

CS6750 Assignment P3

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1 QUESTION 1

1.1

Discoverability makes the functions visible to the users so that they can easily figure out what to do rather than reading documentation or learning from tutorials. This helps the user to bridge the gulf of execution. The last step in the gulf of execution is to execute the identified actions within the interface. The user may know what actions to perform, however, they may not know where to find them.

Consistency is to try to use anything that people normally use in the interface design across similar platforms in the same domain. This is an important tip to bridge the gulf of execution and also ties to the last step where users execute the actions in the interface. Using consistent design help the user easily finds out how to perform actions such as using CTRL+C for copy and CTRL+V for paste.

Tolerance refers to that users should not be at risk of causing too much trouble when they accidentally make mistakes. Tolerance enhances discoverability because users feel safe to poke around. This helps the user to be familiar with the functionalities in the interface. Then the user knows where to find the functions when executing the actions in the interface. Thus, Tolerance is also important to bridge the gulf of execution.

1.2

The participant view of the user focuses on the environment that the user participants in. From this perspective, the interface must fit with the context. The users must be able to interact with the system in the context where they need it. The principle of simplicity could play an important role. For example, the navigation tools such as Google map, need to make the navigation task very easy. The only functions that need to be visible are “start” and “end” the trip. Because users are expecting to find these two features easily when they are navigating. Another important principle for participant view is mapping. The system should speak the user's language or concepts that are familiar to the user. The direction icon

and the voice feedback of Google map creates a natural mapping between the system and the way users actually do in the real world. Turning right means turning right. There should not be any complicated way to convey it. Also, the navigating view of the Google map can be exactly the view the user is facing while driving in the car. Up means driving forward, right is the user's right and left is the user's left.

2 QUESTION 2

The only way to set up the Bluetooth connection to the cell phone in my car is to use the combination of the talk switch and the voice command. There is no visible screen that shows the command or status. The user starts with pressing the talk switch which is located on the steering wheel, and the user needs to push the talk switch every time before saying a command to the system. After the talk switch being triggered, the system does not say anything unless the user says a random word. The system then tells the user each item on the main menu. There are a few items on the main menu and the last item "setup" is the word that the user needs to say to the system. Then the system replies "please push the talk switch and say security, phone setup or Bluetooth audio setup". The user then responds "Bluetooth audio setup". Then the system replies with a few more options – pair audio player, select audio player, change name, list audio players, set passkey or delete audio players. The user needs to say the exact command otherwise the system does not recognize and replies "pardon?" until the user remembers the exact command. If the user cannot remember the command, the user can say "go back" to return to the previous menu and listen to the menu again. The interface has zero-tolerance with the wrong command so it requires the user to memorize the commands. There are a few commands in each level, some commands are using technical terms and some commands are hard to read. It is very easy for a user to forget the command and say the wrong command. The penalty is to go back to the menu again, listen carefully, and memorize them.

From the constraints perspective, the interface can limit the set possible actions at the beginning by recognizing the keyword in the command or a similar word. For example, the user can simply say Bluetooth, and then the system should say the action items that are only relevant to the Bluetooth. If the user says a similar word to the command words, the system can take a guess and ask the user to confirm rather than keep saying "pardon?". This will offload the memorizing

command from the user and prevent the error from not saying the exact command. From the mappings perspective, the system should redesign the command using the user's language. The system can use a "phone", "cell-phone" or "mobile device" instead of using an audio player which is rarely used in real-world conversation. From an affordance perspective, the interface can use signifiers to show the menu items on the screen located on the driver's dashboard. The arrow can be added next to the item to show the user there is a lower level menu or sub-items. In this way, we also create an intuitive mapping between controls and what people have seen from other platforms in the real life.

3 QUESTION 3

A few years ago, when I was in college, my favorite game is Counter-Strike, which is a first-person shooter video game. There are a few hotkeys that the player must know to control the game character. For example, "W", "S", "A" and "D" represents moving forward, back, left, and right respectively. Also, "Q" represents switching guns and "R" means reloading the weapon. I became familiar with the hotkeys after some practice. However, sometimes when my weapon was out of bullets in a battle, I was not able to either reload the weapon or switch to the other gun. I knew what I was supposed to do but I was not able to successfully perform that action in the context of the battle where the enemy in the game was right there and shooting at me. I had to admit that I was very nervous in that situation. My hands got sweaty. I could not remember which hotkey to switch or reload the weapon. I am thinking if the game could send me a reminder on the screen when the bullets are running low and also show the hotkeys for reloading or switching to the other gun if there are no more bullets for the current gun. It would be best if there is a human voice sending reminders at the same time.

There are some hotkeys that the players do not use quite frequently so they don't know how to make some actions happen. For example, the "Ctrl" is to duck. The hotkey "Spacebar" is relatively often used, and it represents "Jump". In cases where the player needs to jump onto a wall or box, the player needs to use the "Spacebar" and "Ctrl" to finish that action. For novice users, they always made such mistakes and asked their team how to do it because they have to remember so many hotkeys, and some of the hotkeys are not frequently used. The game interface can automatically remind the user of these hotkeys in the context where the user needs to use them. For example, the screen can show the player the hint

of how to use the combination of the hotkeys to do the jump onto a box or wall when the player is facing a box or a wall. The user will less likely make mistakes if the interface can make these functions visible on the screen.

To make the game challenging, the system can consider the game character's physical strength level. If the character keeps running, the character will be out of breath and need to stop running. In such a case, the player will have to find a place to hide before the physical strength level comes back to normal.

4 QUESTION 4

Google map is a good representation of its underlying content. After I entered the address of the destination or keywords (e.g. restaurant's name), I could select from a list of the possible results calculated by the underlying algorithm. Once I selected the right destination, the interface zoomed out and showed the possible routes from my location and the designation with the shortest route highlighted in blue color on the map. The interface also provided the time for each type of commute. The representation of the result in a map is exactly what looks like in the real world. The starting location and designation are accurately laid out on the map. Different colors represent the function of the area. For example, green represents the park or forest while grey represents a residential area. The highway or streets are also marked with colors. For example, green signifies light traffic while red means heavy traffic. The user can zoom in to see a representation of details such as street names and commercial place names.

Good representations make relationships explicit and bring objects and relationships together. Google map laid out the user's location in a blue point, the destination with a red pinpoint, and the possible routes to select. The blue point has a light blue light which represents the direction. As the user rotates the cell phone, the blue light rotates. This is also an indication that the blue point is the user's current location. A good representation excludes extraneous details. After I selected the destination, the Google map interface did not show all the details such as restaurants and schools because these details were not relevant. All I wanted to know is the route to the destination and the commute time. If the user wants to know more details such as the places along the route, the user can zoom in the map, and then the interface will provide a representation of what the street or the neighborhood looks like in the real world.

Recently, I asked the internet company to send a technician to my house because I wanted to relocate the wifi/modem device from the bedroom on the second floor to the living room on the first floor. There are at least 4 cable/internet outlets in my house and each of them connects to a separate connector in the box outside my home. The technician first needed to identify which outside connector is connected to the cable/internet outlet in the living room. He had to try each connector because the connectors in the outside box are not mapped to the outlets in my house. There is a mismatch between the representation of the connectors in that box and the cable/internet outlets in my house. The technician cannot easily tell from the current design which connector is connecting to which outlet. The representation does not bring the objects (i.e. outlets) and relationship (connection) together. The good design from natural constraints perspective should either add a label next to the connector to show which outlet it connects to or lay out the connectors to corresponding to the floor plan of my house.