CS6750 Human-Computer Interaction (SU21): Assignment M4

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Abstract— Throughout my course assignments, the interface I will evaluate and attempt to redesign is Kayak's flight booking interface. Kayak is an online travel agency, where users can compare prices and book travel for flights, stays, car rentals, adventures, vacation packages, and train tickets. I will focus on the flight-booking interface. Although the current interface provides a decent experience for users to compare flights, it does not yet address the need to be able to compare prices for users who want to book through points (i.e. paying with airline miles or credit card points).

QUALITATIVE EVALUATION:

For my qualitative evaluation, I will evaluate the prototype of the search functionality of being able to input required and optional search parameters to compare miles / points value across travel partners for travel bookings. I will use the interviews method for my evaluation.
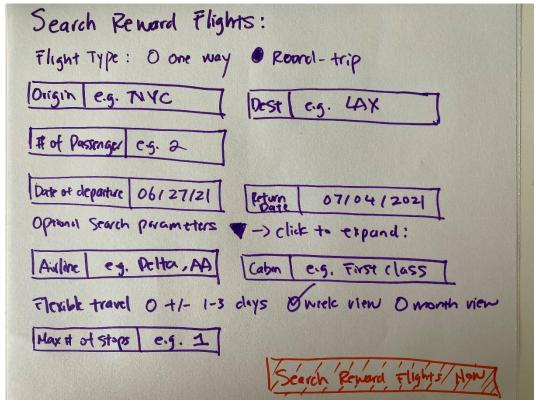
Evaluation plan:

- **Who the participant will be?** I will recruit three family members, my wife, my cousin, and my close friend that lives in the same building as me. The goal is to get two confirmations out of the three recruits in case of scheduling conflicts
- **How they will be recruited?** I will recruit my wife through in-person request, and recruit my cousin and friend over text messages.
- **Where will the evaluation take place?** I plan to do the interview in my building library where we have an open space that other building tenants

rarely use. If it is too noisy during the interview time, I will use my apartment as the backup.

- **Whether / how it will be recorded**? I plan to record the interview on my cellphone after getting consent from the participant so I can refer back to it.

Content of the evaluation / interview questions:

- Participants will be shown the paper prototype I created as part of Assignment M3 (see Figure 1 below) and answer the following questions:
    - Is this interface intuitive for you to use or does it require explanation of what you are supposed to do?
    - Are there any required search parameter that is missing?
    - Are there any required search parameters that is redundant or not needed?
    - Are there any optional search parameters that is missing?
    - Are there any optional search parameters that is redundant or not needed?
    - What other functionality or capability do you use while searching for flights that is not present?
    - Do you think there is a better way to input the user search parameters than the methods laid out in the prototype?
        - If yes, can you elaborate on it?
    - Do you think it is better to hide all optional search parameters until the results screen or do you prefer to allow users to specify these optional search parameters from the initial search itself?
    - Will you use this interface over going to each individual airline website to search for award ticket or do you still prefer to search on the individual airline sites?
    - Is there any other question / comment you have for me about this interface?

- Lastly, I will thank the participant for their time and ask them if it is ok to follow up with them if there is any specific clarification or question that might surface when I do a thorough evaluation of the participant responses.

Figure 1 – Paper Prototype.

How will this evaluation address the user requirements?

The interview responses will directly address many of the requirements collected for the data inventory. This includes looking at the context of the task and addressing the goals of the user. However, the prototype itself does not address all the needs because it was not intended to do that. It just accounts for some of the subtasks needed to achieve the overall goal.

The interview question are meant to evaluate the first part of the goal; being able to search across multiple airline partners for what it will cost them to travel. The interview question focuses on whether the initial search criteria satisfy the context and needs for what the user wants to do, and whether we need to account for anything that is missing. The interview questions also gauge whether or not they are able to use some of the design principles, such as discoverability, mapping, simplicity, and consistency while using this prototype.

EMPIRICAL EVALUATION:

For the empirical evaluation, I will have to design a minimum viable product prototype to simulate the flight searching process. I will be testing the process of leveraging a central platform to search for award flight options compared to users having to search at individual travel partners and doing the comparisons offline. For the empirical evaluation, I will focus on quantitative metrics such as how long from beginning to end that the user took to finish their comparison of flight award tickets and the number of interfaces they need to interact with to accomplish their goal.

Control and experimental conditions:

- Controls:
    - Setting the same search parameters between the two comparisons. This includes date of travel, origin and destination locations, and number of passengers. It will exclude all other optional search parameters.
- Experimental:
    - Interface will be different between searching on individual credit card or travel partner websites compared to the minimum viable problem prototype. This will not be an exact experimental condition since the prototype will not have real processing delays that other systems need to account for. To account for this difference, I will multiple the time by two times for the minimum viable product as a starting point to evaluate if I need to change the time factor.

Null and alternative hypothesis:

- My null hypothesis will be that there is no statistical difference in using individual credit card / travel partner websites or interfaces to compare award flight options across different travel partners compared to using a central interface that is able to compare all flight options across travel partners.
- My alternative hypothesis is that it is faster to compare award flight options across travel partners in one central interface than searching through multiple travel partner websites / interfaces.

Experimental method:

- For this evaluation, I will use a within-subjects method so that each participant goes through both treatments (i.e. interfaces). This means that they will first do the flight search just like how they would today (i.e. through individual travel partners), and record the time it took from beginning to end. Then each subject will complete the same task using the minimum viable product prototype, and measure the time it took from beginning to end. The two quantitative data point the participants will generate for me to collect are:
    - The time it took from beginning to end to complete their search
    - The number of interfaces that they interacted with during their search process
- I will evaluate this analysis with a paired t-test. As we learned through the course lecture, the paired t-test "compares the means of two paired sets of data" (Joyner 2017). Our data generated will also match the criteria for this test, making sure that the individual data points comes from the same participant.

What lurking variables might confound my data?

- Similar to the example given in the course lecture, a major lurking variable could potentially be which treatment each participant sees first. To account for this, and a correction of my previous ideas, I will have to randomly assign the order of which interface is shown to each participant first.
- Another variable that might confound the data is that each person has different level of expertise when it comes to searching for award ticket flights. There might be people in the group that travels more frequently compared to other participants, and therefore, they have more experience searching for flights. There are also people who might not be familiar with how airline miles / credit card points work, and have only traveled through paying for flights using regular currency. Therefore, we need to make sure we considers this factor when we are evaluating our data from the evaluation.

PREDICTIVE EVALUATION:

For the predictive evaluation, I will perform a cognitive walkthrough since I will be more interested in how a user makes decisions and branches within the interface.

Task / situation:

- o The specific task that I will be addressing with this predictive evaluation is the ability to compare what it will cost in airline miles or credit card points across travel partners through a consolidated interface that pulls in all these information from the various travel partners.

User goal:

- o See price comparison in airline mile or credit card points across all available travel partners.

Operators:

- o Power on laptop
- o Navigate to web browser
- o Navigate to interface page
- o Input required search parameters
- o Conduct search
- o Input optional search parameters
- o Filter for specific flight requirements to limit search results
- o Review results and comparison across various travel partners
- o Go back and change search parameters as needed
- o View flight details
- o Save flights for later access or review
- o Transfer miles if needed
- o Redeem for ticket

Evaluation:

- o I will be evaluating a user's navigating around the interface to figure out how to accomplish their goal. Since this is a predictive evaluation, I will perform the evaluation instead of real users.

PREPARING TO EXECUTE:

I will execute the qualitative and predictive evaluation in my next assignment. Given time constraints, I will not be able to create a minimal viable product prototype that I can use to conduct the empirical evaluation. In addition, it will be hard to recruit the sample size needed to conduct the empirical evaluation. The qualitative evaluation can be executed based on my current prototype and leveraging my family member and close friends. The predictive evaluation is also easier to plan for since I will be performing the evaluating instead of real users.

REFERENCES

1. Joyner, D. A. (2017). Human Computer Interaction Lectures