Assignment 1: Project Proposal
Group 8

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Introduction

Addressing the housing needs of Queens University students, this project identifies and dives deeper into this problem that thousands of students face. Inspired by past related research, such as the exploration of collaborative housing in Ireland by authors O'Shea and Avram. As well as Xu, Luo, Xiao Jun and Qian Bingsong's paper on Wuhan University's housing. We learned of the various solutions used to tackle similar problems, and used this to set the foundation for our approach in creating a way to solve the housing challenges of Queen's students.

Our proposed solution aims to address the key issues that were identified through our research and interviews with various students. These challenges ranged from high rental costs, housing proximity, and the need for community support. This information is used to guide our design process, it is the key factor in actually understanding and characterizing our users.

Our primary goal is to create a centralized and accessible platform that will allow an efficient and simple housing search exclusively for Queen's University students. Our design approach will make sure that our interface is inclusive and accessible to all within our user group. Through our groups' coordination this semester, we aim to make a valued resource for incoming and current students, bridging the gap in the current housing search process with solutions that fit these users' specific needs.

Related work

"Housing Ourselves: An Exploration of Collaborative Housing from an Irish Perspective," a research article co-authored by Kim O'Shea and Gabriela Avram, explores a case study on Pobail, an Ireland-based alternative housing community action group, and pitches ideas about how the use of human-computer interaction can help support Pobail's efforts going forward in addition to identifying to whom the responsibility for the architecture and development of such a tool should belong.

The research article does a good job of exploring technological solutions for Pobail to help solve Ireland's housing crisis through their combined analysis of already-existing digital attempts to unify activists (as well as their shortcomings) and how other countries in the EU are handling collaborative housing on a national scale.

Their observations of common shortcomings of existing technology pertinent to collaborative Irish housing and their identification of the root of the problem being that Ireland lacks a unified national platform to address the housing crisis are apt, but fails to include information pertinent to how "the legal framework, the availability of financial resources and cultural resistance" (O'Shea 1) that was mentioned in the introduction specifically impact the Irish housing crisis and lacks novel, innovative solutions to the problem they have identified. The research article analyzes how the Irish housing crisis issue has been impacted by technology, but is not able to conclude with a satisfying solution.

While the impact of human-computer interaction on community housing in Ireland is clearly described in the article through the references to Pobail's existing social media and digital campaigns and the work is adequately relevant to Irish residents who are in need of housing as well as the activists who lobby for them, the research is less innovative and relevant to the broader HCI community due to its reliance on already-existing social media infrastructure, which makes for an understandable starting point and has convincing rationale, but does not offer as much novelty nor does it posit any unique ideas.

Moving on, there is another research project centred on the use of a unified public housing database, specifically within Wuhan University. This analysis 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 (Xu 234). It should be noted that the system was mainly concentrated on buildings directly connected to the university, rather than student housing in general. The main goal of the application was for the school to efficiently access housing information and keep track of any changes to university buildings.

The system managed by the school was developed using Geographic Information Systems (GIS) technology, which implemented the school's unified housing resource database (Xu 234). This application and its features such as communication networks between departments, real estate

information and statistics, and building visualization tools (Xu 235-236) were not only crucial in the management and convergence of university building information, but also assisted the university in the further construction of public housing.

The paper's research finds that the information system has had a noticeable positive impact on the school's public housing management, both in making the process of finding information efficient and for planning new public housing construction projects (Xu 240). The application also successfully enabled the ability to consistently maintain and report information on the school's public housing, which benefited all users of the system (Xu 235).

Some clear comparisons and distinctions can be made when analyzing this project with what our group plans to achieve in our work. The project in this paper is very similar to what we want to do in regards to making the process of finding housing information and communicating with relevant parties efficient. 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 with our project is to have a system exclusively focused on student housing, to be used by Queen's University students. Another important point of relevance from the paper is the idea of centralization. The paper demonstrated 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.

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 telling 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).

We have already gained contact with students in our target user group, and we plan on continuing to discuss these issues with them. Additionally, we will continue to seek out people who are looking for housing, in order to get more input. As we 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.

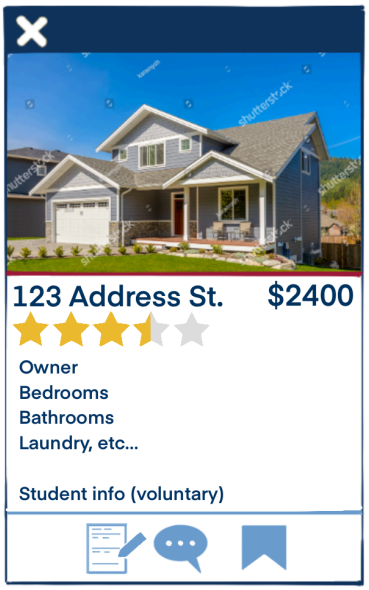


Figure 1: A prototype for the interface users may interact with when viewing information about a house. There will be ratings of the house based on student reviews regarding their experience with it and/or the landlord. Information about the house and students will be in a consistent format. Users can also write/read reviews, message the person who posted the listing, or save it for later.

User Characterization

Our primary target users are Queen's University students within the age range of 18-25, focusing mainly on undergraduate and graduate students. This age group allows us to tailor our interface for a diverse yet specific (or change to a diverse and specialized) set of individuals. The experiences of the users with housing searches span from complete beginners to those who are 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, and genders. From the Queen's University 2022-23 Enrolment Report 28,142 students were enrolled for the academic year, including 4,037 international students from over 94 countries and 781 indigenous students. This diversity requires a user-friendly interface that accommodates a wide range of user needs and preferences.

From our gathered research we have identified some common challenges among students. These include finding affordable housing close to campus, securing reliable and trustworthy landlords, and finding thorough information about properties before making rental decisions. A first-year student shared their struggle with the high cost of housing, stating, "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." Another interviewed student mentioned, "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 a major tool in shaping our understanding of the student housing problem and highlighting how important it is to have a platform that not only handles these issues but also works to reduce them.

Considering that many students are balancing their studies with finding accommodations, the interface must be easy to navigate, user-friendly, and straightforward. Mobile-friendly web application accessible on various devices would be ideal to accommodate on-the-go searches, and perfect for students in this range as they are constantly on mobile devices.

To better conceptualize our ideal user, we introduce a persona: Jay, is a first-year international student from Italy encountering the difficulties of finding off-campus housing for the first time. Jay's situation highlights the struggles many first-year and international students face, including language barriers and unfamiliarity with the local housing market, emphasizing the need for a multilingual platform.

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

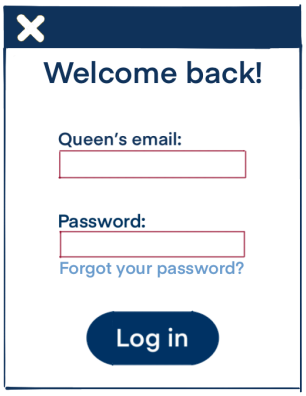


Figure 2: An example of the sign-in window for the application. In order for the application to cater to Queen's University students only, users would need to register with a valid Queen's email.

Design and Development

As the problem is one of difficulty of gaining information about the rental properties, user interaction is less important than user experience. Therefore, this design is going to prioritize the experiences that can be provided to the user base. The main features of the solution are as follows:

The main focus will be presenting this information in a non-cluttered yet still informative way. The use of symbols, and hidden menus will allow for the benefits of a complex menu while still focusing on ease of use. Symbols will be universal and easy to identify to allow for the diverse user base to transcend language barriers. The menus will make extensive use of Miller's Law and good chunking to maintain the low cognitive load we are aiming for. While restricting the use of colour to emphasize the moments in which it does decide to use colour mainly, price and warning icons. Keeping the menu intuitive will be the main priority. With ease of use in mind, An intractable map will be the main feature of the application. A visual representation of the city with clearly labelled pins and icons that allow for quick understanding. With functions that show what students want most, without adding too much clutter. A separate menu controls all the alternative maps that can be replaced with the original to keep a large amount of information accessible. These alternative maps can include bus routes, population density, and satellite versions. A tenant feedback and real time messenger system will be implemented to allow for more information from the tenant, and community. Older tenets will be able to leave reviews of their landlord and give them a score. This creates a sense of community, passing on reliable information to others.

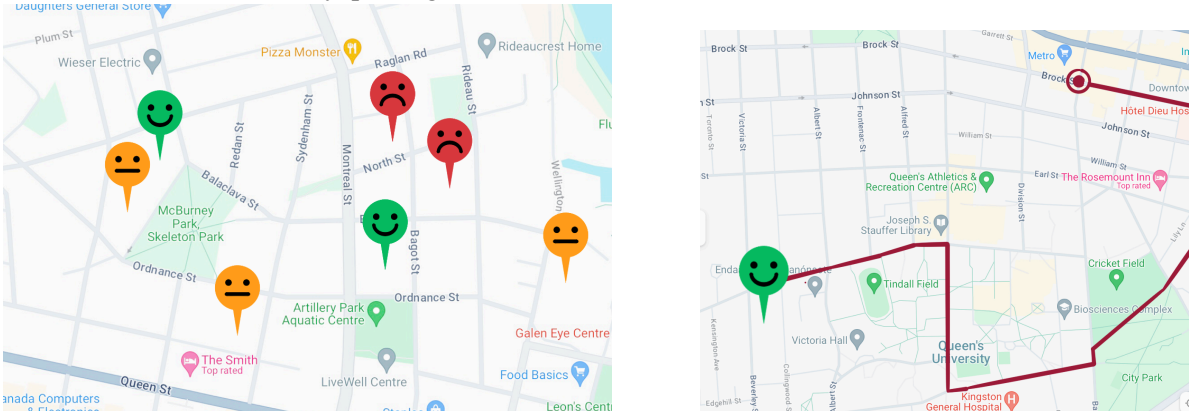


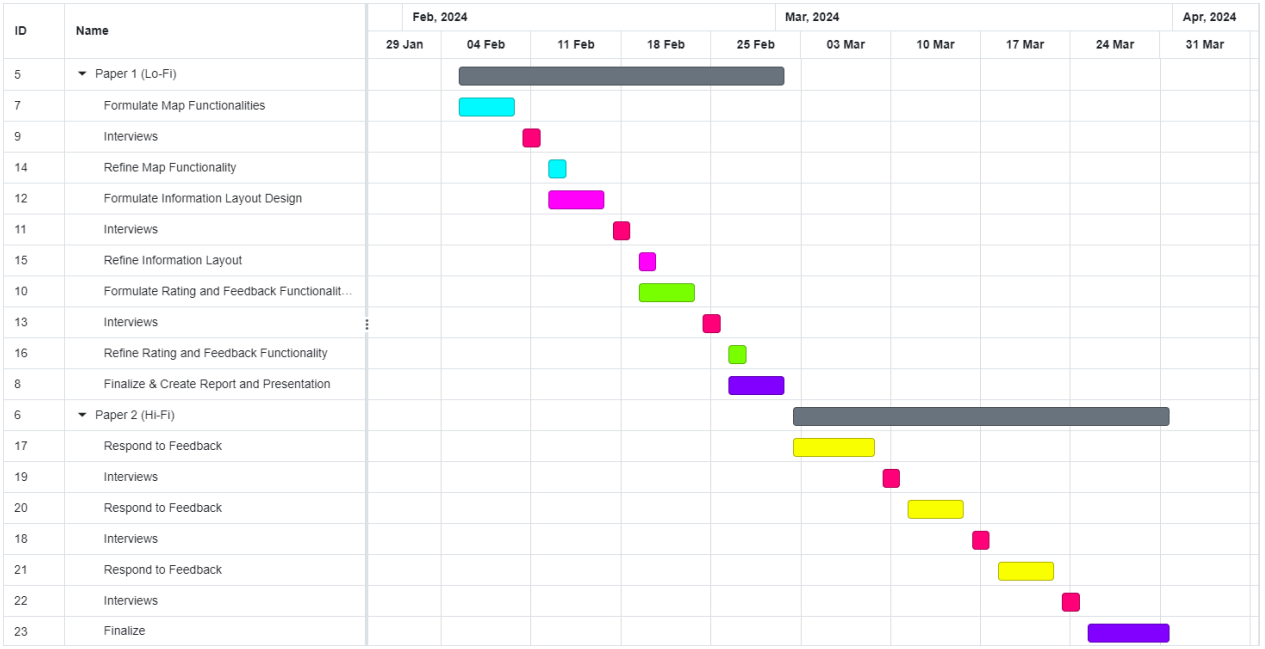
Figure 3: The idea for the map interface that will help users find houses in a specific area. The pins use universal symbols/colours to assist in identifying suitable housing accommodations; the status of the pins is based on user reviews of the house, the landlord, or any related information. The second

image shows bus directions to a key place that most students go to (e.g. Metro) from a house a student is interested in.

With these three functionalities we will be able to provide the testers a sense of the experience using the app. The discrepancy between the expected user experience and the wanted user experience will be fixed by the many iterations of interviews that will be later discussed. We are going to push these user experience concepts as we develop the functionalities. We want to maximize ease of use, through the experience we want to keep in mind cognitive load, as students have too much on their minds already. We want to have a sense of centralization, multiple platforms for information about a house from previous tenants and the landlord leads to mass confusion and thus, a central platform will help lessen complexity and increase accessibility. We want to focus on specialization, a dedicated website for real estate, will allow for a more uniformed user experience which increases professionality. We want to increase accessibility, an accessible website will allow more students to have a better experience on the platform, and the less tech-experienced parents of the students to assist more effectively. We want to combat a lack of professionalism, the unprofessionalism of other websites has led to a quality reduction from landlords, the UI will be structured in a way to promote the professionalism of both landlords, tenants and students alike which can lead to less frustration. We want to promote a good community, the best information comes from just talking to someone who was there before, promoting a sense of community in the UX.

Group Coordination Plan

While lots of the work being done will be independent, we will make sure that during the weekly meeting at Ellis Hall we will share what we have been working on, and discuss how we can refine our prototypes while also communicating freeform in our Discord group chat. Everyone in the group will participate in the weekly interviews as well as weekly scheduled meetings on Friday afternoons. The main method of designing will be the use of Figma, due to the fact that its shared functionalities will allow for simple and easy group collaboration and work breakdown. The plan for development is a sequence of prototypes with a round of development and impactful user feedback for each major functionality of the design. This is done through the multiple contacts that will be held over their preferred method of communication and recorded on the document. Every week, a new functionality will be created up until the Lo-Fi deliverable is due, with the weekend dedicated to finding as much feedback as possible from our testing group. With the final interview process happening on the 24th and 25th, to allow for a final design to come together and be refined. After the low-fi deliverable has been completed, The interviews will continue to be weekly, but the workload will shift over more to listening to the feedback and implementing what they require. The focus is solely on the requests of the target audience. As stated before, the focus after the first deliverable will be closing the gap between the desired user experience and the real user experiences. Making sure to not fall into the trap of implementing what we think is correct, but fully listening to what the feedback tells us.



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