UNIVERSITY OF CALGARY

CPSC 481 HUMAN-COMPUTER INTERACTION

TEAM S FALL 2020

Project Iteration 4

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November 23, 2020

1 Project Description

The WaitLess project idea revolves around improving the virtual academic advising experience for students by refining a virtual line up system. The current solution, QLess, has problems that will be addressed with our idea while also adding improvements to make lining up virtually easy and convenient. We expect our system to be used as a mobile application where students can virtually line up for drop-in advising at their university/school. The system will also be used by academic advisors who will conduct and manage their queues by assisting the first student in the queue and updating the status of the queue. Advisors will also provide an information page for students to read before they decide to join the queue. For the purpose of this project, we expect this system will be used under the context of an academic environment between student and advisor. We don't expect the student to use this system daily as advising meetings are infrequent.

2 User Tasks

2.1 Prototyped Vertically

- The user will be able to search and browse for different queues to join. This task involves the user having an option to freely browse queues and also search for specific queues.

- The user will be able to access a FAQ page for queues and/or be able to access a chat system to be able to get information about the queue before joining it.

- The user will be notified by the app on their position in the queue. As they get closer to the front, notifications would become more frequent, however they may change this setting to meet their need.

2.2 Prototyped Horizontally

- The user will be able to sort the current lists on the screen in a variety of different ways. For example, from our research, we discovered that it is important for the user to sort information how they wish in order to quickly find what they need.

- The user will be able to log in once and join a queue without going through any additional steps. The process of joining a queue is the main task that the app performs, and going through unimportant steps before joining a queue can cause frustration for the user.

- The user will access a general "about" page that contains more information about the app. This task will provide users with a good baseline of information about the functions and purpose of the app.

- The user will access a history of queues they've joined in the past. This allows for better communication between the user, application provider, and the queue provider if support is ever needed for the user.

3 Heuristic Evaluation

3.1 Process and Findings

Our evaluation was conducted using Nielsen and Molich's UIDesign Guidelines. We split our team into 3 evaluators and 2 reviewers. Each evaluator independently viewed the application and reported their findings using the guidelines provided. Each report was then shared with the reviewers and were analyzed to determine problems and their severity.

Initially, the high priority issues we encountered all related to traversal of the app. When evaluating early versions of the prototype, many of the buttons in the app did not take users to the correct

screen or no screen at all. Some of these specific buttons are high priority such as the account sign up button, and additional information buttons in the queue search. There were also some pages that weren't connected to the prototype. These issues were addressed in updated versions of the prototype, which prevented future issues regarding usability.

In terms of communication with the user via visibility of system status, we found that the app displayed relevant information clearly when the user was dealing with queues, but didn't necessarily have any options to change the amount of information displayed. However, even though small adjustments to settings such as this are not available to the user, the overall flexibility and efficiency of the app make up for its lack of customizability. Since all queues share a few basic features, we can ensure the user always has access to essential information for any queue they join and can instantly be familiar with what's being displayed.

Moving on to the overall design of the app, when transitioning from the lo-fi prototype to the hi-fi prototype, overall aesthetic and design was vastly improved. During the evaluation process, looking at the design and colours of the menus and interfaces of the app didn't feel overwhelming. Navigation of each page feels fairly intuitive and never overwhelms the user with too many options. This is slightly hindered by the lack of complete user freedom in some sections of the app where the user doesn't have an alternative method of navigation. Specifically, when a user is prompted by a yes or no pop-up notification, the bottom navigation menu is unavailable as a quick alternative to simultaneously answer no and navigate to the page you want.

In regards to problems with a low severity of 1 and 2. They are mostly quality of life enhancements. There is a need to recolour different sections and buttons to be less eye straining. This mostly pertains to the faculty logos in the queue search and the help buttons. Some other elements of the app could also benefit from being more consistent across all pages to ensure the user can intuitively recognize the actions and functions rather than recall them. Currently, if a problem were to occur in an event such as queuing or sign-up/log-in, we do not have any error messages to notify the user. Other low-severity quality of life issues include the lack of auto-complete or resent searches for the queue search bar, help options in the settings screen, location tracking settings/options, language options and a more developed display of system status.

Overall, the heuristic evaluation and review process found initial versions of the prototype to have a few areas with high severity issues to address. After these were dealt with, evaluations of the prototype mainly resulted in the identification of issues with none to low severity mainly relating to quality of life and non-critical usability of the app. Throughout the entire process, the app required the most attention in the area of error prevention, mainly relating to navigation and accessibility, and required the least attention in the area of matching the system to the real world, which was integrated well in previous stages.

4 Reflection

4.1 What went well

Because we made a thorough low fidelity prototype, we were able to borrow and directly translate most of our ideas onto the high fidelity prototype. We were also able to have efficient communication between the evaluators and reviewers, allowing us to update the high fidelity prototype as necessary.

4.2 What went poorly

The process of making the high fidelity prototype was a bit of a struggle, since the file had to be updated in increments by individual team members. This prevented us from working simultaneously and collaborating on the prototype without taking turns. In addition to this, the transition to using AdobeXD forced us all to face a learning curve to understand and use the new software before being able to work on the prototype.

4.3 What to do differently

Something we would do differently is start the evaluation process while the high fidelity prototype is at an earlier stage so that the information we gain in the evaluation could be applied directly while making the prototype. Most of our early work was done on the high fidelity prototype and it was nearing completion before it had been evaluated.

5 Appendix

5.1 Heuristic Evaluation Documents

Rule of Thumb	Is this rule being applied? How so?	Is this rule violated? How so?	How can this rule further improve usability, utility and desirability?
1. Visibility of system status	Yes, user is aware of distance, people in line, and when you are up next.	Isn't clear in the settings whether a switch is on or off	The number of people in line and distance make it easy for the user to know if it is a good time to join that line
2. Match between system and the real world	Yes, takes in user location to determine distance from a line and which ones to suggest that are near you	This prototype currently does not offer the feature of asking the user to use their location, but this doesn't seem doable in this prototype	This can improve how users choose their lines and makes for a great utility. That way they can determine if joining makes sense for them at that time and location
3. User control and freedom	Yes, they can edit profile details and change certain options in the settings tab	This rule doesn't seem to ever get violated	Makes the user feel one with the app. This app makes it very easy for the user to access exactly the information they are looking for
4. Consistency and standards	UI Design is consistent throughout the app. Information required fits the standards	This does not seem to be violated anywhere in the app	Can ensure that there is a colour scheme throughout the app which is present. Also to create familiarity with the users
5. Error prevention	Yes, back buttons used work properly, and joining lines brings you to the correct screens. Also user confirms actions	Some buttons and functions are not taking the user to the correct screen, or no screen at all	Book in middle of queue search, sign up page, and question marks by lines have no function for the user
6. Recognition rather than recall	The app knows if you are a returning user and remembers your details	Although recent lines are saved, recent searches are not saved per user	Can make it much easier on the user to have this recognition because we want users to complete the task with the least amount of interactions
7. Flexibility and efficiency of use	Yes, it is very efficient with features like recent lines for people who use the same lines multiple times	This rule doesn't seem to be violated	The settings option gives the users great flexibility with how they want to interact with the app. Makes it desirable as it will always fit their needs
8. Aesthetic and minimalist design	The app has only the most required functions so that new and returning users are never confused on how to operate	There are clashing colours in the search queue section, but this is only because each subject has it's own colour.	Many buttons and boxes are squares, with a few search boxes and switches that are curved. Could be useful to choose one design and run with it
9. Help users recognize, diagnose and recover from errors	There isn't any clear instances of showing users that have created an error.	There isn't any error prevention currently in the app. There is the option for users to confirm their actions.	This helps with having users be less frustrated and give them guidance on how to properly make their way through the app
10. Help and documentation	There are buttons available to give guidance to the user about specifics on lines and also an FAQ page	The buttons for information on lines currently aren't working as they should properly function	The FAQ page is very helpful to users and gets updated depending on what section they are on to give the best help

Rule of Thumb	Is this rule being applied? How so?	Is this rule violated? How so?	How can this rule further improve usability, utility and desirability?
1. Visibility of system status	This rule is being applied through visuals of the amount of people within queue, the estimated time to wait and your position within the queue itself.	No violation	Currently we have a notification that signals you are next in line however having additional notifications indicating your position the closer you get might be helpful as well
2. Match between system and the real world	Application is provided in English and does not contain confusing systems or words. For example, we have a simple list displayed along with organization options for it. The option to chat is also a match to the real world in regards to conversation	No language change options for users who do not mainly speak English	Having different languages would cater to more users.
3. User control and freedom	On almost every screen there exists a back button to go to the previous page. For individuals within a queue, there is a clear "leave queue" option	No violation	Improves desirability such that we aren't restricting the user to specific options
4. Consistency and standards	Application has an internal consistency. Functions such as the back button are consistently in the same position and information	Very small detail but "need help" option is not consistently colored	Consistent help options and consistent given information help with usability

	about queues are displayed in similar fashion		
5. Error prevention	Rule is mainly applied in our confirmation screens when joining and leaving queues but also logging out	No violation	Allows users to prevent mistakes and potentially wasting their time
6. Recognition rather than recall	This is mainly in our drop-down sorting options when viewing all available lines.	No auto-complete currently exists for our queue search option.	Prevents users with the need to memorize information
7. Flexibility and efficiency of use	Perhaps, individuals who know exactly the name of their queue can specifically search it up instead of searching a generic word or through an organized list	In regards to efficiency and flexibility there isn't too much to offer between a new user and expert user	There isn't too much when it comes to efficiency for expert users
8. Aesthetic and minimalist design	Visuals show only what's important on the current screen however the user may delve deeper to view more information such as clicking on the FAQ on a specific queue	The bright vibrant colours on some logos might be too much	Having a clean aesthetic with emphasis on important things on screen improves usability. Also, a pretty application is more desirable
9. Help users recognize, diagnose and recover from errors	Doesn't seem to be applied	Currently we have no error messages/screens.	Errors such as illegal emails during sign up or being unable to join a queue due to it being full or a fault with the connection.
10. Help and documentation	Help options are available on plenty of screens both while searching for a queue but also being in a queue.	Currently no help options in the settings screen.	Being able to help users fix their problems or solve their questions improves usability

Rule of Thumb	Is this rule being applied? How so?	Is this rule violated? How so?	How can this rule further improve usability, utility, and desirability?
1. Visibility of system status	When in a queue, information about the current queue is reported to the user. Notifications are also given to let the user know of their status	Visibility of system status is currently sufficient for the purposes of a prototype but could include more if it was a complete functioning app	Seeing the status of the system allows the user to know how they should be using the app at any given time and what actions they can perform
2. Match between system and the real world	Information about the real world is being used in the app to display the correct location of the queue and directions to get to the queue	There do not seem to be any violations to this rule since the system is able to match all necessary components to the real world (queue names, maps, etc.)	Making sure that queues and maps in the app reflects real world info means users don't have to put much effort into knowing where they're going for their queue
3. User control and freedom	The user has freedom over where they navigate in the app using the bottom navigation menu	At certain points, the user must perform a certain task before having full freedom	Giving the user control and freedom allows for better usability since the user won't feel trapped or unsure how to proceed
4. Consistency and standards	The app is consistent with itself in most cases	Some additional polish could improve minor consistency issues	Having a consistent experience allows for the user to have a better experience navigating new or different pages of the app
5. Error prevention	Errors are being prevented by ensuring that every component of the prototype will not lead to a dead end	Pages such as the phone home screen queue notification page are difficult to connect to other pages of the prototype and are inaccessible	Preventing errors before they occur allow for a smooth user experience with minimal frustration

	specific queue types so that users can recognize familiar queues	could be more intuitive, but overall this rule is not violated	and intuitive interaction with the app allows for efficient and quick use of the app
7. Flexibility and efficiency of use	There are relatively few actions required to navigate the pages of the app	The prototype is not yet very flexible since it cannot yet be generalized and expanded to add new queues as the full app might be able to	Ensuring the user doesn't have to jump through a lot of hoops to complete their task ensures the user accomplishes what they want to do quickly
8. Aesthetic and minimalist design	The design does a good job of being aesthetic without overwhelming the user	The rule is slightly violated by some of the example colours for certain faculties	Having an aesthetic and minimalist design ensures the user can focus on navigating the app functionalities
9. Help users recognize, diagnose, and recover from errors	This rule has not yet been applied since it's hard to produce errors in a visual prototype	Although the rule hasn't been applied, it hasn't necessarily been violated either	Helping users recover from errors ensures that users do not become frustrated and leave the app.
10. Help and documentation	The app has FAQ pages for the app itself as well as for individual queues	The rule is not being violated. Plenty of help is available	Having help pages within the app allows for users to spend less time with any struggles they may have using the app

5.2 Reviewer's Findings

Heuristic	Problem Description	Severity Scale 0 - 4 & Justification
Visibility of system status	Visibility of system status is currently sufficient for the purposes of a prototype but could include more if it was a complete functioning app	1 this is a very minor issue that was highlighted. Only needed to be addressed for end stages when we build the complete app
	Isn't clear in the settings whether a switch is turned on or off	2 this error is a low priority compared to others but still important
	No violations	0 severity
Match between system and real world	There do not seem to be any violations to this rule since the system is able to match all necessary components to the real world (queue names, maps, etc.)	0 severity, evaluator found no errors in their review
	App doesn't ask users for their location, it doesn't seem doable in this prototype.	1 prompting the user for their location is can be included at the end of the project
	No language change option for users who do not mainly speak English	1 is an issue but not a priority now in establishing foundational usability
User control and freedom	At certain points, the user must perform a certain task before having full freedom	3 high priority in solving this error as it can trap the user in certain parts of the app
	Doesn't get violated	0 severity
	No violation	0 severity
Consistency and standards	Some additional polish could improve minor consistency issues	3 high priority since consistency in pages helps the user get more familiar with the app
	Doesn't seem to be violated	0 severity
	Very small detail but "need help" option is not consistently coloured	2 at first inspection it was a recolouring issue, but then we found that "need help"was not leading anywhere consistently, so it is a higher priority

Error prevention	Some pages are not yet connected to the prototype and are therefore inaccessible	4 highest priority, breaks usability if not fixed
	Some buttons and functions are not taking the user to the correct screen, or no screen at all	4 again, highest priority. Dead and incorrect buttons destroy the usability of our app
	Book in the middle of the queue search, sign up page, and question marks by lines have no function for the user.	4 highest priority. These are specific buttons that we need to address and fix
Recognition rather than recall	Some symbols and pictures in the app could be more intuitive, but overall this rule is not violated	1 essentially a "recolouring" of some symbols and pictures. Instead of recolouring, placing these symbols elsewhere
	Although recent lines are saved, recent searches are not saved per user	1 low priority since it is not one of our tasks, but would be helpful to add later on for our final stage
	No auto-complete currently exists for our queue search option	1 low priority since it is not one of our tasks, but would be helpful to add later on for our final stage
Flexibility and efficiency of use	The prototype is not yet very flexible since it cannot yet be generalized and expanded to add new queues as the full app might be able to	2 low priority, but higher than others since this should be implemented by the final stage
	Does not seem to be violated	0 severity
	In regards to efficiency and flexibility there isn't too much to offer between a new user and expert user	0 severity
Aesthetic and minimalist design	The rule is slightly violated by some of the example colours for certain faculties	1 low priority as it is some general cosmetic changes
	There are clashing colours in the search queue section, but this is only because each subject has its own colour.	The first error has a severity of 1 since it is only looking at our design and deciding wether to recolour or not

The second error is a bit more severe, |

	Many buttons and boxes are squared, with a few search boxes and switches that are curved. Could be useful to choose one design and run with it.	sitting at a level 2, since this ties in to the consistency heuristic violations as well. However, choosing between the squared vs rounded edges is important to the aesthetic of our app and should be prioritized.
	The bright vibrant colours on some logos might be too much	1 need to recolour the logos to move away from RGB to some softer colours
Help users recognize, diagnose, and recover from errors	Although the rule hasn't been applied, it hasn't necessarily been violated either	2 severity, need to look over our design and include recovery from errors
	There is no error prevention currently. There is option for users to confirm their actions	2 severity, confirmation screens are added, but there are other parts of the app that lack the ability to help the user
	Currently have no error messages/screens	2 severity, from the same reasons as above.
Help and documentation	The rule is not being violated. Plenty of help is available	0 severity, there is a dedicated help screen that is accessible
	Buttons for information on lines currently aren't working as they should properly function	3 high priority, user cannot access help and information pages, and so it should be addressed
	Currently no help options in the settings screen	2 low priority, need to be able to access help from the settings section of our app as well.

GitHub Repository, Portfolio, and Pages Links

Here is the link to our GitHub Repository: https://github.com/RMcCurdy/TeamS_Project

Here is the link to our GitHub Project Page: https://github.com/users/RMcCurdy/projects/1

Here is the link to our GitHub Pages Portfolio: https://rmccurdy.github.io/TeamS_Project/