Assignment M4
CS6750 HCI

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Abstract— Throughout the series of M assignments, I will be focusing on redesigning the search functionality within the DoorDash application. Both the web application and mobile application have a general search ability across all listed restaurants, however I noticed that there is not a search function within the selected restaurant. This causes me (or the typical user) to manually scroll amongst all the tabs and listed menu items to find what I'm looking for… or to even find out if the restaurant has the item. The main goal of this redesign would be to optimize the user's experience in searching for a particular item on DoorDash.

1 QUALITATIVE EVALUATION

For my qualitative evaluation step, I will be using the **survey protocol** to evaluate the **wireframe** prototype I created in Assignment M3. The wireframe prototype integrates the menu search capability through a Search Bar component placed directly above the listed menu items on the restaurant page. For a pictorial representation of the implementation, please refer to *Appendix 5.1: Wireframe Prototype .*

1.2 Evaluation Plan Lay Out

The **participants** for this evaluation plan will be a combination of some of my friends and immediate family. As for **recruiting**, I have three housemates: two friends from college and my younger brother. I will reach out to a few other college friends and my mother, father, and youngest brother to participate in this evaluation plan as well.

The evaluation will **take place** at my house for my housemates and college friends. My immediate family (except for my brother who lives with me) will partake in the evaluation plan at my parents' house. The evaluation plan will be **recorded through video.** Due to the participants being relatives and close

friends, I've had the opportunity to gauge their interest and collect their thoughts on being recorded. All of the participants said that video recording the evaluation plan is not intrusive and that they would give consent to be recorded for the plan execution.

1.3 Content of the Evaluation Lay Out

The **survey** for the wireframe prototype evaluation will be hosted through Google Forms. Due to the participation pool being individuals not being students at Georgia Tech, I needed to make the survey host platform available to outsiders. The survey questions to answered by the participants are:

1. What did you like most about the interface design?
2. How easy was it to find the Menu Search Bar?
3. Did you find the Menu Search Bar useful?
4. Would you use the Menu Search Bar frequently?
5. How easy was it to use the Menu Search Bar?
6. What was your first impression on the new DoorDash interface?
7. Was there anything missing on the Menu Search Result modal?
8. Was this feature confusing to use?
9. Did the placement/location of the Search Bar create clutter?
10. How would you rate the usability of this feature?

1.4 Addressing Stated Requirements

1.4.1 Data Inventory Requirements

In my Assignment M2's **Data Inventory** section, I discussed the Who, Where, Context, Goals, Needed, Tasks, and Subtask aspects of the prototypes created further down the road. The wireframe protocol that the participants will be evaluating is designed to encompass all those focal points. For **Who and Where**: the participants as discussed are a combination of college friends and my local family. My college friends are around my age (mid 20's) and my family ages range from 16 - 75 years old. Each participant will evaluate the prototype either at my house (housemates and college friends) or my parents' home. For **Context, Goals, and Needed** I will provide the wireframe interface for the participants to use. They will all have the same goal: find a restaurant that sells a particular item (chosen by the participant) using the menu search bar. The participants will need the wireframe pages itself which I will be supplying.

1.4.2 Defined Requirements

In my Assignment M2's **Defining Requirements** section, I emphasized the importance of: functionality, usability, and learnability. This menu search bar wireframed prototype displays the search functionality on the face of the restaurant page. The functionality is easily detectable and stands out on its own to the user without requiring the user to go through multiple steps. The menu search bar feature is also usable such that the display contains an actual search bar that the user can type directly into. It's not a button that the user has to press to then see the search bar. Lastly, the menu search bar is learnable in the sense that once the search is executed the user can learn the features that are integrated with this search bar as well. For example, when the participant clicks "Go" to execute the search within the menu, the participant will learn that each time that this feature is executed a modal displaying the results and the option to add that item to the cart is available. Therefore the next time the participant goes to use this feature, they'll be able to learn more about it's capabilities through interaction.

2 EMPIRICAL EVALUATION

For the empirical evaluation, I will be using the **card-based prototype.** The card-type prototype integrated the menu search capability through a Button component. The Search button is placed directly next to the restaurant name in the header component of the restaurant page. For a pictorial representation of the card-based prototype, please refer to *Appendix 5.2: Card-Based Prototype.*

2.1 Control and Experimental Conditions

I will be testing the card-based prototype that implements the restaurant page's search button that displays a modal once clicked. The modal itself contains a search bar and will display the results (if any). I will be **comparing** this prototype design to a variation that consists of a Search button that expands a panel below rather than opening up a layered modal.

2.2 Null and Alternative Hypothesis

The **null hypothesis** for the empirical evaluation is that the card type prototype and prototype variation yield the same participant outcome and data. The **alternative hypothesis** is that the card-based prototype yields faster results for

the plan execution as well as more positive feedback from the participant interaction.

2.3 Experimental Method

I will be using the **Within Subjects Design** to conduct the evaluation plan. The subjects will not be **assigned to groups** since each participant will be interacting and evaluating both interfaces (my card-based prototype and it's altered variation). Due to the tasks for both treatments being the same, the participants will need to **complete** this as part of their condition: using the new DoorDash interface find a restaurant that sells a particular item.

From executing this task through both the card-based prototype and it's variation, the participants **will generate quantitative and qualitative data** for further analysis. **Qualitatively**, the data collected will represent the participant's interaction and emotional reaction to the interface. This data will be **analyzed** using the **Kolmogorov-Smirnov test** due to the data being **ordinal** and spread across t**wo treatments.**

Quantitatively, the data collected will consist of time measurements on each "step" of the interaction: the time it takes for the participant to move from one step to the next and ultimately the total time it took for them to complete the task. This data will be **analyzed** using **Linear Regression.** The data collected here is **non-categorica**l for both **Interval** and **Ratio** aspects.

To clarify, the data I collect for the participant's time measurement in between steps will be recorded on an interval schema:

1. 0-3 seconds
2. 4-6 seconds
3. 7-10 seconds
4. 10-14 seconds
5. 15+ seconds

Similarly, the data collected for the participant's completion time will be measured on an interval schema:

1. 0-7 seconds
2. 8-15 seconds
3. 16-24 seconds

4. 25-30 seconds
5. 31+ seconds

2.4 Lurking Variables

Since this evaluation plan will be conducted using a Within Subjects Design, one lurking variable to look out for is the effect of exposure order. The participants can only interact with one prototype design at a time so doing one before the other may influence their reaction time or intuition on the next. In order to mitigate the effects of this variable, I'll introduce randomization to the order that the particiaptns interact with the interfaces. Another lurking variable that may confound my data is that there may be external factors that cause the participants interaction time to be inaccurate. For example, I have a dog at my house and if she starts to bark at a squirrel outside the participant's focus and attention may be deterred and interrupt her thought process. So, her interaction time and goal completion time may be a bit longer than others when the dog didn't bark. Other external factors like this such as: phone calls, text messages, other surrounding conversations may also affect the resulting data. In order to mitigate the influence of these lurking variables, it would be best to set a base environment that is isolated and maintained for each participant to create consistency resulting in (ideally) more accurate data collection.

3 PREDICTIVE EVALUATION

For the predictive evaluation section, I will be using the textual prototype. This prototype integrates the menu search feature by having a Search Bar available within the Category Navigation Menu. Please refer to *Appendix 5.2: Textual Diagram of the Textual Prototype* for a flowchart summarizing the textual prototype discussed in my M3 Assignment.
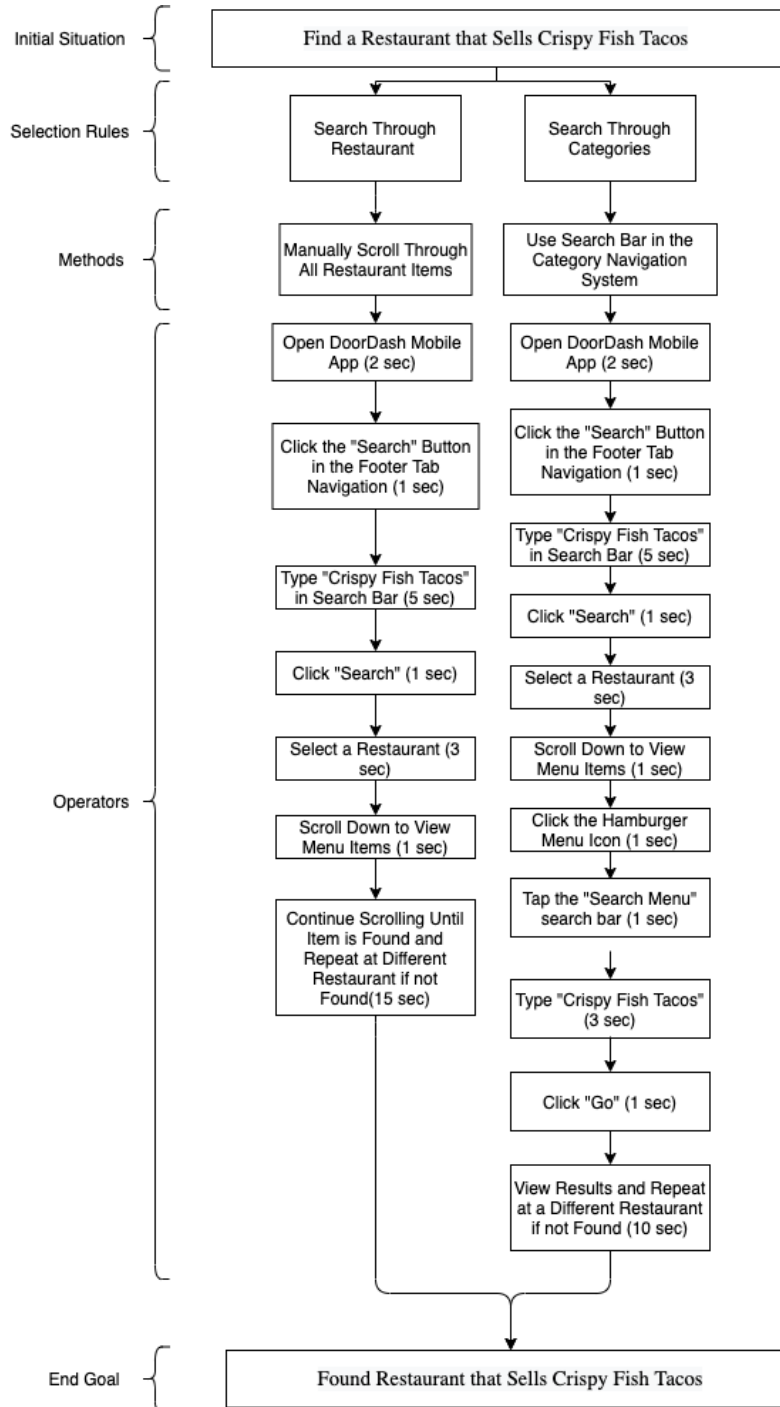
3.1 Predictive Evaluation Plan: GOMS Model

Figure 1—GOMS model representing the textual prototype
provided in *Appendix 5.2: Textual Diagram of the Textual Prototype*

3.2 Describe Task(s)

The user's **task** will be to interact with the textual prototype with the **goal** being: find a restaurant that sells Crispy Fish Tacos. The user will have the textual prototype itself as an **operator** to use for the evaluation plan execution.
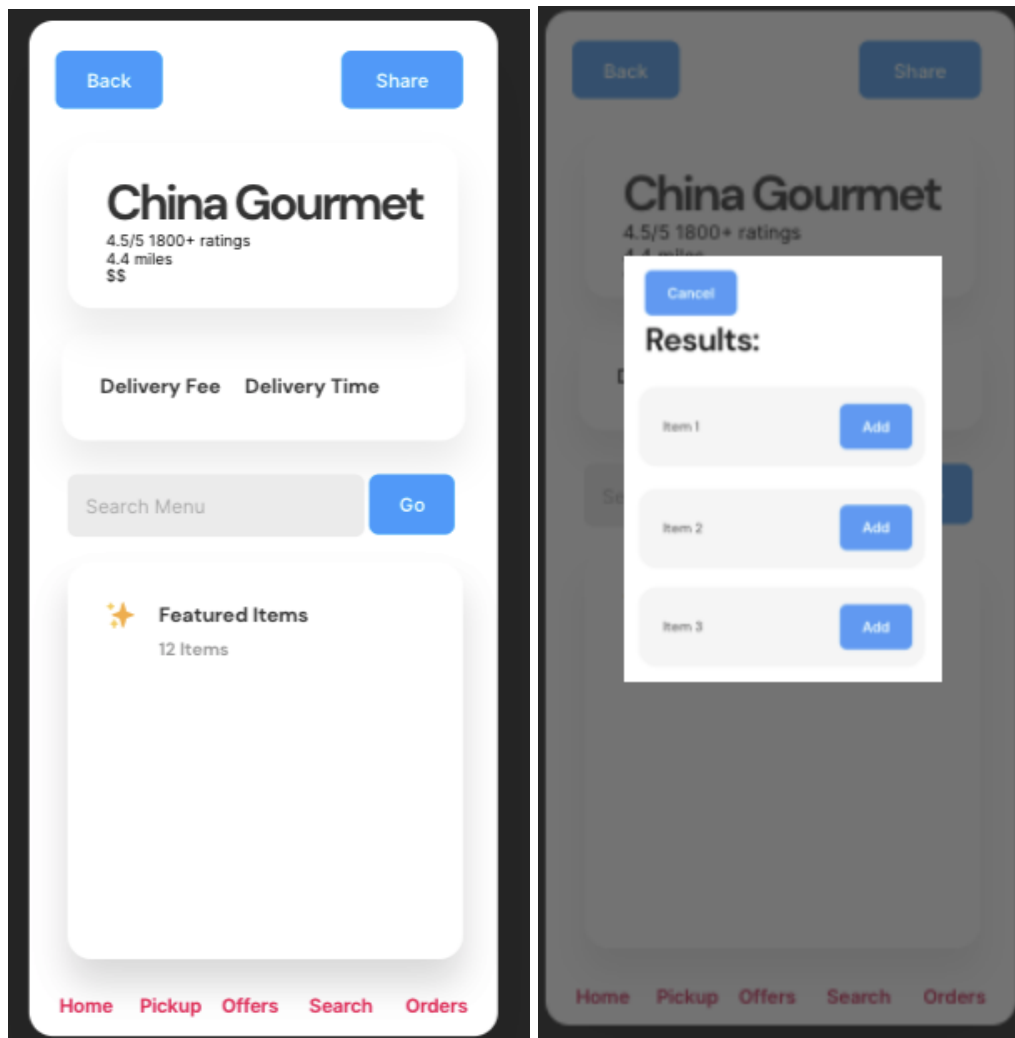
I will be **evaluating the user's navigation around the interface to figure out how to accomplish their goal**. Since the prototype being used for the predictive evaluation is textual, I thought it'd be more beneficial to watch their thought process as they analyze the written steps. Doing so, I can evaluate how the user navigates a textual representation of the design for the first time. If the user knows how to accomplish the goal in advance, they may deem it acceptable to "skim" through the text and miss some steps causing them to take a longer time to complete the goal. On the other end of it though, if the user already knows how to complete the goal, doesn't navigate through the textual protocol at all, and successfully completes the goal, I as the evaluator cannot pinpoint which aspects of the prototype assisted in the success or if the textual prototype was even necessary at all.
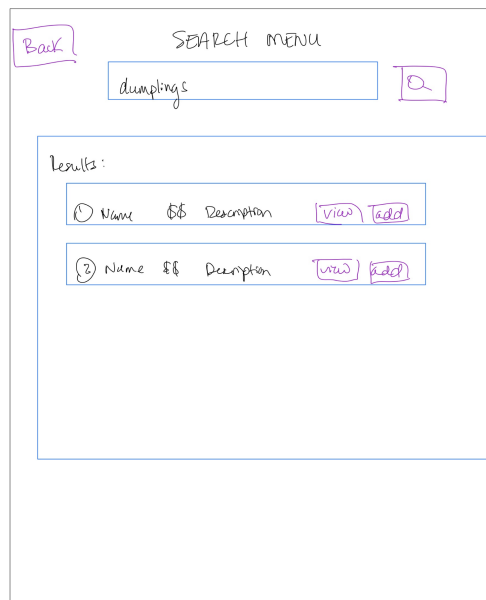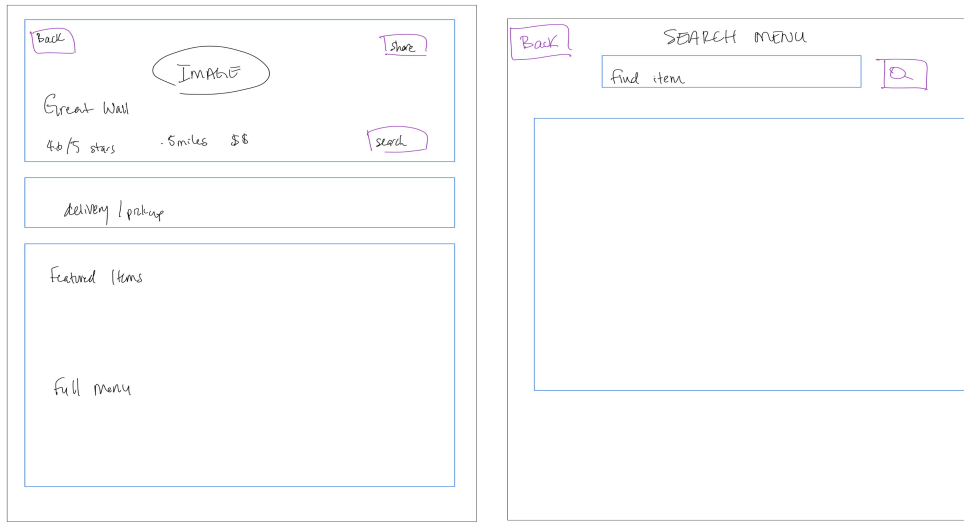
4 PREPARING TO EXECUTE

For the next assignment, the two evaluations I will complete are: **Qualitative Evaluation** and **Predictive Evaluation**. I chose **not to conduct** the **Empirical Evaluation** because the card-based prototype discussed in this assignment currently is not ready to be evaluated. In addition to that, the **Qualitative Evaluation** method appears to cover the majority of the **needfinding defined requirements** and **data inventory** I had initially set out to design for. I have a sufficient number of people to participate in the Qualitative Evaluation as well so the data collected should be a solid representation of the prototype giving me enough information to analyze. The **Predictive Evaluation** method is straightforward and I believe it will produce informative data since the **textual prototype** is detailed and provides clear instruction for the user.

5. APPENDICES

5.1: Wireframe Prototype

5.2: Card-Based Prototype:

5.3: Textual Diagram of Textual Prototype:

1. User Needs to Open the DoorDash Mobile Application

2. User selects a restaurant from the suggested list or results after specifying a delivery address

3. User scrolls down to view the tabs and presses on the left side hamburger icon that opens up the category navigation menu

[Open DoorDash] → [Select a Restaurant] → [Press the Hamburger Icon]

[Enter an Item to Search the Menu For and Hit Go]

4. Enter an item to search for in the category navigation menu and press go

Found Matching Results

No

Yes

[Scroll through Results]