Roommate Finder

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ABSTRACT

Finding roommates has been one of the most widely thought out ideas in the start-up world and has many iterations, Airbnb being the largest and the most widely used. The primary hurdle faced during development of such applications are 'user customizability'. This term is a general reference to all the different aspects a user wants in such applications: his/her likes or dislikes, ranging from food and smoking habits to which sports team the person supports. Incorporating so many aspects of a person's life in a single app is a challenge in itself.

1 INTRODUCTION

There are a lot of challenges associated with development a complete application, as mentioned in the abstract. The software developed in the previous iteration creates a solid base to work upon. That said, the user evaluations made by reviewers clearly show a lot of changes need to be incorporated to make this application 'deployment worthy'.

The current iteration of Roommate Finder aims to eliminate the majority of the problems associated with the previous application by removing the bugs, streamlining the functionalities and incorporating new features.

In this iteration, we wish to incorporate many features but the highlight of the application would be Facebook integration. The best place to obtain users interests is Social Media, especially Facebook. Obtaining data from Facebook would help our application to obtain all the information we would need to suggest and matchup potential roommates.

2 USER EVALUATION

We put out a small survey for users and reviewers to assess our application. The results and interpretation of the survey are described in this section. Each subsection denotes the review question and the analysis of the responses associated with it.

2.1 Was the login/signup process quick and easy

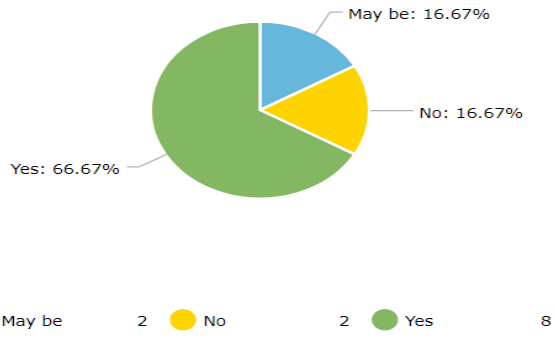

Figure 1: Response Visualization of Question 1

From Figure 1, most of the users didn't face major issue with login/signup feature. Login/signup feature don't require additional work or upgrading.

2.2 Were the attributes used for roommate matching sufficient?

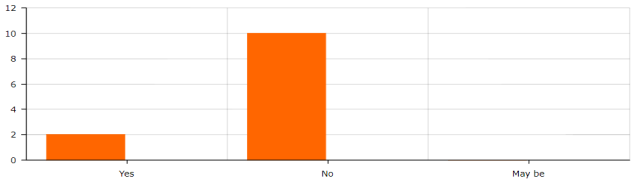

Figure 2: Response Visualization for Question 2

The survey depicts that many people felt the number of attributes based on which roommate can be found is less. This infers that users want more attributes based on which roommate can be found. The users who felt that the attributes are less suggested attributes like clean or not clean, cook or don't cook, have pet or not, would like to split utilities or not, single sharing or double sharing, etc.

2.3 Was the process to search for a roommate quick?

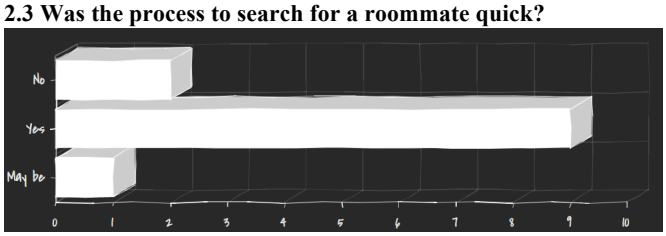

Figure 3: Response Visualization for Question 3

We can infer that users were comfortable with the process of searching the roommate but just needs additional attributes for searching the roommate. But the suggestions of users who responded no were thoughtful to take into consideration because the present system doesn't auto-filter the results based on the selection of the attributes but can be incorporated to make user experience better.

2.4 Was the search doing flexible match or was doing a perfect match with attributes

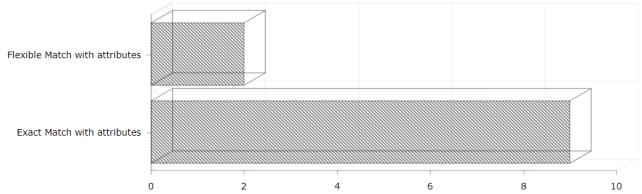

Figure 4: Response Visualization for Question 4

The figure above suggests that the search returns roommates which exactly match the attributes and was not flexible enough with it. Based on this response, the upgradation in the search which can be incorporated in the next version of the application is assigning weights to attributes which user can provide and the results will be displayed based on the weights.

4.5 What would you like us to improve in search process

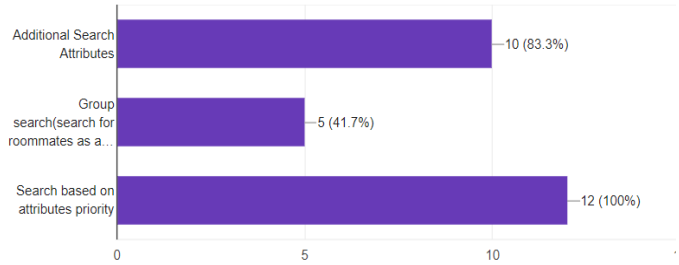

Figure 5: Response Visualization for Question 5

We can get the inference from the above diagram that the users want the search to be upgraded where they can set the priority of the attributes. The additional attribute which a user wanted are clean or not clean, cook or don't cook, have pet or not, would like to split utilities or not, single sharing or double sharing, etc for deciding the roommate.

4.6 Which of the following additional features would you want to be incorporated

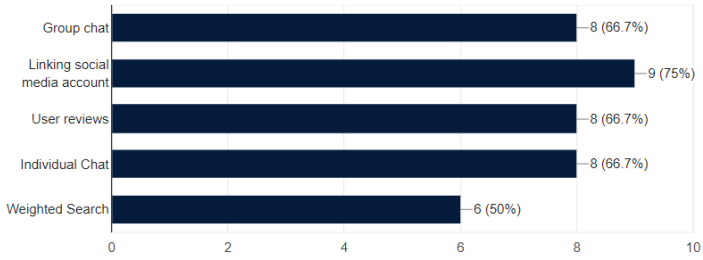

Figure 6: Response Visualization for Question 6

The above graph can give an inference that most of the users want the chat feature where they can chat with the roommates they find a match with, review system where a user can give review and also read the review for the user given by other roommates. Additional functionality which was most required by the user was to link social media account of the user to get the posts made by the user in the groups for finding the roommate.

3. METHODOLOGY

We would be developing the extension features using agile methodology. The reasons for using agile method are:

- We already have a basic deployable version of software already ready to deploy (Courtesy Group A).
- The features we will developing are not dependent on each other, hence we build them independent of one another.
- Developing the software in iterations will give us deployable software with an additional functionality after each iteration.
- In case, we get busy with something else we would at any time be able to present the product of previous iteration.

3.1 Why and how we decided features of each iteration

- The answer to How lies in the user survey conducted by us. Primary reason why we choose to decide the feature priority through survey was that the primary users of application are the students who have faced the issues in past and hence they would better know of how the system should be.
- Once we got what features the users want we noted down the complexity of each of these features and they zeroed down to the features in each iteration.

Table 1 describes how each agile iteration features were evaluated.

Features	User Demand	Complexity	Estimated Development Time	Integration Time	Overall Requirement Rank
Search Efficiency	-	--	--	+	4
Weighted Search	+	+	++	-	3
Chat Application	+	+	-	++	3
User Review	++	_	+	++	2
Using FB to retrieve request	++	++	++	+	1

Table 1: Agile Iterations

3.2 Iteration 1

The reasons for including the above-mentioned features in single iteration are:

- All of them are neither too complex nor too easy to implement and we won't have any iteration where there is too much work or where there is very little to do.
- All of these functionalities are related to improvement in existing platform and hence that should be of higher priority than adding additional functionalities.
- The team has a plan on how to get these functionalities done quickly.
- The functionalities are attainable given shorter span of time.

3.3 Iteration 2

The reasons for keeping these two features in second iteration are as follows:

- Balancing the work throughout iteration.
- These are additional features and hence without them also application would work perfectly fine and there won't be any hindrance in user experience.
- High complexity because we would get Posts through Facebook but we would need to apply Natural Language Processing to identify roommate search request and attributes of request posters.

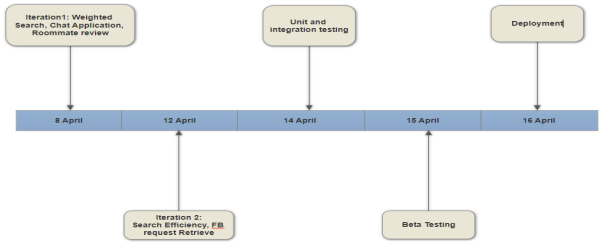

Figure 7: Development Timeline

4 FEATURE ENHANCEMENTS

4.1 Chats

4.1.1 Reasons for incorporating Chats

- Two users who would like to know more about each other before finally zeroing down to stay together.
- Users shouldn't need to reveal their personal info such as mobile number or email to talk to each other through external before they decide to live together.

4.1.2 Problems associated with Chats

- Privacy issues in sharing personal details because any existing communication platform requires sharing of email or phone number.

4.1.3 Complexities associated with Chats

- Once two people have formed a group we need to maintain the chat info to allow all of them to chat on single page.
- Large storage space, which would require more efficient algorithms to handle transactions on vast amount of da
- Real time delivery of message

4.2 Facebook Integration

4.2.1 Reasons for incorporating Facebook Integration

- Largest social networking platform with over 2.2 Billion active monthly users.
- Could get a lot of information about users which otherwise they may not reveal. (Primary reason for this application is compatibility and hence our sole aim is user satisfaction
- There might be users who may not be aware of platform and hence may use Facebook as platform for searching.

4.2.2 Problems associated with Facebook Integration

- Facebook has vast audience and everything may or may not be relevant to all.
- Targeted audience.

4.2.3 Complexities associated with Facebook Integration

- Searching for posts related to a University community.
- Classifying posts based on their purpose.
- Some posts may be from users who might be not using the platform. So, collecting information and asking them to join the platform might be a serious task.

4.3 Adding flexibility to preferences

The existing Roommate Finder project has laid out a well-defined page for preference settings. In this 'Set Preferences' page it takes into consideration monthly budget, location preference, dietary habits covering vegetarian/non-vegetarian option, smoking habits asking whether user is a smoker or non-smoker, alcoholic habits asking whether user is alcoholic or Non-alcoholic, room sharing preferences, earliest moving date and latest moving date. One of the key issues we found with the existing above-mentioned preference list is that many of the preferences are non-flexible and binary in nature (such as dietary habits, smoking habits and alcoholic habits) which may reduce the scope of potential roommates matching.

Through our survey and in person meeting both during and before taking up this project we found out that at least for some preferences such as dietary habits, smoking habits and alcoholic habits, students (the main user group of this project) as well as people in general are very much flexible. [2] They sort out some arrangements pertaining the above habits in their own manner. For example, some vegetarian roommates are fine with their other roommate to bring non-vegetarian food to home rather than cooking non-vegetarian food, flexible with smoking outside house rather than smoking in house and similarly having alcohol only on some specific days of week or on certain occasions. Hence, as stated earlier, students are pretty flexible with such requirements. Thus, we are thinking of providing more options than just binary options such as; 'Vegetarian', 'Non-vegetarian' and 'flexible with both'. Providing this option of 'flexible with both' would increase the scope of mapping to a great extent and improve the existing system which just works on binary mapping. We can add other options such as; 'Vegetarian', 'Non-vegetarian' and 'Prefer only vegetarian cooking but roommate can bring cooked Non-vegetarian food from outside' and/or other such similar options.

4.4 Weighted and/or percentage based search

The parameters on which the system shows the result of potential roommates are as stated below; monthly budget, location preference, dietary habits, smoking habits, alcoholic habits, room sharing preferences, earliest moving date and latest moving date. And the search method as used by the current application is based on the direct one to one mapping. So, of 8 mapping parameters you only see the result of the potential roommates who match exactly to your 8 parameters. Such kind of direct mapping causes problem because consider a worst-case scenario in which there might be zero search results that maps completely to your 8 parameters but there might be abundant people who might map on maybe 6 or 7 of your parameters. Thus, we recommend using percentage based mapping rather than the current one to one mapping. That is, if some user maps to all your parameters than that comes with 100 percent mapping, if they map to 7 of 8 parameters then it results in 88 percent mapping. Thus, as a part of our recommendation we would be showing the search results in the decrease order of mapping percentage as per the scheme mentioned above.

On an alternative side, we would also be looking to provide weighted search. What it means is that the user can give weight to the above preferences (say in range from 0 to 1 with increments of 0.1) indicating the importance of mapping that parameter. So, if user gives weight 1 to 'latest moving date' it would mean that he/she does not at all want to see search results that are past this moving date. Similarly, if user allocates the weight of 0 to smoking habits that means that user is fine with both smoking and non-smoking partner and does not have any such preference. This, option of assigning weights would enable user to define what matters most to them and what least which in turn would enables us to provide appropriate search results. This idea of weighted preference is still in its nascent stage and at first we would start with percentage based mapping and given the amount of time left we would try to implement weightage based mapping.

4.5 Group Search

The existing platform provides search for individual roommates. That is, at maximum this platform would enable to get a pair of roommates. Actually, several apartments both in on and off campus housing provide the facility of sharing an apartment with about 3 to 5 people. Hence, there might be the case that a group of 2 members are looking for other 2 members. For such cases, this application does not provide group search of roommates. Hence, after forming a group of 2 roommates through this application they either have to search on individual basis for other members or resort to other mediums such as WhatsApp or Facebook to search and pair with other members. To overcome this shortcoming, we are recommending 'Group Search' option. In this option, the already paired up members who look forward to being roommates can form their own group and can mention the number of additional members they require. Then if the user selects the 'Group Search' option then it will show the above such formed groups providing information such as the group preferences, existing number of roommates in the group and the maximum number of roommates the group is looking to have. Hence, this option would not only allow user to start their map for searching individual roommates but this option would enable them to search for all the members that could be potentials roommates in a group for 3-5 people in a single apartment.

4.6 Past roommate review

For students living in off-campus housing the lease for a given apartment is generally for 1 academic year. Some roommates

renew the lease for same apartment whereas others change the apartment and search for new roommates. Hence, they again have to go through the same process of finding other roommates and potentially use our application for the same. Considering this situation, we are looking forward to adding 'Past Roommate Review' functionality by which the recently separated roommates can post review about living with each other on our portal. This would enable the new user to get to know more about their potential future roommate. Though this functionality is very useful and informative we still have to figure out whether to incorporate only positive reviews or negatives too, do the reviews need to be verified by the concerned roommate before being posted on their profile and other such questions. Hence, even though it requires a lot of clarification and may as well turn up as future scope, we have mentioned it over here to reflect the use of such functionality in paring roommates.

5 CONCLUSIONS

Based on the user survey, it can be inferred that the current application requires more functionalities like integration of social media account, weighted search for flexibility with attributes, chat feature and user reviews which helps users make a decision whether to stay with the person or not. Thus, from the user survey of previous application by 12 students, this additional feature can add a big enhancement to the current version of the system and can attract many users. Thus, after adding this features to the current version will able to help NCSU community find best roommates of whom they can be proud of.

REFERENCES

[1] RoommateWorkshop:https://www.niu.edu/mptss/_pdf/roommate-workshop.pdf