CS6750 - Assignment P1

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QUESTION 1: EVALUATE INTERFACE OF UDACITY

Processor Model View

The Processor Model view is the study of interfaces from the perspective of human interaction simply being a set of inputs and actions. Evaluating design from this view involves thinking of the user in measurable outcomes and the efficiency of the human's actions based on the content presented. Udacity is a website providing learning web content to multiple users. For this activity, only the Sign-In functionality will be observed and evaluated. The Udacity home web page (Figure 1) does not provide any text input options, so only mouse motion and clicking can be measured. One metric to measure could be the time it takes for a person to reach the targeted link. If after loading the website it takes a long time for the user to click, then the option the user is looking for is not well highlighted or presented to the user.

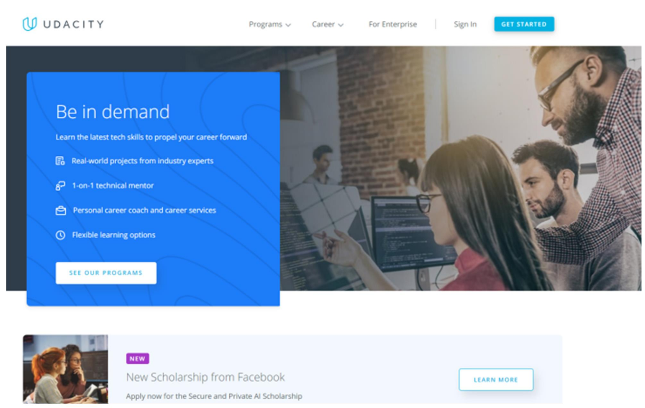

Figure 1: Home page of the Udacity website

For the observed activity, the Sign-In button is visible, but small and formatted together with other text which is not highlighted, unlike the "Get Started" or "See Our Programs" or the "Learn More" text. In this case, an experiment can be made to ask a user to Sign-In, and monitor which button the user clicks first in order to complete the task. The efficiency with which the activity is completed can be established by observing how long it takes for the user to find and correctly click the "Sign-In" button.

After clicking the Sign-In button, the Sign-In prompt (Figure 2) presents an entire new set of challenges to the user. Text input now being available; measuring the number of attempts it takes for the user to sign-in, using keyboard strokes, can determine if the interface indicators are providing the proper sign-in credential markers. Monitoring the key input, one can determine if the user is attempting to type in their credentials before clicking on the "E-mail address" field. Additionally, one can measure how many sign-in attempts are made and the kind of mistakes which are made by user in typing either the email or password incorrectly. For a Georgia Tech user, measuring the amount of time it takes for the user to click on the very last link "Sign in with your Organization" is also a very important metric. Since multiple prompts are provided for the user before this link, there are many opportunities for wrong pathways of clicking either the "Sign in with Google" or "Sign in with Facebook" or even the standard E-mail/Password prompt which can prolong the amount of time it takes the user to click on the proper link to sign-in with the Georgia Tech account.

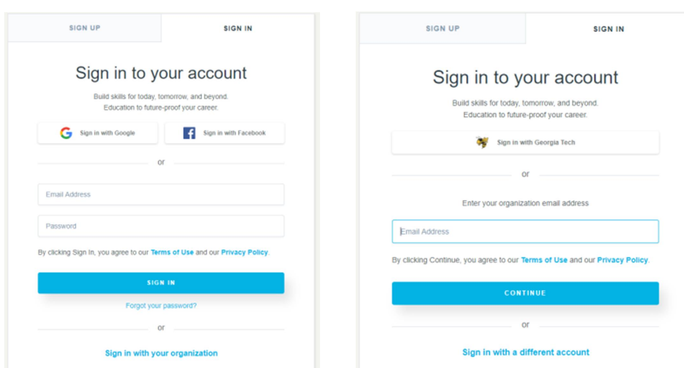

Figure 2: Sign In form (left) and Georgia-Tech Sign In form (right)

Finally, when the user reaches the final Georgia Tech Sign-In prompt (Figure 2), we can measure the response time it takes for the user to click the "Sign-In with Georgia Tech" button or whether the user attempts to type their @gatech.edu email address in the search bar. At this point the user is redirected to the Georgia Tech website where further Sign-In prompts are presented, the scope of which are beyond evaluating the Sign-In activity of the Udacity website.

Predictor Model View

The Predictor Model view introduces human cognition into the evaluation of an interface. The user is now evaluated for what they predict will be the outcome of an action and whether the outcome matched their prediction. For the Udacity Sign-In example, the user would predict that a Sign-In link should be present and visible on the home website (Figure 1), which it is. However, easily locating the link is hindered by the other content around the link which is presented more boldly in order to grab the user's attention. Subsequently, the user would predict that clicking on the "Sign In" link would lead him to a prompt to enter an appropriate Username and Password. However, when the link is clicked, the user is presented with multiple links to "Log in with Google" and "Log in with Facebook" as well as a prompt for the User name and Password.

At this point, the user would predict that entering their Georgia Tech user name and password should lend them access. After multiple failed attempts to gain access, the user would notice that the link at the very bottom of the page states "Sign in with your organization". The user would interpret this link to take them to another page which would allow to select a specific organization to choose from. As expected, the following prompt shows "Sign in with Georgia Tech" (Figure 2).

At this stage, the user would, expect that clicking on the link will allow the user to sign in to the website using the Georgia Tech credentials. As expected, the link leads to the Georgia Tech website, prompting for the standard Sign-In into Georgia Tech, out of scope for this evaluation.

Processor Predictor Model Comparison

The Processor Model is very good at determining where there may be stalls in the Sign-In process but either determining if the user enters multiple wrong attempts, or browses the website for too long, or alternatively clicks on wrong links before finding the right one. The metrics of time or click counts provide insight into pathways which are optimized for the task at hand. For example, the time it takes to find the Sign In link would suggest that the link is not clearly visible. While multiple wrong Sign-In attempts followed by clicking the "Sign in with your organization" click would suggest that the Sign-In prompt is difficult to navigate for Students with an organization account. However, this view does not lend any explanation as to what made certain tasks faster and whether the user had any prior knowledge or help with figuring out the task if they navigated all prompts with speed and precision. Additionally, no suggestions are made to alternative interfaces which could be implemented.

The Predictor Model, on the other hand, lends insight into the thought process behind what the user would expect from the interface. For example, the SignIn prompt (Figure 2) is an unexpected interface from the perspective of a Georgia Tech student since it contains many links for various Access Right and signing in with credentials does not indicate whether the username, password, or organization is incorrectly entered. The interface can therefore be designed specifically to address the issue that for Georgia Tech students, further menu navigation is required.

As noted in the summary above, the Processor and Predictor models offer very different improvements to the interface. On one hand, the Processor shows inefficiencies in the current design where the user may spend a lot of time with searching the main page for the "Sign in" button, or click thorough multiple links before finding the "Sign in with your organization" link. On the other hand the Predictor shows the possible cognitive faults the designer made which do not meet the expectations of the user. Such as clicking the "Sign In" button does not lead to a prompt which will allow Sign-In with Georgia Tech credentials, instead further navigation through links is required. Both methods provide valuable feedback and do not directly replace one another, in this example.

QUESTION 2: COMPUTER APPLICATION IN DIFFERENT CONTEXT

The Tablet Computer

The tablet computer is a computing device with many activities enabled in its functionality. From browsing the web to movie watching and word processing, the tablet is a powerful computing device. The movie-watching activity specifically is often used on tablets due to their portability and adaptability. With multiple users, movies can be watched at the dinner table, in the airplane, at home, or on the bus, and many different users such as adults, students, and children may use the tablet for different video content.

The Child Context

With children, the constraints presented involve the time limits set by the parents and the sensitivity of the touch interface which may be susceptible to accidental touches with kid's clumsy handling.

The Student Context

With a student user, the tablet must minimize all incoming distraction from social media, open links, or video chatting phone calls. Additionally, all resources should maximize the operation of the tablet for maximum internet throughput and video transcoding since the information presented to the user is vital to their experience and success. In this context, the student usually has access to a wall outlet and does not switch his/her outside environment often, thus power constraints can be neglected while performance is maximized.

The Adult User Context

With a regular adult user, the tablet use changes to maximize battery life. Adults often binge watch shows or use the tablet in different rooms for either watching a cooking video in the kitchen, to a movie in the living room, to reviewing some personal movie for posting on Facebook before going to bed. The battery life is important so not to hinder the use of the tablet movie operation throughout the different environments by an ordinary adult.

Overcoming Context Constrains

In order to facilitate proper context switching, the tablet can be enabled with facial recognition. With this capability, the operating system can adjust its internal settings depending on which user is currently using the tablet. Alternatively, the operating system can monitor the contents being displayed and adjust its settings based on the content. Applications such as Netflix, Facebook, or YouTube most likely imply an adult user browsing for videos or watching movies on Netflix. An open Udacity or any .edu website may hint towards a student user where performance must be optimized. Alternatively, SesameStreet videos may hint towards a child user. In this context the touch-screen sensitivity can be lessened and a timer activated for 15 minutes of screen time only.

QUESTION 3: CANVAS SUBMISSION PROCESS

Gulf of Execution

Identify the goal in the context of the system

The goal in the current context is to submit a report for a specific assignment.

Identify the actions necessary to accomplish the goal

1. The user must locate the applicable class that the assignment is related to.
2. The user must locate the link to the Assignments list where the current assignment is listed.
3. The user must be able to locate where to upload their report file.
4. The user must navigate to the actual file on their computer system.
5. The user must submit their report file.

Execute the actions within the interface

Entering Canvas, the user is faced with all classes currently active for his/her profile. Clicking on the correct class allows multiple links to different content. Selecting either "Assignments" or "Grades" allows the user to see a list of Assignments due throughout the semester. By locating the proper assignment and clicking on it from either page, the user is brought to the Assignment's submission page. A large, orange "Submit Assignment" button directs the user to the page where the assignment report file can be located on the computer and uploaded to Canvas. Finally, clicking "Submit Assignment" pushes the selected file to the Canvas database.

Gulf of Evaluation

The physical form of the output from the interface

If the file is an incorrect format type, the output is reflected in red text "This file type is not allowed, Accepted file types are .pdf". The important part of this message is that not only an error is presented, but also a suggestion for how to correct the user's action is also displayed. If the file is correct, a green checkmark and the text "Submitted" is displayed.

Can the user interpret the real meaning of the output?

The user can clearly interpret the output by determining that the file type is wrong in the case of an error. The error text is clearly legible and directly states how to fix the issue. When a submission is successful, the text and graphics immediately suggest a favorable state of the Canvas submission activity.

Can the user use their interpretation to evaluate whether their goal was completed?

It is clearly evident to the user that the file was submitted or if the submission failed. Red and Green graphics are commonplace for suggesting faulty and successful results, respectively. The graphics colors represent the state of Canvas submission while the accompanying text provides details about the state. The only missing component is the instant feedback on whether the internal structure of the file is complete or in some way corrupted. Simply knowing that a file was successfully uploaded is a good start, but the user must then open the submitted file and evaluate the contents in order to ensure that the report they wrote and the file that was uploaded did not get corrupted during the upload process.

QUESTION 4: PERSONAL GULF OF EXECUTION

Large Gulf of Execution: Beginning Occupational Work

The Gulf of Execution of beginning to work on my occupational tasks is extremely large. In order to begin work (programming) first I must drive to my place of employment. Subsequently, participate in morning Scrum meetings to determine the roadblocks and plans to tackle for the rest of the day. Afterwards, an influx of e-mails must be addressed which arrive internationally overnight. Finally, after all side tasks are completed, I can open Visual Studio and begin thinking of the problems I left behind the day before, usually two to three hours after leaving the home.

Small Gulf of Execution: Beginning Academic Studying

The Gulf of Execution to begin studying for my Human Computer Interaction class is extremely small. The reason the bridge is so small is that I am allowed to watch lectures or read materials at any time on any device without any impediments. All communications are moved to online Forums and all necessary meetings can be scheduled and delivered completely online. My direct physical presence is not required for any part of a successful class learning experience.

What lessons could be borrowed and implemented?

The greatest lesson which can be borrowed from the Small Gulf of Execution task is removing spatial barriers. First and foremost, telecommuting is one form of working in a company where the worker does not have to travel to the office in order to produce work. Additionally, in-person meeting as well as the amount of meetings required by management can be reduced or similarly, moved to online platforms where users can either video-chat or use Slack channels to carry out Scrum planning.

Unfortunately, e-mails are already a form of online communication and the only solution to reducing their impact on the Gulf of Execution is proper email filtering. Proper filtering and sorting will allow the worker to focus on urgent e-mails and leave the non-urgent ones to another time in the day when appropriate breaks in actual work being done are in effect. Thus, a second lesson may be technological advancement. With smarter, AI-enabled technologies, e-mails may become a diminished form of communication as more and more administrative tasks would be handled by an AI agent. Simple questions will no longer distract users from their work but could be addressed by an AI agent. Such technological advancement is not a part of the current state of the Learning task as described above, however the platforms used by Georgia Tech for content presentation take advantage of technology to further lessen the Gap of Execution.