Assignment P4

Adam Takahashi
adam.takahashi@gatech.edu

1 QUESTION 1

Figure 1 illustrates a GOMS model for contacting a professor to ask for an explanation of a grade.

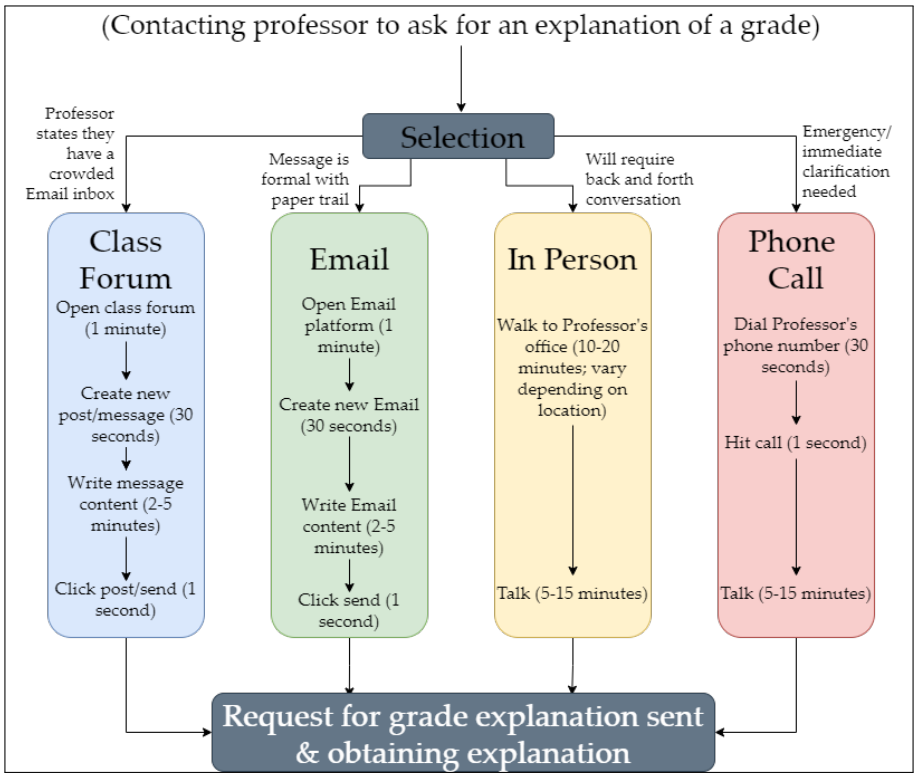

Figure 1—GOMS model for contracting a professor to ask for an explanation of a grade.

1.1 Initial Situation

The initial situation is: contacting the professor to ask for an explanation of a grade.

1.2 Selection Rules

The selection rules help to decide when to use each method. This selection conditions match with the arrows following from the "Selection" box of the GOMS model from Figure 1.

- Select **Class Forum** if the professor states they have a crowded email inbox.
- Select **Email** if message needs to be formal with a paper trail.
- Select **In Person** if it will require back-and-forth conversation.
- Select **Phone Call** if the clarification is an emergency or needed immediately.

1.3 Methods & Operators

The methods are shown in the four colored boxes with their respective operators associated. The methods are ways to choose from to accomplish a goal. The operators are the series of actions that carry out the method. These operators also have an estimated time to execute each operator within parenthesis.

1.4 Ultimate Goal

The goal would be to have your request for the explanation sent out to the professor, but also getting the explanation back to understand the reasoning behind the grade.

2 QUESTION 2

Below is a hierarchical task analysis of submitting assignment P4 to Canvas and receiving the grade and feedback.

- Complete this assignment.
  - Assignment Work.
    - Navigating to course website for Assignment P4 instructions.
      - Open Chrome.
      - Click on "CS6750" Chrome bookmark.
      - Scroll down to Week 7 on course calendar using mouse wheel.
      - Click on "Assignment P4".
    - Working on assignment content.
      - Open Chrome.
      - Click on "Overleaf" Chrome bookmark.
      - Click "Login".
      - Type in email and password.
      - Click on "New Project".
      - Click on "View All".
      - Click on template search bar.
      - Type "JDF" to search.
      - Open "Joyner Document Format v2.2" as a new template.
      - Question 1.
        - Read question prompt.
        - Create section in Overleaf document.
        - Answer prompt.

    - Question 2.
        - Read question prompt.
        - Create section in Overleaf document.
        - Answer prompt.
    - Question 3.
        - Read question prompt.
        - Create section in Overleaf document.
        - Answer prompt.
    - Question 4.
        - Read question prompt.
        - Create section in Overleaf document.
        - Answer prompt.
    - Review prompts and answers.
        - Review Question 1 prompt.
        - Review Question 1 answer.
        - Fix answer 1 answer if necessary.
        - Review Question 2 prompt.
        - Review Question 2 answer.
        - Fix answer 2 answer if necessary.
        - Review Question 3 prompt.
        - Review Question 3 answer.
        - Fix answer 3 answer if necessary.
        - Review Question 4 prompt.
        - Review Question 4 answer.
        - Fix answer 4 answer if necessary.
    - Click "Download PDF" button.
- Submitting assignment on Canvas.
    - Open Chrome.
    - Click on "Canvas" Chrome bookmark.
    - Click "Login".
    - Click on "CS6750: Human-Computer Interaction".
    - Click on "Assignments".
    - Click on "Assignment P4".
    - Click on "Start Assignment".
    - Click on "Choose File".
    - Upload File.
        - Click on "Downloads".
        - Select "Assignment_P4.pdf".
        - Click "Open".
    - Click on checkbox for End-User License Agreement.
    - Click on "Submit Assignment".
- Receiving grade and feedback.
    - Open Chrome.
    - Open Canvas.

    - Click on "School" Chrome bookmarks folders.
    - Click on "Canvas" Chrome bookmark.
- Click "Login".
- Click on "CS6750: Human-Computer Interaction."
- Click on "Grades".
- Scroll with the mouse wheel until "Assignment P4" is visible.
- Click on "Assignment P4".
- Read grade.
- Read feedback.

3 QUESTION 3

3.1 Distributed Cognition

3.1.1 *Driver*

The general cognitive task that the driver is concerned with is driving the vehicle and processing to directions. The driver plays a role in the perception, memory, reasoning, and acting. The cognitive activity of perception comes from the driver looking at the environment around the vehicle. The drivers use perception to view the objects around them for driving. This may include watching to not hit other cars, looking at the stoplight color, watching for street signs, and more. The driver may also perceive from sensors within the car, such as the gas reading, speedometer, and tachometer for reasoning.

The driver also plays a role in memory. The driver may memorize certain steps to get to the destination, speed limits associated with certain areas, and even operating the vehicle. The driver may also have to memorize directions given by the passenger so that they can execute the correct actions when needed (i.e., turning when they need to).

The driver also uses reasoning. Reasoning comes into play when deciding on certain aspects of driving. The driver may have to reason over whether to go through a yellow light or come to a stop already. The driver may use information from their own perception or from information given from the passenger to reason over different actions.

The driver uses acting to interact with the vehicle to drive. The driver is the one mostly doing the acting in the system by controlling the steering wheel, using the turn signal, gas/brake pedals. No other part of the system is doing functional acting that would be required for driving. Hopefully the passenger is

not the one controlling the steering wheel.

3.1.2 *Passenger*

The passenger will similarly play a role in perception, reasoning, and acting for the cognitive activities in the system. That activity is offloaded on the map. The passenger can also perceive input from the surrounding environment. This will track where the driver is driving. The passenger needs to correlate their current position and what is on the map. Being able to perceive their current surrounds is important to keep track of the relative position to their destination.

The passenger will use reasoning to decipher what is the best direction to get from their starting position to the destination. The passenger will probably reason over the best path initially, but this may change as they are driving. If they come across traffic, the passenger may see that there is another route that can avoid the traffic on the map. They may reason to change course in order to save time.

The passenger may play a role in acting with interacting with map. Based on the map, the passenger may have to move it around, flip pages (if it is those map books), or organize different pages. The passenger may also interact with the audio system of the car, but I would not consider this a mandatory part of the system to complete the task, rather a realistic component that two people may encounter.

3.1.3 *The Map*

The map acts as a memory component of the system. The map provides the cognitive activity of memory to the system because it offloads a portion of it from the driver and the passenger. The map keeps memory of all the connected roads for an area that the map represents. The user does not have to memorize all the connecting roads and paths from one location to another. Though the map needs another part of the system to reason over its information to decide on how to get from one location to another since all available paths may not be the most optimal. The map just provides a database of all means.

3.1.4 *Road Signs*

Road signs play a role in memory. Road signs provide a reminder to the driver and passenger about various points of information relative to their current loca-

tion. This can be the speed limit, potential dangers (animal crossings), upcoming exits, and street names. Road signs act as memory because other components do not have to always store this information in long-term memory, it acts to offload some information from other parts of the system. It provides reminders that bring it to the driver and passenger's attention when needed (within their short-term memory).

3.2 Compare and Contrast

There is a large social component when comparing a lone driver using a GPS versus a married couple. There is a strong social relationship between the married couple that a person using a piece of technology would not have. People exhibit emotions and social relationships towards other humans that affect the way they interact with them. The married couple may have a bond that allows them to succeed, be more resilient to failure, and work together better than a person trying to navigate alone.

3.2.1 *What does social cognition reveal about the situation that distributed cognition does not?*

Social cognition will reveal more about the marriage relationship between the driver and passenger, but also has the interaction between two humans. Social cognition would reveal the social interaction between the couple as they try to navigate. There may be personal dialect and conversations mixed in with the system compared to a lone driving using a GPS. Social cognition may also reveal the memory of the couple. The passenger may remember that the driver can be forgetful of turns, so they will have to remind them more often. Overall, social cognition will reveal more about the social relationship that the driver and passenger share compared to distributed cognition.

3.2.2 *How might the social relationships among the parts of the system affect the success of the system as a whole?*

Social relationships may affect the success of the system by either improving it or harming it. It could be improved with the married couple because the passenger could know to explain things in a better way to the driver based on their preference (e.g., using landmarks for turns versus street names). The social relationship could also harm the success of the system because if the couple had a fight previously before starting the drive, then this may affect their

willingness to cooperate. The passenger may give the directions too late, thus causing the driver to miss the turn. The system depends on the health of the social relationships because it affects the mental or emotion state of humans within the system. This may impair their cognitive function towards the task.

4 QUESTION 4

4.1 Work Meetings & Microsoft Teams

The task I chose is completing a work meeting. Since the pandemic started, all my meetings have moved to being conducted online. These meetings are used to provide my current status with my teammates and hear their status as well to give more visibility on the team. Microsoft Teams is the interface that allows for these meetings to be conducted virtually, also close to being as if the meeting were held in person.

4.2 Pieces Of The System

The pieces of the system are my keyboard, mouse, microphone headset, computer, monitor, webcam, Microsoft Teams, myself, and team members (with their respective components too). These are all the different components of the system that allow for work meetings.

4.3 Cognitive Tasks

4.3.1 *Memory*

Microsoft Teams handles most of the cognitive task of memory within the system. Teams will remind me when the meeting is happening, how long the current meeting has been running for, a reminder when there is five minutes left in the schedule for the meeting, and even a chat history related to the meeting. Teams takes most of the work to offload the memory from myself and my coworkers attending the meeting alike.

4.4 Perception

The microphone headset, webcam, monitor and humans (myself and coworkers) perform the cognitive task of perception within the system. The microphone on the headset turns the audio from me while speaking and transmits the sounds across Teams to my teammates so that they can hear me on their headset. This is focused on auditory perception. A similar concept happens in reverse for

myself for when I am listening. The microphone is perceiving sounds from the different human participants in the system. The webcam plays a role for the visual perception. The webcam allows the human parts of the system to views the others apart of the meeting. This visual perception is then projected onto the monitor via Teams for the humans of the system to perceive. Last, is myself and my coworkers in the system. I play a role in perception for both visual and auditory to receive the sounds from the headset and visually on the monitor. I process both visual and auditory inputs to use for the cognitive task of reasoning. My coworkers act like a similar function to myself.

4.4.1 *Reasoning*

Myself, the computer, and my coworkers provide the reasoning cognitive task of the system. As mentioned previously, after I gather the visual and auditory perception, I may use it to decide. If my coworkers ask me a question, I may have to think about what the best response would be. I am using reasoning to determine the response. My coworkers will do the same when I provide a question to them. The computer provides a reasoning cognitive task of the system by providing a medium between the other computer components (headset, keyboard, mouse, webcam, monitor, and Teams). The computer performs the cognitive task of how to control different components on Teams. An example of this is, it knows when specific users are talking based on the input and translates this visually to highlighting the user on the Teams Interface.

4.4.2 *Action*

The cognitive task of action is performed by myself, the mouse, and keyboard. I use the keyboard and mouse to interact with the Teams interface virtually. The keyboard maps different buttons to letters so that I can type messages to others in the meeting chat. The mouse provides a way to interact by clicking certain components on the Teams interface. An example of this could click the mute/un-mute button during the meeting to control when others can hear me. Together, myself, the mouse, and keyboard are performing actions to interact and control different parts of the system to accomplish the task.