Assignment P3:CS6750

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QUESTION 1

The goal of this GOMS model is to contact a Professor for explanation regarding a grade. The visualisation for this situation is provided below.

Identification of the Initial Situation: The GOMS model is similar to the Processor Model of HCI. The student here is assumed to have received a grade that is not satisfactory to that student. The student seeks to reach out to the professor to understand the rationale for a grade.

Ultimate Goal: The ultimate goal is to successfully reach out to the professor and make sure they are aware of this grading issue.

Method 1: The first method involves emailing the Professor directly, the operator involved would be to first find the email id of the professor (Estimated Time **(ET)**: 20s) as it can be easily found from the college website. The second operator would be to compose the email (ET: 5 minutes). The third operator would be to send the email (ET: 5s). The total time for this method would be about 6 minutes.

Method 2: The second method involves emailing the Teaching Assistant for the course instead of the Professor directly, the operator involved would be to first find the email id of the TA, (Estimated Time **(ET)**: 40s) I searched for the TA through my contacts in Outlook for their email ID. The second operator would be to compose the email (ET: 5 minutes). The third operator would be to send the email (ET: 5s). The total time for this method would be about 6 minutes.

Method 3: The third method involves meeting the Professor directly during office hours. Piazza has a feature where the office hours of the staff are visible under the staff/ URL. If it isn't present there the first operator would be to contact the professor for the office hours and scheduling an appointment (ET: 2 mins). The second operator would involve going to the office at the scheduled time (ET: 3 days) as I live really far from Atlanta and the third operator would be to meet with the professor for the scheduled time (ET: 30 mins). The total time for this method would be about 4 days.

Method 4: The fourth method involves raising a question through Piazza. The first operator would be to Open Piazza (ET: 1 minute), The second operator would be to create a new Post to instructors and fill the form (ET: 5 mins). The third operator would be to post the question to the class (ET: 10s). The total time for this method would be about 6 minutes.

Selection Rules: Grades are time sensitive so Methods that take a long time (Method 3) is eliminated. For the email options, the assignment may not be graded by the professor or the TA I send the email to. So there would be a delay in them getting back to me. The most prudent way would be to raise a question in Piazza.

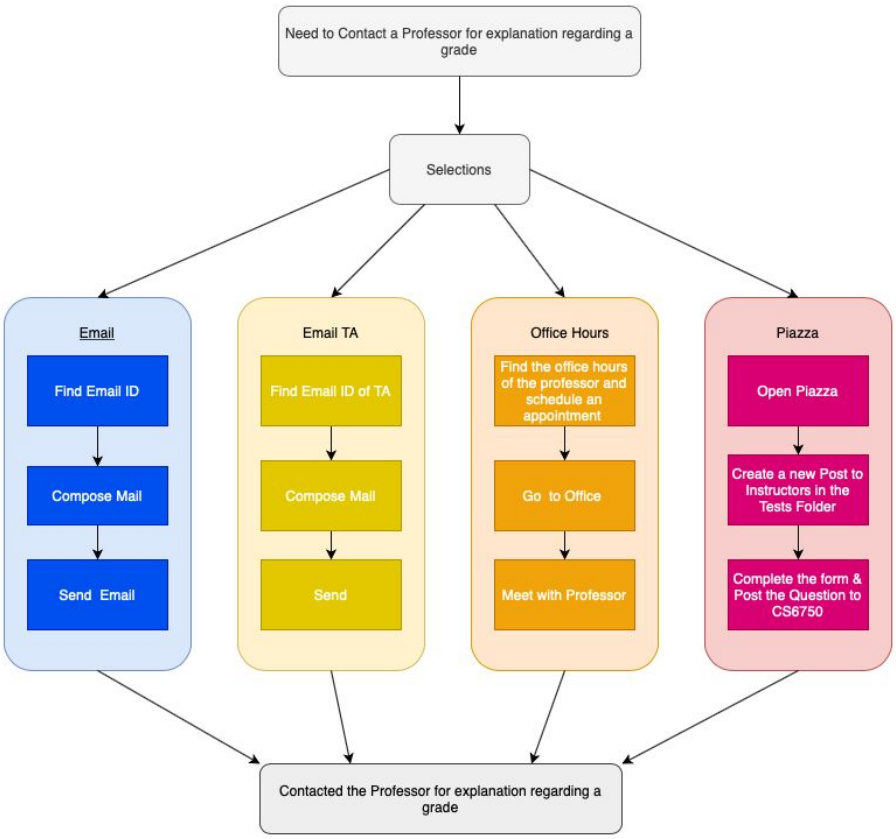

Figure 1— GOMS Model

QUESTION 2

1. Complete the assignment P4
    a. View the Lectures

i. Go to the Udacity website *https://www.udacity.com*
ii. Sign into Udacity
    1. Choose Sign in with Google
iii. Go to Classroom
iv. Select Continue for the HCI course
v. View lesson 2.7
    1. Select the first lecture
    2. Click Play
    3. View all lectures
    4. Choose 'Start Next Lesson' after the last video in the lesson 2.7 has played.
vi. View lesson 2.8
    1. Repeat steps 1 - 3 of lesson 2.7

b. View Assignment
i. Log into Canvas https://gatech.instructure.com/
ii. Go to Courses and choose CS6750: Human-Computer Interaction (FA20)
iii. Go to Assignments
iv. Select Assignment P4
v. Click on the Assignment description link below
vi. Read the assignment

c. Open Google Docs
i. Open the JDF2.2-Starter (Google Docs Format) Google Document
ii. Select File
    1. Select Make a Copy
    2. Enter 'Assignment P4' in the Name column
iii. Replace the text with the responses
iv. Download as PDF

2. Upload the assignment to Canvas
a. Log into Canvas https://gatech.instructure.com/
b. Go to Courses and choose CS6750: Human-Computer Interaction (FA20)
c. Go to Assignments
d. Select Assignment P4
e. Click on 'Submit Assignment'
i. Click on 'Choose File'

ii. Select the file to be uploaded
iii. Click 'Submit Assignment'

3. Receiving Feedback and Grade
    a. Open outlook
    b. Receive Email with the subject ' Assignment Graded : Assignment P4, CS6750 : Human Computer Interaction (FA20)
    c. Open Email
        i. Click the link 'You can review your assignment here'
    d. Review the corresponding feedback and Grade.

QUESTION 3

Before the advent of a hand-held GPS unit, navigation occurred using Maps, directions from the destination or remembering the directions in working memory. For the purposes of this question the system consists of a married couple guided by a map. **The Driver** operates the vehicle and the duty of navigation is offloaded to the navigator. Doing this frees up the *perception* and *situational acting* as the driver does not have to perform navigation when driving and *memory* & *reasoning* are freed as the driver does not have to remember the sequence of actions that needs to be performed.

This distribution allows the driver to focus on the road and for the cognition of navigation to be given to the second user.

The Map provides a complete route to the destination including all the turns, exits and stops they have to make throughout their journey. Once a route is mapped out, the map distributes the cognition of *memory & reasoning* as the navigator does not need to memorize or reason every single turn or stop in the route and *situational acting* is distributed from **The Navigator** to the Map as in case the couple gets off track, it provides them a way to get back on their navigated route. Another piece of the system is **The Car** itself. If the couple travels on a highway by activating cruise control the driver can distribute some of the cognitive load of memory and situational acting to the car as it can offload the task of acceleration to the car freeing up memory and perception of the driver.

This situation when compared to a lone driver using a handheld GPS device, the social component would reveal characteristics about the system that the GPS system would not know. The driver's vision may not be perfect and maybe they

would have a harder time seeing landmarks that would be mentioned in a GPS device's navigational instructions. The social cognition between a couple would be different as the navigator would be well aware of the lacking cognitive abilities of the driver and would be effectively able to compensate for it.

The social parts of the system would offload tasks from the drivers cognition to the navigators but having another person in the car would lead to conversations thereby using the freed up cognitive and reasoning resources of the driver while driving. The Social cognition is able to improvise to the situation and continue offloading tasks whereas the distributed cognition is more rigid and not able to adapt to the different contexts for example If the car is a convertible for instance there would be a lot of noise present when driving the car which would make the GPS's audio instruction really hard to decipher. In this situation the GPS does not free up perception and memory as the user would still have to look at the map from time to time to remember the steps that one has to take to navigate. The navigator could use hand signs or other methods to communicate with the driver in this situation.

QUESTION 4

The simple task of paying for purchases can be daunting. If we are paying through cash, we will need to come up with the closest denomination, check the balance we've received. Tip the cashier (if applicable) not forget to take our wallet with our purchased goods all the while a line is starting to form behind us. The task of paying a user online as discussed by me in Assignment P2 is the task I've **identified** for this question.

I've **described the task** above, the interface I've chosen for doing this is that of the payment wallet PayTM. While using the PayTM application to shop, most sellers would have a QR code pasted at the checkout system. Once the total bill is summed up. I just need to take out the PayTM application, scan the QR code, enter the amount and the PIN and the transaction is complete. The process is further simplified in most shops where I simply tell the cashier my phone number and I receive a notification on my phone to authorise payment. I can authorise the payment by simply tapping the fingerprint reader, I receive instant confirmation about the transfer of funds and the bill starts printing from the cashiers machine.

The **pieces of the system** involved here are my phone, the shop computer, PayTM servers, the cashier and myself. The **description** of the cognitive tasks that are performed by each system are as follows

PayTM servers: The PayTM servers take out a cognitive load of payment from the user. It reduces the **memory** load by warning me if the balance is too low, and automatically deducting the amount from my account without any more input aside from authorisation from me. *The shop computer:* The shop computer keeps track of the billing, reducing the cognitive load of the cashier by reducing the memory load of addition, and keeping track of the prices of individual items. It also reduces the **perception** load of the user(myself) by sending me a request about the total bill amount. In the absence of this feature I would have to take my Phone out and find the shop account from the rest by either scanning the QR code or entering the shop details. *My Phone:* My Phone reduces the cognitive load by transferring the memory tasks such as the amount to be transferred which is automatically detected. It has also transferred the cognitive load of **action** from the user. In earlier interfaces I had to manually input a PIN number. Now I can authorise payment using my fingerprint.

With the implementation of an application based payment system, the cognitive load imposed on the user is reduced. For the task of paying a particular business or user the application can reduce the cognitive load by **reducing the memory load** by performing addition and other mathematical & memory operations, **the perception load** by automatically deducing the receiver of my payment and the **action load** by reducing the number of actions required to authorise payment.