"NUShare" - a central web-portal for Northeastern students

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Abstract— **New students enrolled at northeastern university have many queries related to housing and feedback on different courses. They don't have a centralized platform where such queries are answered.**

NUShare is an online portal designed for the students at Northeastern University to connect with other students on campus and help to ease their study-life. It is a customized form of social media with features that enable students to have easy access to multiple resources in a quick, organized and efficient manner. The two main features we propose and implement here are Book-Share (for sharing books between students) and Housing Reviews (reviews about housing locality nearby university campus)

Keywords: Book-Share, Housing Reviews, Centralized Portal, Northeastern University, NEU, Husky

I. INTRODUCTION

The myNEU portal was launched in 2002 as a centralized location to provide one stop for collaboration and transactions. [1] In past years, we noticed that this portal for Northeastern University is missing some useful features that could be provided in order to help students further. NUShare has two main features that were implemented, that is, Book-Share and Housing Reviews.

Book-Share is a resource that the user can use to rent textbooks from other students studying in Northeastern, in case it is unavailable in the library or too expensive to be brought online. One can also post books to share to help fellow students and to make it more cost efficient.

Housing Reviews provides honest reviews about various apartments and neighborhoods near Northeastern University that the students can refer while renting out apartments. Most of the online content about housing reviews are fake and not up-to-date on other housing websites. This platform helps new students to get housing reviews from their seniors or other students from Northeastern University. We collected user informa- tion through distributing pre-surveys which helped us get a constructive feedback to build our system. We also analyzed qualitative data obtained from the questionnaire given to the users.

II. DESIGN

There are two main functionalities that were built, which are Book-share and Housing Reviews.

Book-share can be used to rent textbooks from other students studying in Northeastern, in case it is unavailable in the library or too expensive to be brought online. One can post books to share to help fellow students and to make it cost efficient. Housing Reviews provides reviews about various apartments and neighborhoods near Northeastern University that the students can refer while renting out apartments.

We applied Fitts' law [2] for our front-end design to improve time efficiency for accessing the resources, so that users can point and choose to the relevant options present on the portal. We also used Gestalt's principles [3] to group the "similar" buttons together so the user can recognize the functionalities and there is no hurdle in using them, we maintained "proximity" of the available options presented to the user and applied the "law of common region" to group the relatable items on the portal together. This reduces the mental stress on the user and they can accomplish the required task in an efficient manner.
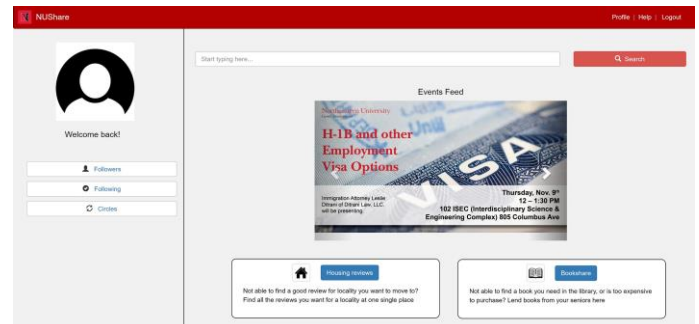

Fig. 1: NUShare home page layout displays the Event Feed, Book-Share and Housing Reviews functionalities

The homepage for NUShare consists of an events feed which displays all the latest events being conducted on the NU campus. The left side bar of the homepage consists of various links for user profile, users' followers, other users the user is following and their respective circles. The homepage also consists of a search bar on top of the page which can be used to search for relevant information the user needs as a student. The homepage contains links that lead the user to the Book-Share and Housing Reviews page. This can be seen in the Figure (1) above.

Moving on to Housing Reviews page, it contains all the latest reviews that other students have posted about various locations and neighborhoods. The left side bar in the housing reviews page consists of basic information about the page and a few quick links for the user which shows if anyone in

their circle has posted any housing review. The user can also upload their own review about a location using the write a review button on top of the page.

The Book-Share page displays the latest book uploads by the users. The user can check its availability and information about the user and contact them. The user can also upload a book to lend to others and can also search for a book using our search feature which is located at the top of the page. the left side bar consists of certain basic information about the page and a few quick links for the users which shows if anyone from their circle has uploaded any book for lending.

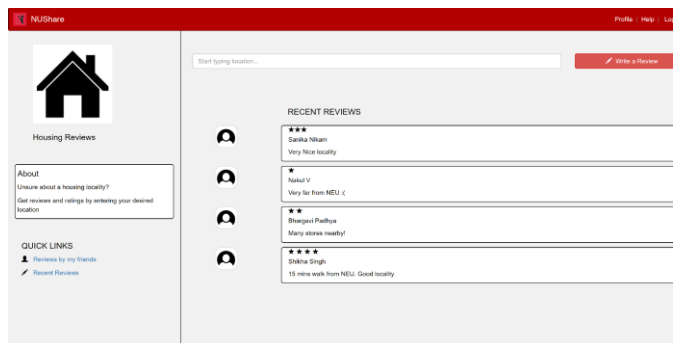The views of these two pages can be seen below in Figures (2) and (3).

Fig. 2: NUShare housing reviews page displays the recent reviews of the housing locality nearby the campus
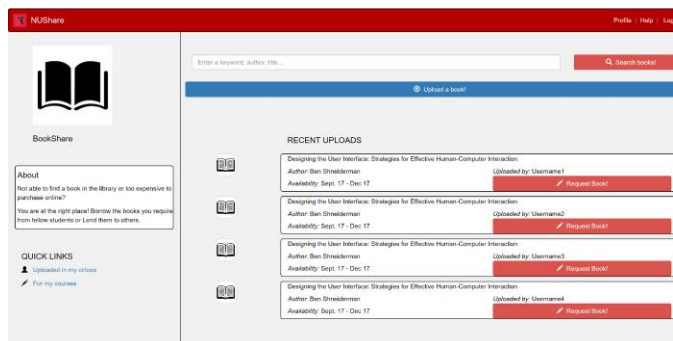

Fig. 3: NUShare book share page presents the students to request books from other students who have uploaded books for sharing

NUShare also has a profile page where the user can update their profile information and personal details that they would like to share with other users. They can also access their followers, list of people they are following and the circle information.

NUShare also consists of a help page which gives the users some basic information about the page and answers the general questions that the user might have if they get stuck while using NUShare.

III. IMPLEMENTATION

The technology stack that was used to build NUShare are HTML, CSS, Bootstrap, Node.js, Express.js and MongoDB

[5]. The front-end of NUShare web application was developed using a tool called Atom, a text editor and the backend was developed using MongoDB.

Below is the architecture using the technology stack mentioned above, here is the client machine depicts the usage of our portal NUShare:
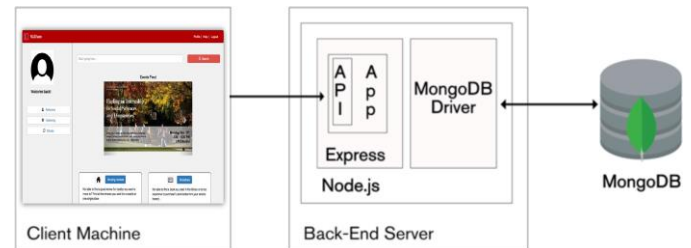

Fig. 4: NUShare architecture consists of MongoDB, Express and Node.js (Back-end) and HTML, CSS and Bootstrap (Front-end) components

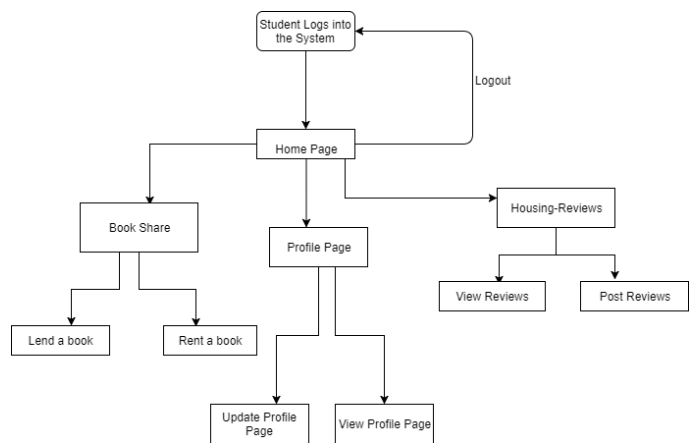Following is the tasks flow that NUShare follows:

Fig. 5: NUShare tasks flow chart depicts the students' actions available while using the NUShare portal

The user first logs in the system using their NEU Husky credentials. The first screen that the user will be able to see is the homepage where they can access either the book-share functionality, housing functionality, or visit their profile page. If the user goes to book-share page, they either have an option to lend a book or rent a book. If the user lands on the housing reviews page, they can either view a list of reviews posted by other students about different locations or they can post a review about a locality. The user can view their profile or make changes or update their profile from the profile page. The user can logout from the homepage of NUShare. We wanted to keep the front-end consistent with the existing Northeastern portal [1][6], so that in future the integration process would not involve many changes in the front-end.

IV. USER STUDY/EVALUATION IN REAL-USE CONTEXT

To evaluate the accuracy and effectiveness of NUShare, we asked 5 subjects (3 females, 2 males), to use the NUShare

website and make use of the functionalities provided. The subjects were all students who went to Northeastern University. Subjects could pause and continue the experiment as needed. On an average, the subjects took around 10 minutes to finish the experiment. It was ensured that there was no disturbance while the user study was being conducted. The subjects were given a brief overview of what NUShare is all about. However, they were not provided with full details of how each functionality is supposed to be used and neither were they given any instructions to be followed. It was up to the subjects how they went about using NUShare. The user study was performed on the campus of Northeastern University.

Following is the task list the subjects were asked to perform and based on which the user study was conducted.

- Editing profile
- Find and Click on NUShare
- Search for Books on Book-share
- Search for a locality on housing reviews
- Post a review in housing reviews
- Accessing the quick links
- Click and view the HELP section
- Logout at any point in time

There are three main usability metrics for NUShare that we will concentrate on. They are:

- *Effectiveness*

Effectiveness can be calculated by measuring the completion rate, which can be defined as the number of tasks that the user successfully completed divided by the total number of the tasks taken up. If the user could achieve the result of a task we mark it as value 1 else, we will mark it as 0. This way we can derive a formula to calculate the effectiveness overall.

Effectiveness = Number of tasks completed successfully x 100

- *Efficiency*

Efficiency is a measure in terms of measured in terms of task time. That is, the time (in seconds or minutes) the participant takes to successfully complete a task. We can derive a simple formula to interpret this usage, we need to note down the start time for a task and then note down the end time at the completion of the task, therefore we arrive at:

Time efficiency = End Time Start time

- *Satisfaction*

After users attempt a task (irrespective of which whether they can manage to achieve its goal or not), they would be given a questionnaire to measure how difficult the task was. We could like to include up to 5 questions, these post-task questionnaires will take the form of Likert scale ratings [7] and their goal will be to provide insight into task difficulty as seen from the participants perspective.

At the end of the tasks study, the users were requested to fill a questionnaire based on their experience with the NUShare portal.

After the study and questionnaire, we conducted a post-study interview with the subjects to get more insights on our portal.

V. RESULTS

The below results in the Figure (5), was based on the data that was captured during the task activities based on user study and calculated based on the metrics that were defined in the previous sections.

Average task time (per task)	Effectiveness	Efficiency (average)	Satisfaction (Based on questionnaire)
2 to 2.5 seconds	90%	3 minutes	95%

Fig. 6: NUShare usability metrics calculated based on the results obtained by the user study of five test subjects

The below figure (6), shows us the quantitative analysis of questionnaire which was given to the students at the end of the study:
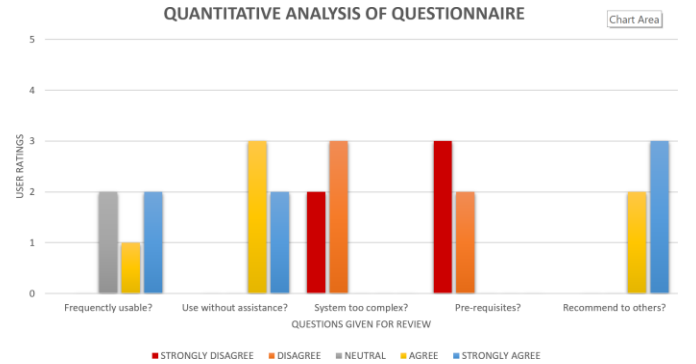

Fig. 7: NUShare survey statistics obtained from the questionnaire completed by the five test subjects

And based on the reviews from qualitative analysis and conversing with the students we received a very positive feedback which included quotes such as "A great ecosystem including all the additional resources which a student would require at one place", "finally a portal to share books!", "Will help lot of students reach out to each other as library's books are not always available" and "Reviewing the localities before moving in would be of great help to avoid the unnecessary stress on the student about his housing needs even before his course starts".

VI. DISCUSSION

Summary from the statistics:

- No major pre-requisites required! The users could navigate through the portal with the minimal awareness of the use of the website.
- Simplicity of the system was a big plus point, as the users' ratings leaned towards the system being simple
- Users were happy to recommend the system to others which would help reach the tool to a greater audience

From the interviews it revealed that the NUShare was very much appreciated. And the common consensus suggests that

the general needs of students were fulfilled and would help them avoid a lot of stress and let them concentrate on the academics and cultural activities more as it would help them save a lot of time during their initial stages of the semester.

VII. BACKGROUND WORK

Facebook [4] is a platform that brings millions of people around the globe together. This is either achieved through Pages pertaining to a subject or groups formed based on common attributes. Sure, a student joining NEU can look up on Facebook [4] the different groups available to look for housing and roommates, but the list of pages and groups can be never ending. It can be quite a task to first search for a group, then filter the best one and then go about getting your problem solved NUShare is a centralized portal that is dedicated to a set of students serving a common purpose. All that a new student needs to do, is login to this web portal with their Husky credentials and look for the information that they need that has been already categorized and arranged to make the search process a non- tedious one. Northeastern University Student off Campus Services provide new students with all the help they need for apartments search, roommate search etc. However, they do not provide any reviews about the safety and surroundings of different localities. Housing Reviews on NUShare provides honest reviews about various apartments, their neighborhoods and the safety and surroundings of those locations near Northeastern University that the students can refer while renting out apartments.

VIII. CONCLUSION

This paper describes NUShare, which is an online portal for students of Northeastern University to stay connected and share useful information with one another through the applications several features and in turn help each other in making the university life smooth and hassle free. The assumptions to be considered for the NUShare application are that the user is a student of Northeastern University and has valid NEU Husky credentials to log into the application. Along with that, the student has a basic idea and hands-on experience of using a similar portal or web application.

Based on our background research and findings we realized that there is no platform for students of Northeastern University to share useful resources like books with fellow students, or get reviews about housing locations from their peers to make better decisions of living at a place. These are some of the major concerns new students enrolled have, for which they must turn to multiple portals available. We thought that a having centralized place for students to get their major queries and concerns answered would really make sense and save a lot of the students' time.

Keeping the above in mind, we decided to build NUShare with the features like Book-Share and Housing Reviews. With Bookshare a student can look for a book on the NUShare application that is not available in the library, and borrow it from a peer who has uploaded the book for lending, for a period. The student thus doesn't have to spend money in buying expensive books that he would need only for a semester. With the housing review feature, a student looking for a place to live near the university, can search for a location and get reviews about that locality, its accessibility, safety etc. from another student who has lived there previously. The student can also write a review about that place, once he has lived there to help another student.

In future, we plan to bring more such features that can help students of Northeastern University. One of them being Carpool, where students traveling to same destinations to their co-op/internships can share rides. For this all they need to do is update their travel times and location they want to travel to. The system will match them with other students traveling at the same time, and provide their details to communicate with one another. Since all our features are being built keeping students and their connectivity on campus, we plan to make our application more like a social media portal specific to Northeastern University. We plan to have a feature, where a student can follow other students they come across through our several features like bookstore, housing etc. and form their circles, which will keep them connected in the future.

IX. ACKNOWLEDGEMENT

X. APPENDIX

Fig. 8: User survey form given to the five test subjects to obtain qualitative data

Fig. 9: User questionnaire form given to the test subjects for obtaining feedback on NUShare

Following is the task list the subjects were asked to perform and based on which the user study was conducted.

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- Click and view the HELP section
- Logout at any point in time

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