Group Assignment 1: Project Proposal

Queen's Parking Mobile APP

Group 24

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1. Introduction

The rapid increase in our university's student population poses an urgent challenge to parking management. The existing system relies on outdated parking machines and is plagued by a number of limitations, including inflexibility and an inability to meet the changing needs of members of the university community. This proposal is to show a comprehensive and user-friendly parking application designed to streamline the parking process and improve the overall parking experience for students and staff. The app offers several advantages over traditional parking machines, including real-time updates on parking availability, the ability to pay using a mobile device, and a detailed payment history. In addition, the main goal will be to create a human-machine interaction oriented to young people's usage habits, allowing the app to be rolled out across campus.

2. Related Work

Source 1: Edmonton's mobile parking system

"Through regular surveying of our visitors and clients, we have consistently identified parking as an area where we can make the greatest impact on guest satisfaction," said Olaf Miede, General Manager, of Edmonton EXPO Centre. "As we elevate our health and safety protocols in response to COVID-19, contactless systems ensure a seamless parking experience and uphold our commitment to ensuring our venue is among the safest places to attend events." [1]

To improve overall guest satisfaction. General Manager Olaf Miede noted that regular surveys show that parking is a key area that can be improved. Given the popularity of COVID-19, contactless systems, such as the ParkMobile app, have been implemented to ensure a seamless and secure parking experience. The use of these systems aligns with the venue's commitment to maintaining a high level of health and safety protocols.

Source 2: HonkMobile app

"The HonkMobile app is easy to use and allows customers to pay for parking from their smartphones before departure, during their trip or upon arrival at their destination, adding significant timesaving and convenience to the parking process. Users receive alerts 15 minutes prior to the expiration of their parking session, providing them with the opportunity to pay for additional meter time remotely."(Marketwired, 2015) [2]

The HonkMobile app is designed to make parking more convenient by allowing customers to pay for parking from their smartphones. The app's particular focus on ease of use and flexibility that makes it relevant to the interaction design community and its potential to simplify and streamline the payment processes that makes it relevant to the HCI community. The app's novel features, such as the ability to receive alerts 15 minutes before expiration and to remotely extend the billing time, makes it different from other parking payment solutions. The rationale behind the app is to save customers time and effort while paying for their parking. All In all, the HonkMobile app is a relevant and valuable contribution to the interaction design and HCI community that addresses a common problem in an innovative way.

As with any technology, the application may have some challenges and limitations. HonkMobile also has them, such as technical difficulties. Users may experience technical difficulties when using the application, such as slow load times, errors or crashes. Compatibility. The application may not be compatible with all smartphone models or operating systems, which may limit its use by some users. Integration with parking infrastructure. The application may not be compatible with all parking systems and infrastructure, which may limit its functionality in certain locations.

Source 3: Toronto's Green P Mobile app

The update of GreenP application is to make the payment of urban parking fees more convenient, but these changes are more challenging for users. The new design replaces the direct parking time input window with a confusing chart, and the introduction of the "quick time" option increases this confusion. The interface becomes cluttered and more difficult to browse, and the user has not received any notice of these changes in advance. As a result, the next time they use the app to pay for parking, they are caught off guard and face an unfriendly experience. ("People in Toronto Are Hating the Latest Update to the Green P Parking App") [3]

3. Problem Description or Design Concept

Kingston's parking system is well-known for its inefficiency and inconvenience, particularly for students who park in busy areas frequently. We conducted research on university campuses in Kingston to gather insights from our target users, student drivers, about their parking experiences. Through on-site interviews and open-ended questions, we collected their perspectives on the current parking system, identifying difficulties and gathering suggestions for improvement.

According to the results of our interviews, one of the problems faced by drivers is paying for parking at the pay stations. The current process involves walking to the pay station, operating the machine and waiting for the ticket to be printed, all of which must be done outside, regardless of the weather. This process is not only complex but also exposes drivers to adverse weather conditions.

Another issue is the difficulty of securing a parking spot close to their destination, especially for drivers who regularly park in busy areas such as city centers and university campuses. This daily challenges further exacerbated by the shortage of available parking spaces, causing drivers to spend too much time looking for a parking space and forcing them to travel further distances.

Given these problems, it is a priority to devise a solution to make the parking system more accessible to drivers. Our team plans to target Queen's University, St Lawrence College and Princess Street as trial areas to use our product. As mentioned above, our software is aimed at streamlining the entire parking process for student drivers, so that they can spend their valuable time focusing on their academics.

4. User Characterization

Our target users are students at Queen's University who usually drive to school. A significant percentage of students struggle to find a parking spot, especially in the harsh weather conditions of winter. Student parking at Queen's University is limited and the prime parking list is usually full a few days before the start of the school year. Therefore, our target users are also students who have not obtained a parking permit.

Our target user group is mostly aged between 17-28 and includes all university students. This group is primarily composed of Generation Z, who are referred to as "digital natives." Born between 1995-2009, they grew up with smartphones and the internet and are familiar with various technical products. They are young and have average good hearing, vision, and memory. They are comfortable with touch tasks and using multiple functions.

We serve all genders as the student group has no gender limitations, and the functions of our product treat users equally.

We target university students who are mostly undergraduates or have higher education backgrounds. These students have sufficient knowledge and experience with cell phone technology and the internet. According to a 2023 marketing report, 75% of Generation Z consider mobile phones their preferred device. The most common first choice of media for students is their cell phones, making it easier for them to solve parking problems on the spot. This makes it easier for them to notice, become interested in, and eventually get used to our app. Their experiences will allow them to interact deeply with our design.

For culture, we take into consideration several factors. Firstly, the main language used by our users is English, which will also be the official language of our app. Only 15% of Queen's University's students are international students. Secondly, our target users are primarily from the middle class and above, who

have a greater likelihood of owning a car and driving to university daily. They can also afford to pay for parking consistently. Most importantly, our target users have a sense of social responsibility, as they follow parking rules and are willing to park in designated spots and pay for them. This reflects the driving regulations and laws of the larger society, making our product suitable for social needs.

5. Design and Development

During recent years, the rapid development of technologies and the extensive use of internet has led to an increasing demand for businesses to extend their operations online for the purpose of convenience. Parking is a part of everyday life and there is a need to both facilitate and optimise parking to meet the needs of consumers. However, there are a number of challenges such as the lack of parking spaces in busy areas, limited payment options and the complex process of re-purchasing tickets after the time limit has expired. Optimizing parking software has therefore become a key task, not only to improve the user experience, but also to increase the efficiency and competitiveness of the company. To this end, we aim to address these issues through progressive improvements to our software.

Our software will make use of widely used tools such as QT, InvisionApp and Figma to create a user-friendly interface. This project is part of the Human-Computer Interaction course, which focuses on designing software that meets the needs of the user. The most important aspect of HCI is to ensure that the software is user-centered and designed to solve real-world problems. The course will inform the design of the user interface for the software, taking into account the principles of HCI. Given that our target user group consists primarily of students, it is essential that the software has an easy to use and visually appealing interface. This includes simple navigation, clear information delivery and action prompts, and an attractive visual design. In addition, the software should take into account user habits and ensure consistency between different platforms and devices.

6. Figures and Illustrations

The storyboard below illustrates two scenarios of how the target users interact with the system.
Scenario 1: Fig 1-3, demonstrates a queens student who wasted a lot of time looking for parking space because she didn't know whether there was any spare parking space, and how she interacted with the app..
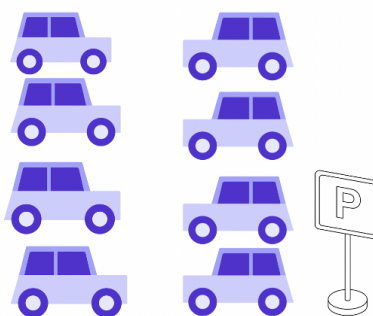Scenario 2: Fig 4-6, demonstrates people have to bear the extreme cold weather and pay the parking fee in person. Both scenarios show the function of the QueensParking app that can fix those problems.

Scenario 1:
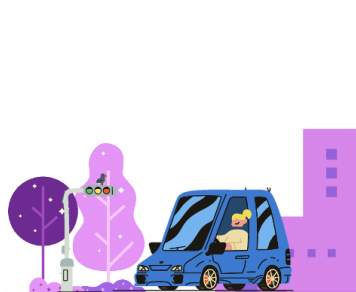
Amy is a fourth-year queens university student. One day, she is driving to school as usual.

Amy is looking for the parking spots at campus, but all the spots are occupied. And lots of the spots are reserved by others.

Amy wastes a lot of time looking for parking space. By using QueensParking, she can check the available parking spots and their locations.

Fig 1   Fig 2   Fig 3

Scenario 2 :

In extreme weather such as heavy snow, not only is parking machine easy to be covered by heavy snow

Fig 4

People need to endure extreme cold weather and pay through parking machine which is not convenient

Fig 5

By using the app, people can charge parking fee anytime at anywhere, and don't be bothered by extreme weather.
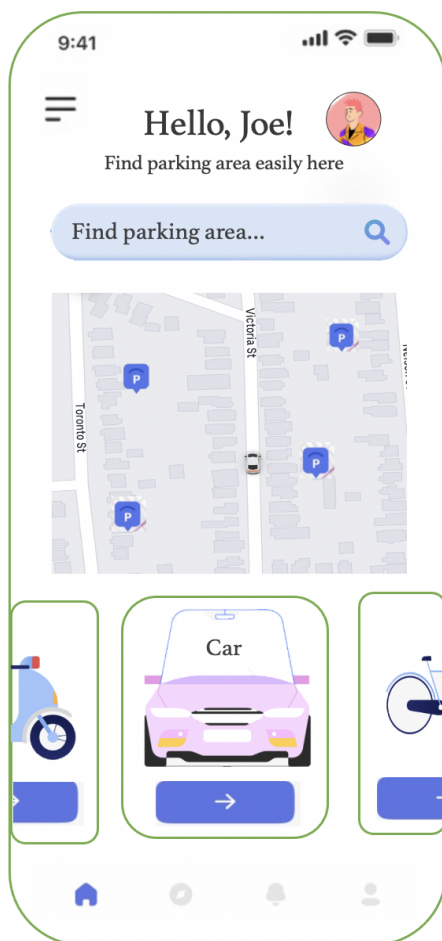
Fig 6
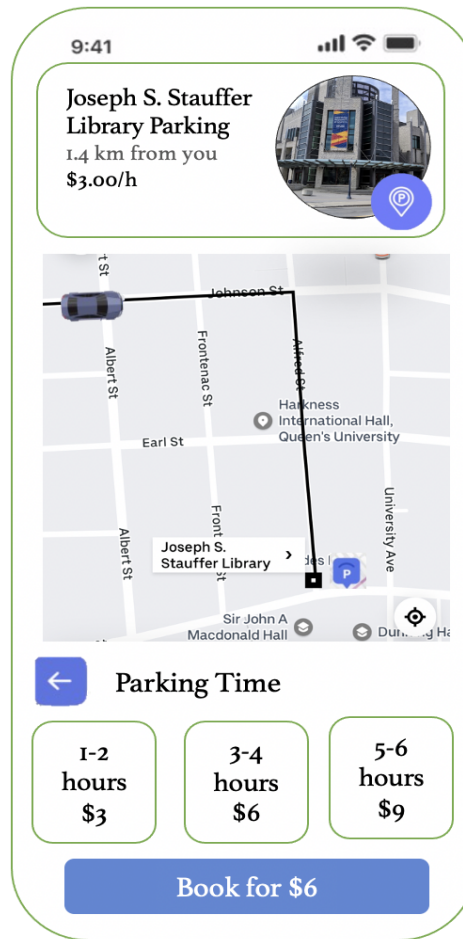

Figure 7: Search page of QueensParking

Figure 8: Information page for Queens Parking

7. Group Coordination Plan

1. Team Contract and Organization

For future work, our group decided to hold weekly meetings of 1 hour in order to make sure we are on the right path. Also, we will schedule weekly meetings with the TA for asking questions and reviewing our progress so far. There are 3 stages we have to go through: investigation, design and testing.

The Gantt Chart is shown as figure 9.

1) We will use discord as the primary way to talk about the project and will respond to each other within 12 hours of receiving a message.
2) Teammates will establish a set meeting time each week to work on the project together that works with everyone's schedule. We will meet via Zoom at the following days and times: 2pm Saturday. If a teammate can't make it, they will let others know. beforehand.
3) Teammates agree to meet with their Group TA on a weekly basis. We will meet on Mondays 3:30-4:30 PM in WLH205 on W2, W4, W5, W7, W10, W11 on 16,30 Jan, 6,27 Feb, and 20,27 Mar. For other weeks, we will meet via online on W3, W6, W8, W9 at the following days and times: Friday 5 pm. If a teammate can't make it, they will let the teammates know beforehand.

2. Project Timeline

Week 5- February (6 th -12 th）
- Complete and submit proposal report (Due February 9th at 10:00 PM)
- Interview with user to research their user pain points
- Start "Low-Fi" project (Due March 3rd at 10:00 PM)
- Complete status report

Week 6- February (13 th - 19 st)
- Complete status report
- Complete all week 6 content in the "Required Content" section of OnQ

Week 7- February (27 th – March 5 th）
- Complete status report
- Complete and submit phase 2 report
- Begin working on Low-Fi presentation

Week 8- March (6 st –12 th)
- Complete status report
- Continue working on proposal presentation
- Complete all week 8 content in the "Required content" section of OnQ

Week 9- March (13 th - 19 th)
- Complete status report
- Complete all week 9 content in the

"Required content" section of OnQ
● Complete and practice for final
presentation

Week 10- March (20 th – 26 th)
● Complete status report
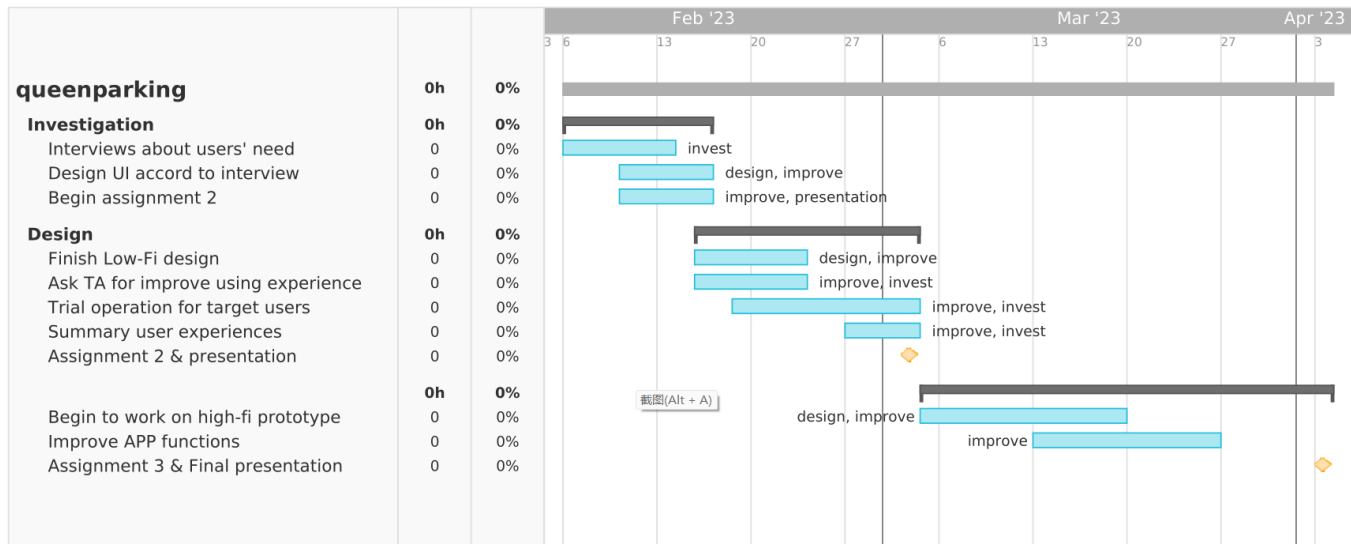● Complete and submit phase 3 report

Figure 9: The group Gantt Chart

8. Reference

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[3]"People in Toronto Are Hating the Latest Update to the Green P Parking App."
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