Assignment 2: Low Fidelity UI Design

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INTRODUCTION

It is a common thing for university students to require housing in the city in which they attend post-secondary education and it is also a common thing for local landlords to have housing options available for rent in these cities. The problem lies in the disconnect between the two, where incoming students new to the city are not aware of their housing options, and landlords, who have no affiliation with the university, are in search of tenants for their rental housing units.

"Student housing," the intersection of these two categories, refers to housing units that target students as their desired tenants, with the intention of housing students during the duration of their stays in the city while they attend school. Our work focuses on using human-computer interaction to help university students living in Kingston find housing easily for their unique circumstances. First and foremost, our work promotes reflection upon the unique and diverse needs of university students. For example, university students require some form of transportation to campus daily in order to attend lectures and tutorials. University students may also live with friends and roommates, and may be hoping to participate in house-sharing to cut down on monthly rental and utility costs by splitting the fees. Additionally, our work promotes reflection on Kingston's local housing market, particularly around the Queen's University campus area and downtown. This critical area, which is usually within walking or brief bussing distance to the university, where many students need to go each day, is the hotspot and main focus of our work due to its reputation as the center of Kingston's student housing scene.

With great variation on prices, property size, living conditions, parking availability, number of bedrooms, number of bathrooms, proximity to campus, proximity to local student hotspots (for example, libraries, nightlife, and restaurants) and more factors unaddressed here, there is a wide variety of factors that a student looking for housing in Kingston will need to consider and be aware of. However, there is no singular source of information that compiles all of this information together for students' easy reference and comparison. We aim to change this. Our work focuses on bridging the gap between university students and finding satisfactory student housing.

RELATED WORK

There have been countless projects that attempt to find effective solutions to the problem of finding suitable housing that fits one's needs. Researchers have used various methods to build applications to help users find housing that meets their criteria, such as predictive algorithms [3, 12], screening systems [14], considering nearby transportation systems [2], evaluating user experiences [10], and understanding cultural contexts [4]. The results of these papers have assisted us in the development of our project. These projects have been tested in a wide variety of demographic contexts, which will also greatly assist us in narrowing our scope down to only focus on off-campus housing for Queen's University students. Below, we find that these four projects strongly pertain to our proposed application.

The first research project relevant to our project is a research article that describes a case study on Pobail, an Irish alternative housing community action group [9]. The article identifies who should take responsibility for the development of tools to facilitate housing search and provides ideas about how the use of human-computer interaction can help support Pobail's efforts in the future. Being somewhat pertinent to our research topic, this article focuses on the activism angle of Ireland's housing crisis, but still details how beneficial national-scale applications can be in bringing people together in an organized fashion.

The second research project relevant to our project is centred on the use of a unified public housing database within Wuhan University. This paper focuses on colleges' and universities' utilization of information systems designed to manage public housing, "*optimize the allocation of public housing resources, and provide decision-makers with the basis for campus planning*" [5]. The application's main goal was for the school to efficiently access housing information and keep track of any changes to university buildings. The project's implementation of centralization and optimizing the process of finding

housing information is very similar to what we want to achieve. The paper demonstrated that a centralized housing information system can lead to higher efficiency, consistency, and ease of use, and we hope to adopt this aspect into our work. Where our ideas diverge is who will be using our system. The housing system at Wuhan University is essentially focused on the management of all facilities related to the school, whereas our goal is to have a system exclusively focused on student housing to be used by Queen's University students.

The third research project relevant to our project details the architecture, development and rationale behind the creation of a mobile solution for locating and applying for affordable housing in Santa Clara County [1]. The Android application aims to help users find and apply to affordable housing more quickly by having one application that combines questions from individual applications for all the different housing units the user would like to apply to. This research is highly applicable to our research topic, which aims to achieve a similar goal in terms of helping users find housing through a mobile application. Their application focuses more on streamlining the application process, while ours focuses more on providing the user with relevant information to help them make housing decisions and facilitate their search process.

The final research project relevant to our project is a research article that describes a digital art installation that is also a social commentary on what gives real estate value [13]. Utilizing human-computer interaction to model how the value of a specific house during the 2008 American housing crisis is entirely dictated by the market, this interactive digital demo demonstrates how livable houses become uninhabitable as a result of human-assigned values. Being somewhat applicable to our research topic, this article delves deeper into the philosophical side of housing, whereas we aim to provide a more practical solution.

In conclusion, there has been a variety of research already done in the human-computer interaction field that ranges from being highly relevant to our work to being relevant enough for us to learn and draw insights from.

PROBLEM DESCRIPTION AND DESIGN CONCEPT

Every year at Queen's University, hundreds of students go through the process of trying to find suitable housing for the upcoming school year. This is an inevitable task that everyone must experience, from undergraduate students who may have no experience and are not sure what they should be looking for, to graduate students who have experience, but may find themselves hopping from house to house in order to find something more comfortable and affordable. Through interviewing a wide range of students (and through our own experiences), we have come to better understand the issues that they face.

The major issue that was brought up by everyone in the interview process was a lack of useful information about a house, or that information being difficult to find. Upon examining a central location for housing information to be shared, such as Facebook marketplace, it can be noted that a lot of the posts that advertise housing do not follow a shared format. This is because, depending on the community they are posting in, when a user makes a post they may only be prompted for text and an image. This gives the user the freedom to communicate too much, or not enough, information about the house, and in any order they want, resulting in confused users trying to navigate through dozens of posts, none of which tell them exactly what they need to know.

Another issue that was brought up by many of the interviewed students was that there was not enough information about the landlord available to them. The quality of a landlord is one of the most important aspects to think about when looking for housing and yet there are so few ways of being able to know this. The main way this information can be communicated is simply through word of mouth because no online housing forum offers any sort of metric that judges a landlord's quality. This is somewhat understandable, however it can cause users to feel uneasy or concerned about renting a certain house.

These issues both stem from the fact that current ways in which students look for housing restrict them from knowing the full details of the house they are interested in. This means our design concept should be an alternative way for students to look for housing, that tells them everything they need to know about the house they are interested in. The application will present this to them in a clear and easy to understand way, providing a user experience that satisfies a user to the fullest. For example, the user interface will be designed so that the user is given chunks of important information, rather than one large text bubble (like how Facebook marketplace presents it).

As we continue to make our prototypes, we will check in with our target users and ask for feedback and criticism, in order to better understand how we can make our prototype the best it can be.

USER CHARACTERIZATION

Our primary target users are Queen's University students within the age range of 18-25. This demographic includes both undergraduate and graduate students, providing us with a unique opportunity to tailor our interface to meet the needs of a diverse yet specialized user base. Our users' experience with housing searches varies widely, from complete novices to those more skilled in the rental market.

The diversity in this group is more than just age and rental experience but also in religious beliefs, cultures, academics, economic backgrounds, and genders. According to the

Queen's University 2022-23 Enrollment Report, the student body comprises 28,142 individuals, including 4,037 international students from over 94 countries and 781 indigenous students[11]. This diversity requires a user-friendly interface that accommodates a wide range of user needs and preferences.

Our research has revealed significant challenges faced by students in the housing search process, highlighting the necessity for a platform that effectively addresses and fixes these issues. Students have reported difficulties in finding affordable housing near campus, dealing with unreliable landlords, and accessing comprehensive property information. One first-year student expressed their struggle with the high living costs, saying, "I've been house searching since the first semester reading week and the cheapest place I found was $900, which is beyond my budget. All the houses I can afford are over 40 minutes away by bus." Similarly, another student expressed concerns about the availability of quality housing options, stating, "I have not started my housing search for the next school year so I am a bit concerned that once I do, all the good housing options will not be available for me and I will be stuck with a place that maybe doesn't have the best landlord and is not of high quality." These interviews have been pivotal in our understanding of the student housing dilemma, highlighting the importance of developing a platform tailored to the diverse needs of Queen's University students.

Given the many responsibilities students need to balance, the search for housing should not add additional stress. The interface of our platform is designed to be intuitive, and straightforward, with seamless functionality across iOS, Android, and web interfaces, ensuring every student has access, whether they're on a smartphone, tablet, or laptop.

To better conceptualize our ideal user, we introduce a persona: meet Jay, an 18-year-old first-year international student from Italy, navigating the complexities of finding off-campus housing in Canada for the first time. Jay embodies the challenges faced by many international and first-year students, such as understanding unfamiliar housing contracts and overcoming the language barrier. These obstacles show the need for a multilingual platform that is intuitive and supportive. Jay seeks a community where they can connect with peers from similar backgrounds, highlighting the importance of social integration features in our system. Our design strategy prioritizes creating an interface that is not just easy to use but also embraces cultural diversity and inclusivity, aiming to ease students like Jay into their new living and academic settings more seamlessly.

Through ongoing interviews, we continue to deepen our understanding of the users and sharpen our approach to dealing with the housing problem, ensuring our platform effectively addresses the varied and specific needs of Queen's University students.

DESIGN

The application is designed to allow students to easily find off-campus rentals. This is primarily integrated through the use of a map system, standardized property information, and student reviews. Since this application will be exclusive to Queen's students, users will need to have a valid Queen's email to use the system. Our application has utilized several notable design elements discussed in lectures [6, 7, 8]. So far, a low-fidelity desktop prototype has been developed, but our project will also be available on mobile devices.

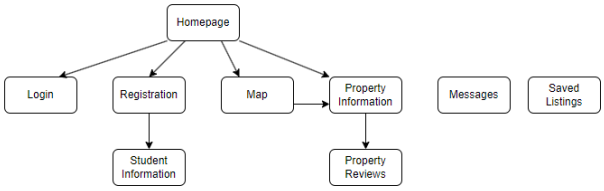

Figure 1. Rough storyboard of low-fi prototype. Messages and Saved Listings can be accessed through the dropdown menu on the navigational bar.

Home page

The project's homepage is what the user will interact with when opening the application for the first time. The purpose of the application is made clear to the user through a statement relevant to their needs (i.e. "*Off-campus housing made easy*"). The layout of the page is split into 3 sections highlighting the main functionality of the system: property searching, viewing the newest listings, and viewing student reviews or writing them. This page leads to the map view, property information pages, login page, and registration page. This page utilizes several significant design elements focused on simplicity and familiarity:

- *Hick's Law*: The separation of the homepage into 3 main sections gives the user a small number of selections to make by focusing on the most relevant functionalities of the application.
- *Laws of proximity and similarity*: Integrated within the separated sections and the grouping of similar elements (e.g. the property listings), the user can comfortably scroll through the homepage and easily understand its available operations.
- *Isolation effect*: The property search function is isolated at the top of the page and is visually distinct from the other elements. Since it is the first element the user will see, its functionality will be strongly remembered.
- *Social proof*: Integrated using the 1-5 star rating system and student testimonials, users will have a greater ability to make informed decisions about the property they wish to lease.
- *Colour Psychology*: Aspects of the Queen's University colour palette will be used to generate a

feeling of familiarity and exclusivity for Queen's University students. It is also a palette with excellent contrast, which will assist in making the page visually distinctive and accessible.

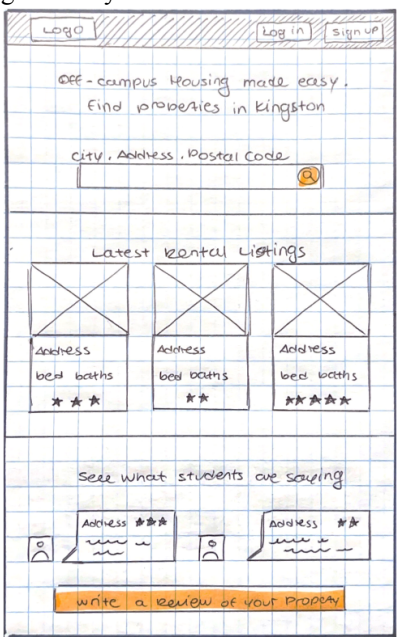

Figure 2. Low-fi prototype of the Homepage.

Login Page

The login page allows users to log in to their already-existing accounts. The page layout is simplistic and straightforward, consisting of only text box inputs and one sole emphasized call to action (the "login " button.) If the user inputs an email address that does not have an account associated with it, the text box will become outlined in red and subtext saying "email not found" will appear underneath it to indicate the problem to the user. Similarly, if the user inputs an incorrect password associated with a registered email, the text box will become outlined in red and subtext saying "password is incorrect" will appear underneath.

- *Hick's Law*: By only having 2 input fields and one emphasized button, the user interface maintains a low cognitive cost, as there is only one obvious call to action that is emphasized, so the user can easily figure out how to log in.
- *Law of Symmetry*: The text fields and "login" button are all symmetrically aligned to indicate that they are grouped together and to better catch the user's attention, positioned at the center of the page.
- *Law of Similarity*: The text input fields all look stylistically similar in order to indicate that they are all filled out in the same way.
- *Von Restorff Effect*: The "log in" button, as the "key button" and main call to action of this page, stands out from every other page element due to its different, emphasized and visually distinctive appearance.

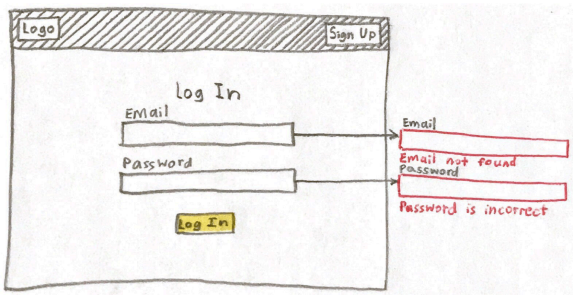

Figure 3. Low-fi prototype of Login Page.

Registration Page

The registration page allows users to create an account so that they can keep track of their search history, interested listings, and reviews. The page layout is similar to the login page, but with a second text box field to confirm the previous user input in the "email" and "password" sections, respectively. Similar to the login page, all text box input error handling is indicated by a red text box outline and the error message is shown in red underneath their respective text boxes. Clicking on the underlined "Terms of Service" leads the user to a separate page detailing the terms of service that the user must agree to in order to create an account and use the application. The "sign up" button is greyed out until the user checks off the "I agree to the Terms of Service" box, and then the button becomes colourful and interactable.

- *Hick's Law*: By only having 4 input fields and one emphasized button, the user interface maintains a low cognitive cost, as there is only one obvious call to action that is emphasized, so the user can easily figure out how to log in.
- *Law of Symmetry*: This element is used in the same way as the Login page. The confirmation text boxes are also consistent in their placement underneath their original input fields so that it is easy for the user to recall that they need to confirm both their email and password inputs.
- *Law of Similarity*: This element is used in the same way as the Login page..
- *Von Restorff Effect*: The "sign up" button, as the "key button" and main call to action of this page, stands out from every other page element due to its different, emphasized and visually distinctive appearance.

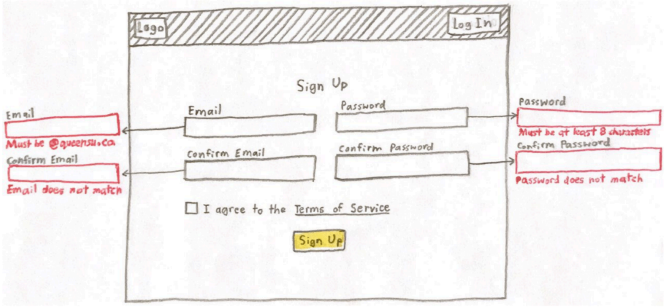

Figure 4. Low-fi prototype of Registration Page.

Student Information

The student information page allows users to set their name, year of study, and pronouns to help them identify themselves, confirm their status as current university students, and to inform others of how they would like to be addressed. The page layout is simple, with one text box input field for the user's name input and two dropdown list menus for the user to select their year of study and pronouns. A submit button is located under the input fields and saves the user-input information upon button press, as well as a "skip for now" button that allows users the option to skip setting up their profile to come back to later. This page uses design elements focused on simplicity and familiarity:

- *Hick's Law*: By only having 3 input fields and one emphasized button, the user interface maintains a low cognitive cost, as there is only one immediately obvious call to action that is emphasized, so the user can easily figure out how to proceed.
- *Law of Symmetry*: The text fields, submit button and "skip for now" button are all symmetrically aligned to indicate that they are grouped together and to better catch the user's attention, positioned at the center of the page.
- *Law of Similarity*: The input fields all look stylistically similar in order to indicate that they are grouped together and thus should all be filled out.
- *Von Restorff Effect*: The submit button, as the "key button" of this page that the user is required to press to save their inputs, stands out from all other buttons, such as compared to the "skip for now" button, due to its different, emphasized and visually distinctive appearance.

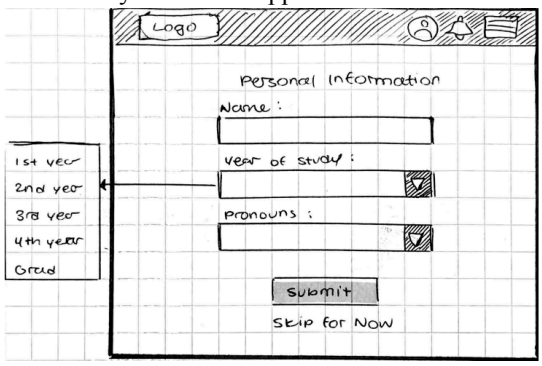

Figure 5. Low-fi prototype of Student Information.

Map page

The Map functionality can be accessed through the Homepage. The graphical interface of the interactive map, similar to Google Maps, will allow the user to easily find properties in Kingston through search input, property filters (i.e. number of bedrooms/bathrooms, parking spaces, etc.), and review markers. To ensure ease of use within this intricate system, relevant design elements are implemented:

- *Visual cues*: Property markers use recognizable icons and colours to signify the past student happiness associated with a property. This element is made to be accessible by using high-contrast colours and easily-interpreted expressions.
- *Curiosity*: The map will show more properties local to a specific location the more the user zooms in (either by clicking the map or the magnification buttons).
- *Law of Similarity*: The user can easily recognize similarly rated properties based on the property markers, which could help them avoid pursuing rentals with poor ratings.

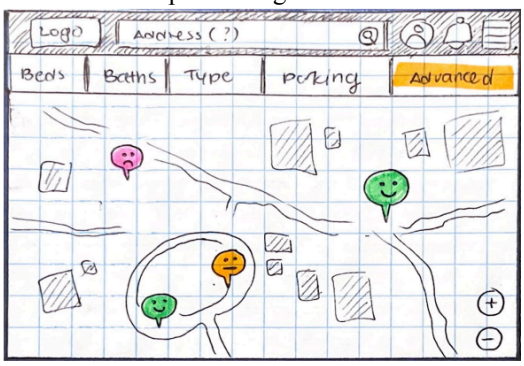

Figure 6. Low-fi prototype of the Map page.

Property Information page

These pages are responsible for giving relevant property information that users often look for, such as the price per month, number of bedrooms, property type, etc. The page will include photos of the property at the top, and the user has the options of saving the listing, messaging the landlord, and viewing or writing reviews. The design elements used for this functionality are focused on making the page as readable as possible:

- *Visual cues*: Recognizable icons are used for rating (stars), saving (bookmark), messaging (text box), and writing reviews (pen and paper). These symbols are unambiguous and are commonly used in applications.
- *Readability*: The property address and price per month are emphasized in a large font at the top. This makes it simpler for the user to determine if they want to know more about the property.
- *Curiosity and Law of Common Fate*: The property photos are organized in an image carousel that the user can click through. The images behind the centre are shaded to make the centre photo clearer and encourage the user to view the next image
- *Fitt's Law*: The page groups relevant functions for the user on the right side of the page so the user can quickly perform a desired action.

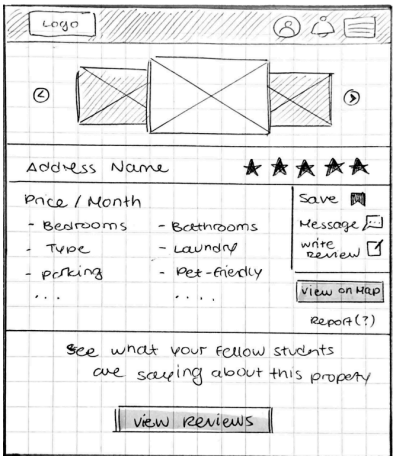

Figure 7. Low-fi prototype of Property Information.

Property Reviews page

Students will be able to read testimonials from other students regarding the property they are interested in. This functionality promotes student insight and will greatly help in making housing decisions based on the rental's living conditions and/or landlord. Students need to be logged in to view or write reviews. The page's functionality is integrated in a way that will allow users to sort reviews by different requirements (time, rating, etc.), view any media of the property, and write their own review. The design elements used in this page are focused around ease of use:

- *Law of Isolation*: The key action for this page is the "Write" functionality. It is indicated for the user utilizing a large button with the application's accent colour, bold font, and an icon.
- *Miller's Law*: The user will be able to scroll through reviews using a numbered bar at the bottom of the page, rather than view all the reviews at once.

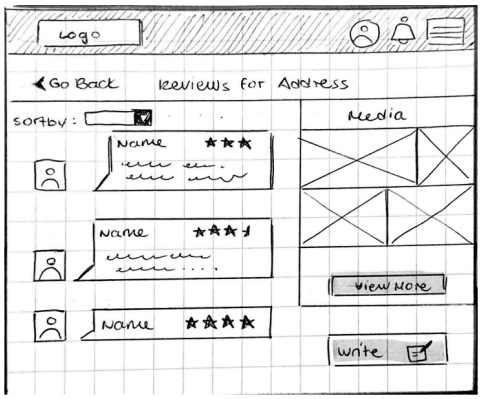

Figure 8. Low-fi prototype of Property Reviews.

Messaging

The messaging page allows users to send messages to other users and potentially ask for advice, ask about their reviews and past experiences with listings, et cetera. The page is split into two sections, with the smaller left section being split further into uniform boxes, one for each separate user the user has started a chat with. The larger right section is the actual chat that is displayed upon selecting the corresponding user's chat in the left section. An airplane icon that represents the "send message" functionality is located at the far right after the chat text box. Chat message boxes are ordered chronologically with the most recent message at the bottom, and the user's own messages are aligned to the right while their chatting partner's messages are aligned to the left and coloured differently, for a clear distinction between the two. Additionally, the user's chatting partner's profile picture icon is shown for further clarity. A small top bar with the listing address of the associated listing being discussed, as well as a shortcut button to view the listing in question help jog the user's memory of why they began a chat with their chatting partner to begin with and which listing they are discussing. This page uses the following design elements:

- *Visual cues*: Recognizable icons are used for sending messages (airplane) and deletion (trash can). These symbols are unambiguous and are commonly used in applications.
- *Law of Similarity*: Messages coloured and aligned the same way belong to the same user, thus grouping messages together through shared similarities in alignment and appearance.
- *Law of Common Region*: The list of the user's active chats all appear on the left of the screen, allowing the user to easily understand that selecting any of the chats does the same action (which is to open the selected chat on the right screen).
- *Von Restorff Effect*: The selected chat is highlighted in a different colour compared to the other chats displayed in the smaller left sidebar, indicating that it is the one the user is currently displaying on the larger, right screen.

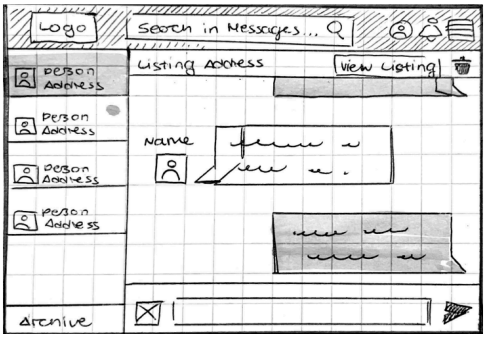

Figure 9. Low-fi prototype of Messages.

Saved Listings

The saved listings page is a collection of the user's viewed listings that they have indicated as important to revisit. The page has an "edit" button emphasized in an eye-catching colour in the top-right, as well as chunking of listings (up to 6 visible at the same time on-screen). Each listing displays its associated photo, as well as basic identifying information about the unit (such as its address, its number of bedrooms and bathrooms) and its rating.

- *Visual cues*: Recognizable icons are used for the ratings (stars). This symbol is unambiguous and commonly used in applications.
- *Good Chunking*: 6 chunks of information (listings) appear visible to the user at any given time on the screen, even if they have more saved listings. This prevents visual overwhelm and allows the user to quickly identify and remember which listing is where.
- *Law of Common Fate/Region*: Each listing is grouped tightly together in a uniform format: Photo first, then address, then number of bedrooms and bathrooms, then their rating. This pattern helps the user quickly identify which piece of information they are looking for, as they know every piece of information they are looking for about one listing is in the same region, ordered in the same way.
- *Von Restorff Effect*: The "edit" button is emphasized using a different, eye-catching colour in the upper-right of the page, indicating that it is the "key action" of the page should the user want to add or change their list of saved listings.

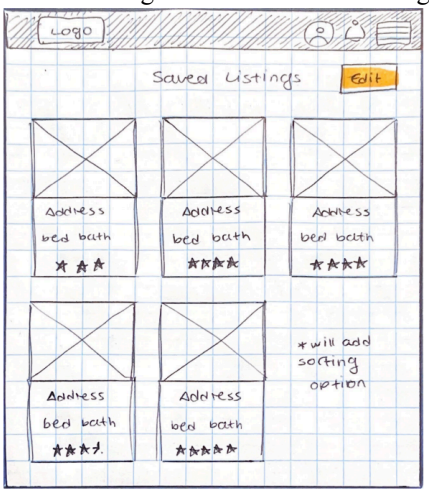

Figure 10. Low-fi prototype of the Saved Listings page.

USAGE SCENARIOS

Scenario 1

The main user will be named Gerold. A first-year student advancing into second year, looking for a house with their three friends.

Background and Actions

After living in Kingston for a year, Gerold knows what they need to live during the school year, however, they still require assistance finding where to get it. Having lived at home with his parents before residence, he has never rented a place before. After registering as a student and logging in, navigating to the map they will start to look for places that meet their expectations. Using the multitude of information on the map, and the filters to choose what is applicable to them, Gerald finds many potential places that are suitable for them. Clicking on one of the potential houses, they will be redirected to another screen with a large amount of information about the house in addition to publicly available reviews to make a decision to better aid the decision.

Benefits & Differences From Existing Applications

The map is the main advantage in this use case. The visual representation of the different amenities in town will help Gerold create a better informed decision about how they will live for the next year. Understanding the layout of the town, having clearly readable and apparent bus routes and paths to campus to town, directed towards students will enhance the user experience. Other applications like Facebook Marketplace or Kijiji do not provide a seamless single-tab experience for Gerold, forcing dozens of tabs to gather all the information that will be provided.

Scenario 2

Our example persona will be named Tyko. A recent highschool graduate attempting to find a place to rent for their first year at Queen's University, with little knowledge of Kingston's layout.

Background & Motivations

Likely not accepted into residence for their first year of university, Tyko will already be stressed and nervous, placing a large amount of strain on their mind. Having only visited the campus once for a tour, they have never had the experience of living in town. This will make their research of what is necessary for their living insanely tough to find.Opening the program, Tyko will skip registration to save on cognitive load, and get straight into the home page, with 3 clear descriptions of houses laid out in from of them, and stars to easily denote their quality. Tyko will being to look into each of these houses to see if any of them are a fit for them.

Benefits & Differences With Existing Applications

The property information page layout will be an invaluable asset for Tyko. Without any prior information about where to even start, the streamlined user experience that we will provide eases the cognitive load that will be placed on them during the perilous times. Having direct access to not only all the information required for a new tenant, but having it be in a user experience friendly way will benefit them. Our product will help alleviate the pain and confusion paired with the situation that other platforms cannot provide with their cluttered and unfocused experiences.

Scenario 3

A landlord named John attempting to advertise their rental property in downtown Kingston. He has been living outside of Kingston for 5 years.

Background and Motivations

Setting up an account and logging in, John will go through a rigorous setup process with the project staff. After setup, managing the listing, and chatting with the potential tenants

is easy through the internal chat systems and advertising opportunities.

Benefits & Differences with Existing Applications
The benefits for John are created by intentionally reducing the size of the target audience, but refining what that audience is. As all the tenants are students, there are less. In addition, John's credibility will increase greatly by having the previous tenants leaving positive reviews for his maintenance. With this platform, John has less competition from people who lie on their listings, making his listing stand out more. In addition, the whole process for John is centralized on a single platform, having a better experience for him as well.

Scenario 4
A 3rd year student, Alexis, currently living in a rental property, attempting to swap houses due to poor living conditions.

Background and Motivations
After 3 years of experiencing the market Alexis knows their preferences for living location. The main draw then will be the robust review system. In order to avoid the previous inconsistencies they have experienced with landlords and rentals in the past, they will refer to the review of previous tenants to make a better informed decision. After logging in and registering, they will navigate to the map find the house they are moving out of, and write a review to get published and a scoring to give the landlord. Then using reviews published by other previous tenants using the sharply coloured icons indicating user satisfaction, they will investigate the areas they will have previously known to be suitable for living, using the advanced searching features on the map to provide expert level speed. Finding a house for them with the credibility to not repeat the same mistakes

Benefits & Differences With Existing Applications
Existing applications like Facebook marketplace sport very poor authenticity guarantees. Creating environments with false listings and inflated quality. With emphasis on tenant feedback, our project will create a sense of professionality that Alexis can rely on for a higher quality experience.

USER EVALUATION

Method

Our user evaluation was designed to simulate a realistic first-time user experience with the paper prototype of our application. The process was divided into two phases: initial interaction and a guided walkthrough.

Phase 1: Initial Interaction
Participants were presented with the paper prototype, they were then instructed to interact with the application as they would normally, without any prior explanations or guidance. This approach allowed us to observe their instinctive interactions and identify any intuitive or confusing aspects of the design.

Users were asked to verbalize their thought process, which helped us understand the logic behind their actions. Each time a participant 'clicked' on an element, we manually switched the paper to the corresponding new page, replicating the application's response to their action.

Phase 2: Guided Walkthrough
After the initial interaction, we explained each aspect of the application to clarify the intended user journey. Participants then interacted with the prototype again, this time with a deeper understanding of its features. This phase aimed to identify whether initial confusions were resolved with explanations and to highlight the difference in user interaction with and without prior knowledge.

In this phase, we posed specific questions related to different pages of the prototype to get focused feedback:

- Registration Page: "Could you easily understand where to input your information? Was it clear what each field of the registration was asking for?"
- Login Page: "How was your experience with the transition between logging in and creating a new account, if you needed to switch to the latter?"
- User Information Page: "How do you feel about the level of personal information requested? Is it too little, too much, or just right?"
- Message Page: "How do you rate the ease of finding a specific message or conversation thread?"
- Property Reviews Page: "How easy was it to understand the rating system and read through the reviews? Was the media related to the reviews helpful in understanding the property?"
- Property Page: "Is the option to save, message, or write a review about a property intuitive and well-placed?"
- Home Page: "Are the search functionality and the latest rental listings effectively presented size and position-wise?"
- Map View Page: "Are the filters (beds, baths, type, parking) helpful and sufficient for your search?"
- Saved Listings Page: "Are the visual cues (like star ratings) helpful in recalling the details of the saved listings?"

After the structured questions, we opened the floor to additional comments, questions, or feedback, allowing users to share insights beyond the scope of our questions.

Users Tested
Our user group included a diverse set of participants, all of whom were students with varying degrees of familiarity with the off-campus housing market:

Two Third-Year Dons: A female Chemistry major and a male Computer Science major, both lived in residence initially, then off-campus, and are now Dons they have been out of the housing market for a year.

Two First-Year Students: A male and a female from the Greater Toronto Area, new to housing searches, both currently living on campus; one in Computer Science, the other in General Arts & Science.

Rugby Team Member:
A male Computer Science student, actively involved in sports, from Vancouver, currently living on campus.

International Student:
A male first-year from Vietnam, unfamiliar with the Canadian housing market, residing on campus.

Second-Year Bader Student:
A male Psychology major with minimal Canadian housing experience, previously at Bader Castle, now in residence.

Data Collection:
The user testing sessions were recorded on video after obtaining consent from the participants. Each interview lasted approximately 10 minutes, during which we captured both the users' interactions with the prototype and their verbal feedback. This approach to data collection allowed us to correlate users' actions with their voiced thoughts and concerns.

Findings
Usability:
During the initial walkthrough, several users searched for a 'help' section on the home page, expecting to find guidance or instructions on how to use the application. The absence of such a feature made it challenging for users, especially those unfamiliar with similar platforms, to understand how to interact with the system and where to find help when needed.

Accessibility:
For the international student from Vietnam who preferred using Vietnamese, the absence of a language selection feature presented a significant barrier. This student struggled to find any option or button to switch languages, which could limit the application's accessibility for non-English speakers and hinder their overall ability to navigate and use the service effectively.

User Experience:
The overall user experience was met with mixed reactions. On a positive note, the 'Login' and 'Create an Account' interfaces were commended for their straightforward design, featuring entry fields that users found simple and easy to navigate. The use of universally recognized icons, such as for saving, the message bubble for messaging, and the pencil for writing a review on the 'Property Page', was also highlighted as a strong point. These intuitive symbols likely aided users in quickly grasping the available actions. Additionally, the 'View Reviews' button was recognized as an effective direction, providing users with a clear path to more detailed information. However, challenges arose with navigation, participants frequently asked about how to transition to different pages, indicating that the pathway for progression was not intuitive. Similarly, in the map view, the colour-coded markers were a source of confusion. Users expressed that while they noticed the different colours, the significance of these colours was not immediately apparent, which suggests a need for a legend or explanatory tools.

Recommendations
After a thorough evaluation of the testing feedback, we plan to refine the interface to better serve the needs of our users. A user-friendly settings menu will be introduced, allowing for easy customization of language preferences and other personal settings. This will ensure a more accessible and tailored experience for all users. We are committed to maintaining an honest and safe platform. Users will have the ability to report not only listings and landlords but also to similarly flag reviews and messages that are fake, inappropriate, or violate our community standards. In our efforts to create a more centralized hub for housing searches, we are exploring methods to integrate data from external sources such as Facebook Marketplace and Reddit. This will provide users with information from existing listings and landlord reviews, further simplifying the search process.

To enhance user personalization, our platform will now include housing preferences in user profiles, allowing for more tailored searches. We're also introducing a roommate search feature, where users can filter potential roommates by shared preferences, making it easier to find compatible living situations. To go with this, we are broadening our communication features to allow users to message each other directly. This aims to foster community engagement, facilitating discussions about housing arrangements and listing insights.

Other identified user interface improvements include allowing users to upload images with their reviews, providing a clearer understanding of properties, and boosting transparency. We also plan to select the reviews displayed on our homepage carefully, instead of showcasing the most upvoted ones. This aims to keep the space informative yet balanced, avoiding a social media-like feed. We will also be adding more detailed information on the listing pages, and restructuring the homepage to clearly present pricing, rooms, and amenities. The go back/exit buttons will be standardized on each page for consistency. A navigation bar will be introduced for easier page transitions, and we will apply Hick's Law to the reviews page to simplify the interface and minimize cognitive overload.

REFLECTION

Our group has made some large strides in designing our prototypes, and our philosophy in designing them has completely shifted. Initially, our group was thinking of all the features that would be necessary to make a better version of what already exists, however as we continued to make progress on the report, we came to realize that adding new features was simply not enough in order to provide a good user experience.

All of the low-fidelity prototypes shown in this report have all been designed in order to comply with multiple different laws of human-computer interaction. We have learned both from related papers on human-computer interaction and from testing different iterations of prototypes with our user group, that users respond more positively to prototypes that implement multiple different laws of human-computer interaction. For example, the first draft of the bus route prototype was drawn on paper using only paper and this resulted in some confusion over what was being presented to the test users. After considering the idea of using colours as a visual cue, we decided to highlight the most important fields, the ones that we wanted our users to interact with. Despite being a simple change, it was very effective in guiding the users to the areas of the screen of most importance. This goes to show that remembering the basics of user interface design can greatly impact the quality of a user experience.

Additionally, this was a great example of how users were able to drive the design of our prototype into a better place. If we had not checked this with our user group, it would not have occurred to us that this change would strongly benefit the user experience. This goes to show that interacting directly with your user group is a fantastic way to shed more insight on what does and does not work about your prototype. A user is capable of viewing your prototype in ways that you, as a designer, simply cannot due to your own biases, and so every designer should allow their users to have some say in the design of their prototypes, and eventually final products.

Other than assisting us with the user interface, our user group was also able to assist us in figuring out extra features to add to the software and improve the overall user experience. One user in the test group, an international student, brought up the idea of having the platform support multiple languages, due to the large number of international students who struggle with finding housing. If we want our platform to have a universally enjoyed user experience, we have to take this into account.

The recommendation from the student came from our extensive evaluation process, where we allowed our users to say exactly what they were thinking about our design. We would watch the user and ask them questions as they interact with the prototype. Some of the questions were along the lines of "would you describe the user interface as intuitive?" or "is there anything about the user interface that you would change?", questions that were asked in order for us to get a better understanding of how well the design is working with the user. At the end of the test, we would ask the user more questions, such as asking them how they would rate the usability of our prototype or what they would add to the prototype if they were on the team, the latter being how we learned about the lack of language options our design had. This proves yet again that interacting with and evaluating the user group is absolutely vital when creating a design for a user interface.

Compared to what we initially set out to create, our low-fidelity prototype has taken a very different form from what we originally envisioned. This is thanks to our user evaluation and testing processes, which we believe is the best opportunity to expand a prototype into something greater. We will continue to adjust the prototype as we see advance into the next stage in development.

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