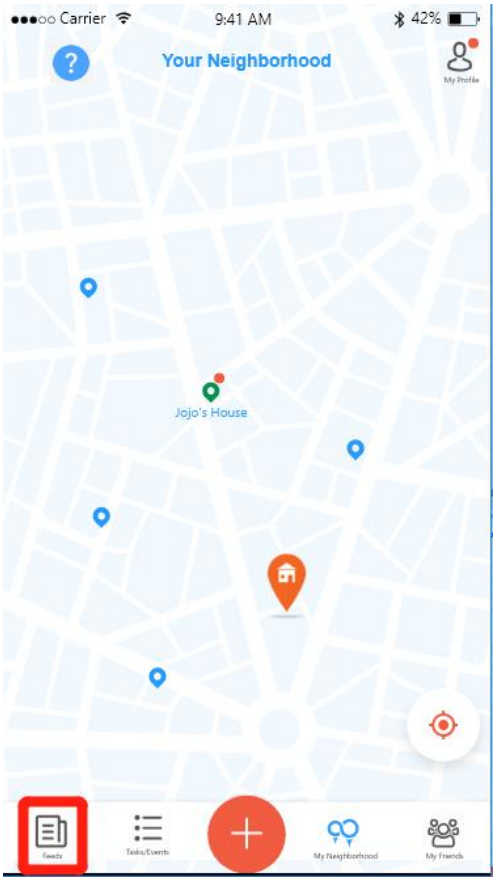


1.4.2 Issue Two: Not attractive

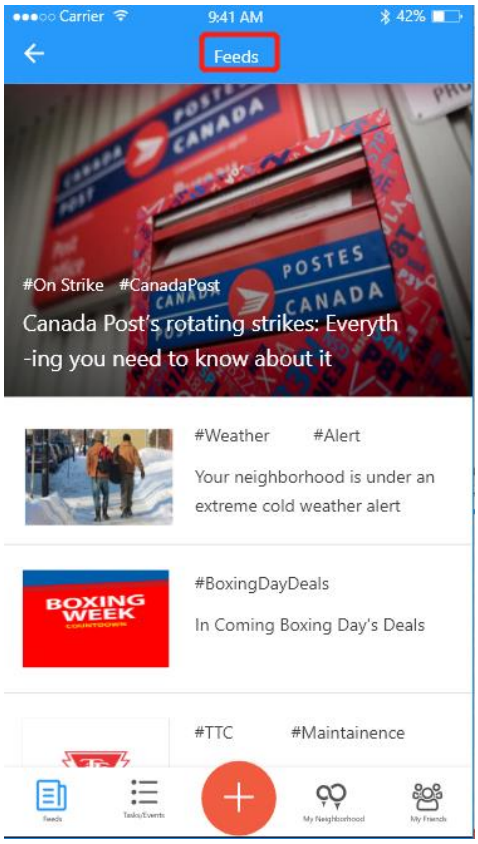
Some users and experts complained that our app might be unattractive since our paper prototype has a limited number of functions such as post/attend a task/event. And people may not need it at all. So, they argued that there is no incentive to use our app frequently.

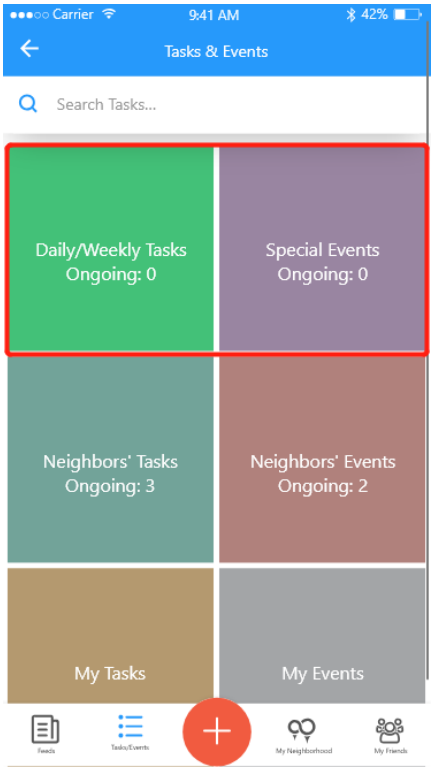
To address this issue, our team added local news/feeds function and improved our system tasks and reward system.

The “feeds” function can promote users to use our app more often since the system will post selective local news, weather alerts and shopping mall deals in this section.



The Daily/Weekly Tasks and Special Events will further promote users to frequently using our app. For example, the system can add a daily “login task” to promote our users to login the app on a daily basis. And when they complete it, they will get points reward. If they login our system on strike like login for ten days without any gap, extra points will be rewarded. Also, we can add other similar system tasks or system events. For example, we can add a weekly “help task”. If users helped at least one neighbour through our app in the current week, besides the regular task-complete reward, the system would send them extra points reward for finishing this weekly task.



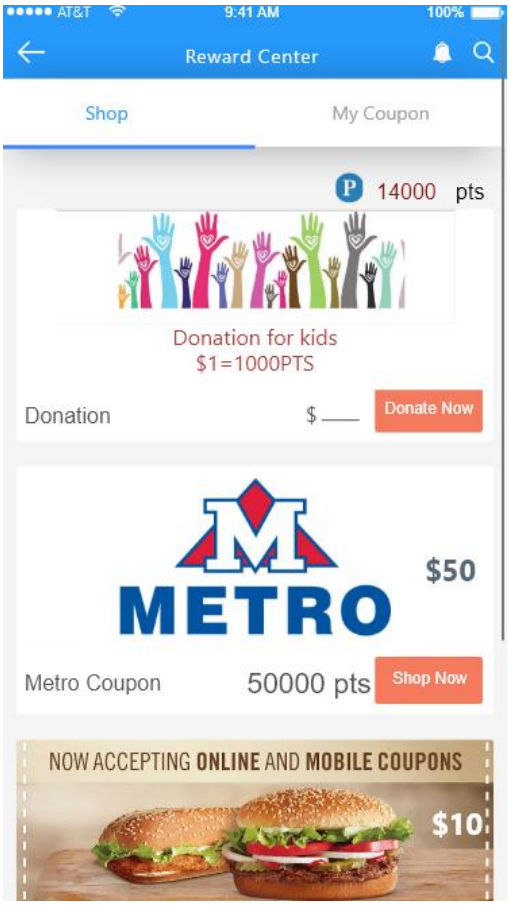


Speak of the system event, our system could post event such as “holiday event” to give users more opportunity to gather together. In a word, we added system task and event function to encourage people to use our app more frequent and go outside to know each other.

Furthermore, we improved our reward system. We added both virtual rewards and monetary rewards. For the virtual rewards, if a user’s historical overall earning of points is large, he/she will have a higher level. The level shows that

how popular, influential and integrity they are in their neighbourhood since points can only be earned through meaningful interactions with other neighbours such as helping others, attending events, organize events etc.

For the monetary reward, points can be exchanged to coupons of local supermarkets or restaurants. That's the monetary incentive for the users.



1.4.3 Issue Three: Abuse Our System for Faking Task/Event

Some users argued that people might post and finish fake tasks just for points rewards since points can exchange coupon. When monetary incentive gets involved, abusing our system may appear.

To address such issue, we set the quota for each user as the following:

1. Users can post tasks at most seven times per week, and at most one of them could be a high-priority (high reward) task.
2. Users can post at most one event per week.
3. Users can accept at most ten tasks per week, at most three of them could be a high-priority (high reward) task.
4. Users can attend at most three events per week.

Since we are limiting the number of tasks one user could post or accept, people will value more about those quotas. If they posted fake tasks for points, when they need help, they might use up their quota already. Besides, our system added a penalty system that if a user posted a fake task, he/she would be penalized that they will have half of the quota for the next four weeks.

2. Research Protocol

1. **Project Title**: Usability Testing

2. **Investigators**: Liu, Xueyang xueyang.liu@mail.utoronto.ca

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3. **Purpose**: The purpose of our test is to learn how well users can learn and use our high-fidelity prototype to achieve their goals. It also tests to see how satisfied users are with that process. It will help us improve the quality of the user's interaction with and perceptions of our interactive computational media.

4. **Process to be followed**: We will briefly explain to the participants about the purpose of our study, explain the consent form to them, and ensure that they sign the consent form. We will then engage the participants in a usability testing session between 15 minutes to 30 minutes. We will also, with their permission, record videos during the session. Upon completion or failure of each task, notetaker will ask questions regarding the task that takes about 10 minutes. Finally, we have them filled out a satisfaction survey based on SUS that will take less than 5 minutes.

5. **Participant selection:** Participants will be chosen randomly across the age group. We will keep the ratio of immigrant and local equivalent if possible. In general, they will be characterized by age and status in Canada.

6. **Relationships**: Our relationship to the participants may be described as follows: recognizing but has no closer relationship or unfamiliar.

7. **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 study without the need to give any explanation.

8. **Consent details**: We will brief the participants about the purpose of the study, and explain the **attached consent form** to them, and ensure that they consent to participate and sign the consent form.

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

10. **Information sought:** The information to be sought is described in the attached survey protocol, recorded videos.

11. **Confidentiality**: Information 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.

2.1 Participants

- We aim to recruit 12 participants in total, as it will detect an average 97% of issues that a larger group would identify.
- Multiple rounds of tests also help reveal more bugs, so we will have two rounds if time allows.
- The first test will be with about eight participants; the second test will be with four participants.
- All participants are identified by their status in Canada. We want to recruit an equal number of immigrants and local people.
- Our participants are likely our friends or acquaintance at University due to accessibility.
- Our Assumptions on participants are that
    - The participant will explore the system, looking for actions to contribute to complete a goal
    - The participant selects actions that seem best for the desired goal
    - The participant interprets response and assesses whether progress had been made toward completing tasks

2.2 Tasks

The testing will be in the form of task completing. The following are the designated tasks.

We first assume a fundamental action of "Log in" will be performed by participants to enter our application once we start the testing. The necessary steps that users will go through are: swipe all tutorial slides or press "skip" on the top right -> sign up -> fill in the form-> continue-> home page.

Tasks asked to perform in the first round are divided into two parts:

- Simple
    - Edit personal profile
    - Recipe: homepage or click on “My neighbourhood”->click on the upright corner (personal profile)->click on the name, address or tags
- Integrated
    - Make a new friend and message him/her
        - Make friend tasks test for any inconvenience immediately after making friends chatting system and confusion in the make friend action
        - Recipe: homepage-> + -> press make a new friend
    - Post an event or task and view the posted event/task
        - Posting actions have them evaluate the detail page to see if anything is missing
        - Viewing Posted item on map and list test for feedback and any inconvenience
        - Recipe: homepage -> + -> post -> detail -> publish
    - Apply filter
        - Take a task and view the accepted request in tasks-> “accepted tasks”, and message the Poster for details
        - Filter actions test for any misleading options
        - Taking task test for feedback from notification system, similar testing as posting tasks to test for consistency
        - Recipe: homepage -> task -> ongoing task/events -> filter on the upright -> apply filter -> take one

- Browse feeds and Take a posted task
    - Test for shortcuts on the navigation bar and feeds page
    - Recipe: homepage -> feeds
- Finish a task and view your rewards.
    - Test understanding on “Point” system and favour returning option
    - Test understanding of our coupon promotion
    - Recipe: home page-> “task & event” tab -> “Accepted task” -> find the task that you want to complete -> press “Complete” -> homepage -> personal profile to view earned Points
- Share invitation code on social media
    - Test for connection to social media
    - Test on the incentive of the rewarding points, is it enough?
    - Recipe: homepage -> top right button (personal profile) -> “Refer a Neighbor”

In the second round, tasks are little different.

- Based on feedback from studio and previous round of testing, we modify our tasks to be the following:
    - 1. Edit personal profile
    - 2. Make a new friend
        - Then interact with your friend
    - 3. Post an event
    - 4. Apply filter
    - 5. Take a task
    - 6. Finish a task.

    - 7. Exchange a coupon in reward center
    - 8. Share invitation code on social media
- Instead of giving explicit instructions of messaging, we decided that it would be better to ask participants to do what they would like as interaction. The actions could be messaging or viewing the friend's profile. We also added a Reward Center in personal profile page for users to exchange coupon using system points.

2.3 Data collection methods

- Usability testing based on efficiency (effectiveness) and satisfaction (after each task)
- We will collect video recordings. Recordings allow us to evaluate the efficiency of our design concepts by comparing the step they went through to our solution. We will also collect a satisfaction questionnaire response that helps us identify the strength and weakness of our application.
- We will measure and analyze accuracy (difference in path compare with our solution based on the design) and satisfaction by subjective measure.
- We would like to see how user's performance deviate from our tempted design solution so that to consider whether or not redesign some pathways and display.
- Notetaker will take notes on each task about the following observations:
    - Will the user know what to do next?
    - How many unnecessary steps do users take?
    - Will user notice the correct action is available (to achieve the sub-goal)?
        - visibility, affordance, constraints applied to controls in the UI
    - Will the user understand the feedback? Is it an appropriate feedback? Does it help the user understand if the step/sub-goal has been successfully completed?

    - How many backsteps or error users take for this task?

- Notetaker will ask questions upon completion or failure of these following tasks:
    - edit
        - What do you think about the profile page?
        - Do you find editing option intuitive?
        - What else do you think can be edited-available as well?
        - What inconvenience do you find in finishing this task?
    - Make friend
        - Do you find this action intuitive?
        - Do you think this provides you with an opportunity for finding neighbours with shared interests?
            - Address functional requirement 2 and 4
        - What do you think about our chatting system?
        - What inconvenience do you find in finishing this task?
    - Posting
        - What do you think about the detail page?
        - Can you tell the difference between task and event?
        - What do you think about the viewing of posted items?
        - What suggestion do you have for our posting system?
        - What inconvenience do you find in finishing this task?
    - Filter
        - Do you know how to apply the filter without instructions?

        - Do you find our system will prevent you from getting into either sensitive topics or activities with neighbours who have a different cultural background?
        - What suggestion do you have for our notification system?
        - What inconvenience do you find in finishing this task?
    - Home screen
        - What do you think about the “feeds” page?
        - Do you know find getting back to home page (i.e. the button on navigation bar) intuitive?
        - How do you feel about having a view of tasks/events on the map?
        - What do you think about “Pay a visit” option?
        - What suggestion do you have for our home page?
        - What inconvenience do you find in finishing this task?
    - Reward
        - What do you think about our favour exchanging/returning option?
        - What do you think about our point system?
        - What inconvenience do you find in finishing this task?
    - Invitation
        - Do you think the system encourages you to invite more friends? Why and why not?
        - What inconvenience do you find in finishing this task?
- Participants are also asked to complete an Overall Satisfaction survey using SUS.

2.4 System Usability Scale

SYSTEM USABILITY SCALE

1. I think that I would like to use this system frequently.

2. I found the system unnecessarily complex.

3. I thought the system was easy to use.

4. I think that I would need the support of a technical person to be able to use this system.

5. I found the various functions in this system were well integrated.

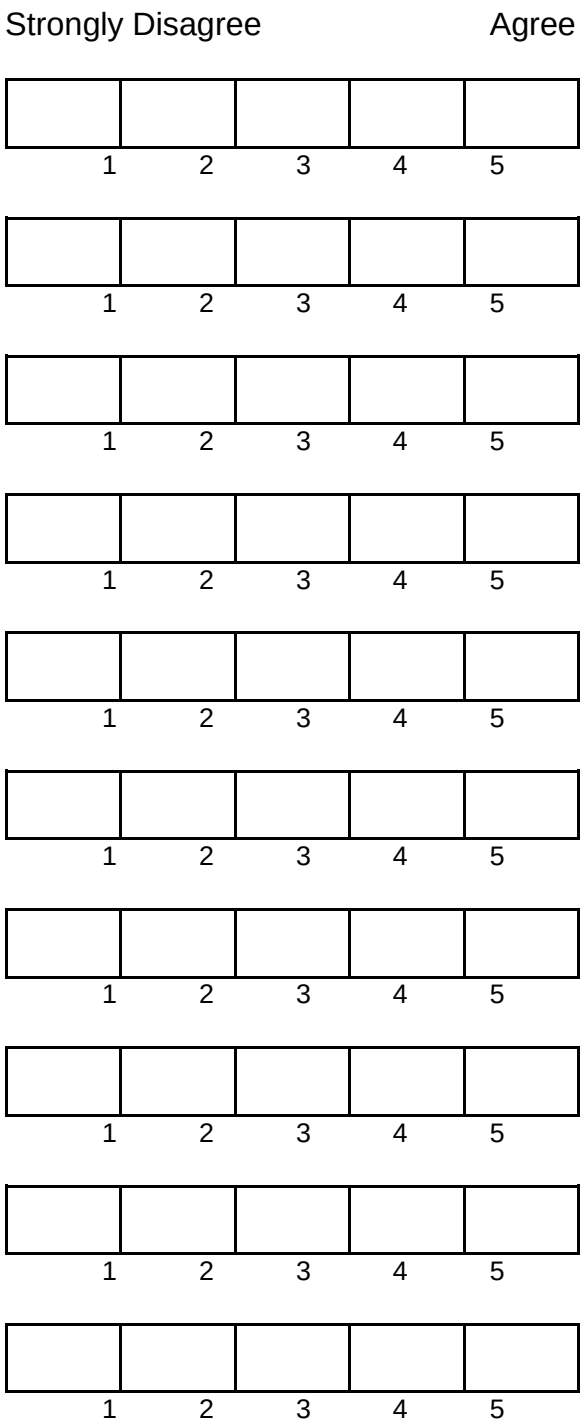
6. I thought there was too much inconsistency in this system.

7. I would imagine that most people would learn to use this system very quickly.

8. I found the system very cumbersome to use.

9. I felt very confident using the system.

10. I needed to learn a lot of things before I could get going with this system



2.5 SUS Criteria

- Accuracy measure is testing on how successful users will be to use our application.
- Subjective measures by SUS
- System usability scale based on
    - Each question is a 5-point scale from strongly disagree to agree strongly.
    - The total score is calculated by summing up (each odd number question answer deducts 1 point) and (5 points minus the total number of even questions' answers) and then times 2.5 to get a score out of 100.
    - The average score of 68 represents our application in good condition.

3. Results of the Study

In our design protocol, we specify the number of participants we want to recruit in the second round should be four. However, due to time constraints and the quality of the testing, we are unable to find four participants but two eventually.

After performing the usability test, we summarized the results from the notetaker's notes, the System Usability Scale's outcomes and answers from follow-up questions.

3.1 Results from Notetaker's Notes

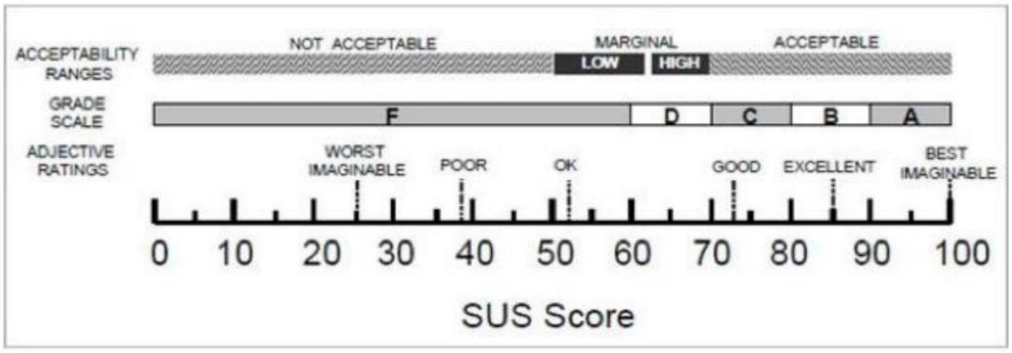
After analyzing the notes from the notetaker, we have the following conclusions in the first round of testing.

- For task 2-7 that are integrated tasks, all of the participants were able to understand how functions in our application work. They can notice the correct action to take immediately. Impressively, in total, it takes them 0 unnecessary step to complete our tasks. Besides, none of the participants had problems in understanding the system's response of involved functions during the test. In a word, our users accomplished task 2-7 without disruptions and could appreciate our app's responses and logic behind the interactions with our system.
- For task 1, which is a task about profile editing, participants seem to be confused with the setting of the profile. The feedback for the profile editing indicate that the function is not well designed; participants spend the unusually long time to figure out the meaning of the feedbacks. It had them undertake on average 2-3 unnecessary steps or backsteps to perform this task. After the testing, two of them claimed that they were

confused during the process; they found the design was complicated. They argued that the steps of editing profile in our model is different from the process in other apps such as Facebook or Wechat. And, some of the button names are confusing which makes them have more error steps or backstep.

3.2 Results from the System Usability Scale

Regarding the System Usability Scale, our design achieved an average of 84 scores in Eight participants' testing, and the median is 86%, the variance is 16%. Comparing with the rating table, this is considered as an "excellent".



"Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale," by A. Bangor, P.T. Kortum, and J.T. Miller, 2009, Journal of Usability Studies, 4(3), 114-123.

After making some change in the task instructions and improving features in our design (optimized the profile-editing function and renamed some buttons), we conducted a second round of testing, and the conclusions are the following:

- We deleted leading elements in the task requirements. (Such as we change the task from "view the posted event on the map" to "view your posted events") Since we have a suspicion that those elements reduced the difficulty of the tasks by providing

participants with some hints. After rewording the task statement, we found some results in the first-round testing contain bias.

- Notetaker noticed that after we removed those leading elements, participants began to take significantly more unnecessary steps on task 2 and task 5 (which are "make a new friend" and "Take a task"). After asking them follow-up questions, participants claimed that some buttons' names are confusing. Also, since they have never used an app where people can see his friends' name being displayed on a map, so at first glance, they did not notice that they could start the conversation by clicking their friend's icon on the map. It made them take an average of 5 unnecessary steps to complete the task.
- The result of SUS in the second round is similar to the first round. This time, our design achieved 84% average, and the median is 90%. Although the revised task statement will make users more difficult to perform the task since they are unacquainted with the design that combines the map and the friends' list, the user's overall experience had been improved due to several revisions and optimization we made after analyzing the limitations from results of first round testing.

Our note taker also asked participants questions during each testing phase in both of two rounds of testing to get the information we are interested in to check if our feature fulfilled our intention.

3.3 Bright Spots and Hot Spots

After analysis of their responses, we identify some bright spots (the type of features that worked well) and hot spots (those that failed to meet our expectation).

What Worked Well

- Hashtag function
- “click and go chat” button
- Countdown on the event and task lists
- Feed tab
- Filter
- Rewarding system
- Invitation code
- Location display of events and tasks

What did not Work Well and Suggestions to us

- Edit of personal profile
- Information provided in a personal profile
- Countdown bar on each task
- Location of the filter
- Options in the filter
- “Pay a visit” button
- Button names
- Cheating on not returning the favour

4. Discussion of the Results and Implications

4.1 Interpretation of the bright spots

After users have a good general view of our system and testing all of the functions, some part of our system won enthusiastic approval from the participants.

- **Hashtag**

  7 out of 12 participants in the first round of our testing mentioned that the Hashtag function (which is a function that allows users to tag themselves with their interest and hobbies) is a handy design. (https://www.youtube.com/watch?v=8T0c_SGgXPQ) Quoting from some participants: “It helps me start the conversation with my new friends…”, “I am able to check the hashtag about their personality or their interest…”, “It provides me with some common topics to break the ice...” This function also serves as a solution for the function requirement #2 that we mentioned in the report of the formative study, "Our application should provide more opportunities for those people that are searching for neighbours with shared activities and common interests."

- **Click and Go Chat Button**

  All participants also claim that they like the "click and chat", they believe it gives them a more natural way to access chat function compare to most of the other communication app. We are glad that our expectation of this function is met. When comparing to traditional messaging where users have to find a name from a friend list and start conversations, our app combined the chatting system with the map. This

design will increase the sense of reality in an online conversation, and the map will also provide warm feelings for the user to think as if they were interacting in person. On the other hand, as users meet more and more neighbours, their map will show all their friends house around them, which also makes people feel like they are living in a community surrounding with their friends. Therefore, it will increase their sense of belonging and security in the new community.

- **Filter System**

  All participants like the "Feed" feature. (https://www.youtube.com/watch?v=CDV343YWzvU) They mentioned that the news provided to them, not only encouraged them to use this app more frequently but also, the feeding news are more related to their lives (since we will provide them with news base on their location, such as "Bay Street is now closed due to weather issue" etc.)

  All participants mentioned that they agree the filter help them to find events easier. It also prevents them from getting into some improper events for them (for example it prevents juveniles from unintentionally joining an alcohol-only party). This feature can also serve as a function to help avoid events with sensitive topics or activities for some neighbours who have a different cultural background. As we expected, it fulfils the functional requirement stated in our previous report: "Our application should assist new immigrants to help them avoid sensitive topics and activities during their connection with people having a different cultural background, thereby reducing conflicts."

For example, new immigrants with a Muslim belief can filter out the events like outdoor barbecue, so they would not be wasting time on browsing unwanted events.

- **Rewarding System**

  All participants apprise that rewarding system will significantly improve neighbours' interaction quantity. They mentioned this feature provides them with a great incentive to start the interaction with the neighbours.

  Once people find a task, he would have an opportunity to choose whether he wants to get paid by the real-money or he wants to have "return-a-favour" option. Participants claim the idea of "return-a-favour" is great since it helps to increase the frequency of interactions within the community — which is exactly the reason we implement this feature. In our function requirement, we want to focus on helping people maintain relationships with their neighbours, by frequently helping one’s neighbours with some daily tasks and allowing them to "return-a-favour" and help one out, the relationship between each other will become closer and closer.

- **Invitation System**

  ALL participants agree that invitation code along with the reward system is an attractive way of inviting more friends and increase the population of our user. When more and more neighbours join our app, the total number of events and tasks in a community will also increase, which will have a positive impact on neighbour's interaction in a local community.

4.2 Interpretations of the limitations and issues

- Limitation in profile editing

  Some details would need to be modified such as providing an opportunity for users to change their profile picture. Although this would not affect the primary function of our application, however, these small details will have an impact on users' fluency of use.

  Therefore, we take into account what they suggested and implement these features after the first round of testing.

- **Limitations in Friends Making**

  Three participants gave us a suggestion to show more information about the friend we added such as their date of birth and their occupation, although it is true that if we know a friend better, we would be able to find more common topics.

  However, after considering the safety and privacy issue, we decide to adopt this suggestion and implement it after we complete a well-established privacy protection system.

  We got a lot of applause for the countdown function of our events; they think it is a well-designed and unique idea. However, some participants are confused with the description of the countdown, such as "Does the counting down means countdown of registration finish or countdown of event beginning?" It is a good question that we didn't expect. However, there is one participant questioned about the meaning of countdown bar on each events' page. (https://www.youtube.com/watch?v=GENCZ5Sgg7Y)

He was confused because he thought the countdown could be either the starting time countdown or ending time countdown of events. He was wondering which kind of countdown we were trying to demonstrate in our app.

Thus, we decide to change the naming of the bar to prevent future confusion.

- **Limitations in Tasks and Filter**

  3 participants claimed that they have trouble with the filter feature when they want to find an event or task. It is an essential tool we need, especially when we have a considerable user's population - if the number of the tasks and events is huge, without some well-designed filter feature, the user might waste a lot of time on finding the events and tasks that they interested.

  One participant suggests that "The filter can be improved by having an option to show what are the popular events around me."

  Therefore, we will be adding a “Recommend” tab to separate events for a clearer view. We also add in options like “location near me” in the filter.

- **Limitation in the Reward System**

  Participants have concerned about users keeping to their words.

  They were also worried if people would take advantage of our rewarding system and fake "tasks" with their friends to earn virtual currencies (such as stores' coupon).

  Therefore, we need to reconsider the feasibility of some features in our rewarding system, and we need to figure out a well-designed reporting system to punish these bad behaviours which might harm the coherence of the community.

- **Limitation in Button Names**

Three participants expressed confusion on our button names. We believe this will significantly impact user experience, so we proposed changes to these problems.

We will rewrite those button names and provide descriptions in our application when users first enter the system.

Despite all changes made to complement user's feedback and critiques, we also want to accomplish the following improvement to enhance our application further.

- We would provide users with an opportunity to search the people who have the same "hashtag" as they do. Since this suggestion coincidently fulfilled our function requirement in the report of formative study "Our application should provide more opportunities for those people that were searching for neighbours with shared activities and common interests." So, we would like to add this feature to our design. Therefore, users will be more comfortable to find neighbours with common topics and start their interaction.
- We will add a report function in our main menu to constrain some of the behaviours that might harm social coherence, for instance breaking one's promises. The user will be able to report other users who were using this app for illegal behaviour or report those who keep distributing zombie messages to his neighbours. When a user has cumulated a specific number of negative reports, some features will become restricted.

  In fact, we have in mind a report and enforcement system that constrain users in such behaviours by suspending their accounts and taking credits from their account such that any further rewards to them will be deducted as a "punishment" to discourage misbehaviour.

5. Critique

After finishing the first round of testing, we found that the users were able to perform their tasks without taking any unnecessary steps. Although we are satisfied with this result, the result is inevitably concerning and questionable. We went through the evaluation questions again, and we conclude our tasks instructions contained some of the leading elements which indirectly taught the user how to perform the tasks. For example, in our evaluation, we asked the participants to "view the posted event on the map". Hence, they may receive the hint that he needs to go to the map menu to check the posted events. Although we removed those leading elements in our tasks list when we conducted the second-round testing, however, this kind of leading questions made results from our first round of study biased and should be interpreted carefully.

We realize the importance of wording in asking questions the high potential of bias that it fosters. Hence, this a reminder to all of us to avoid being leading when interviewing or performing an instructive experiment.

During testing of the first two participants, the notetaker asked the follow-up questions only after they completed all of the tasks. Although this did not cause any severe consequence in our result analysis, however, the notetaker noticed in the later testing, when he asked the follow-up questions once they finish one task, the participants were able to remember and provide much more details about their thoughts on each of our function.

This reminds us that the person who designs the tasks and the person who conducts the testing should be communicative to prevent misunderstanding in actual practice.

Suppose we have more resources and time; we would conduct additional testings. Recently we noticed that there is an App called "Zenly" has a lot of features similar to our design. So, we would use Zenly as the independent variable and invite participants to engage in a comparative study. By

performing this testing, we would be able to identify more bright spots in our app and also, be able to analyze and learn the advantage in Zenly.

Appendix: Who did What

Janet (Zhitong) Liang

- Participated in all Meeting and Discussion – 5 hrs
- Pilot XD Prototype – 3 hrs
- Prepared for Studio 6 – 5 hrs
- Finished Evaluation Protocol – 15 hrs
- Pilot Evaluation Protocol – 2 hrs
- Generated Assignment 3 Report Part Two – 10 hrs

In total: 40 hrs

Benjamin (Zongmo) Yang

- Participated all Meeting and Discussion – 5 hrs
- Prepared for Studio 7 – 5 hrs
- Generated Assignment 3 Report Part Three & Four – 26 hrs

In total: 36 hrs

Mike (Chaohan) Zhu

- Participated in all Meeting and Discussion – 5 hrs
- Developed Android Prototype – 33 hrs

In total: 38 hrs

Leon (Zilun) Du

- Participated all Meeting and Discussion – 5 hrs
- Developed XD Prototype 2nd Draft – 21 hrs
- Finished and Summarize 10 Experiments – 15 hrs

In total: 41 hrs

Derek (Xueyang) Liu

- Organized all Meeting and Discussions
- Distributed Tasks and Tracking Schedules
- Developed XD Prototype 1st Draft – 20 hrs
- Prepared for Studio 6 – 5 hrs
- Generated Assignment 3 Report Part One – 10 hrs
- Finalize Report and Prototype

In total: 35 hrs