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**SB06/JR/MN/14072/2022**

**HUMAN COMPUTER INTERFACE**

**COM 4139-1**

**CAT 1**

**Question 1: Analyze the Challenges Faced by Novice Users in Interacting with the Current System**

1. Complex Voice Commands: Novice users struggle with complicated commands, which indicates a lack of alignment with the simplicity principle in HCI. Simplified, natural language commands are key to making the system accessible.

2. Unclear Feedback Mechanisms: Users need to understand the system's response to commands. Lack of feedback violates feedback and visibility principles, where users should feel informed about the system's status. For instance, failing to receive clear confirmations or prompts creates confusion.

3. Difficulty Initiating Control: Novice users may find it challenging to understand how to start the system. This issue relates to affordance, where the system should clearly show its functions and usability. Clear affordances are essential to help users know how to operate the system intuitively.

4. Cognitive Overload: The complexity of multiple commands may overwhelm users, violating the principle of cognitive load minimization in HCI. Reducing the number of steps and simplifying interactions can help ease mental demands.

5. Confusion Over Functionality: Users may not know what tasks the system can automate, creating a barrier to effective usage. This issue reflects a lack of learnability, where users struggle to understand the system without extensive learning or instructions.

**Question 2: Evaluate Usability and Affordance in Designing for Novice Users**

1. Usability and Simplicity: For novice users, usability means that the system should have a clear, straightforward interface that is easy to navigate. According to Norman's usability principles, minimizing the number of steps needed for each action improves user satisfaction.

2. Affordance and Perceived Functionality: Affordance ensures that users can easily perceive what actions are possible. For instance, a microphone icon could indicate where to initiate commands, making it obvious for users to start.

3. Minimizing Cognitive Load: The system should require minimal mental effort, which is crucial for novice users. Reducing cognitive load involves simplifying commands, avoiding jargon, and using familiar language, which allows users to focus on the task rather than the interface.

4. Guidance and Instructions: Providing clear, step-by-step instructions or visual cues can guide novice users through actions. Using progressive onboarding can make learning the system less overwhelming.

5. Error Prevention and Recovery: Novice users are more prone to mistakes, so designing error-prevention mechanisms is essential. By including confirmations and undo options, the system adheres to Nielsen’s usability heuristics for error prevention.

**Question 3: Propose a New Design for the System**

1. Simplified Voice Commands: Reduce the command structure to single phrases (e.g., “Turn on lights” instead of “Please turn on the lights in the living room”). This approach aligns with Shneiderman’s Golden Rule of reducing cognitive load, making it intuitive for users.

2. Clearer Feedback Mechanisms: Implement audio or visual cues, such as a chime or icon change, after each command. For example, when users say “Turn on lights,” the system could respond with a brief “Lights are now on.” This feedback builds on the visibility and feedback principles by reinforcing the system’s response.

3. Onboarding Process: Use a step-by-step onboarding tutorial that introduces the main functions. Employing the progressive disclosure principle, the system gradually exposes advanced features, allowing users to learn at their own pace without feeling overwhelmed.

4. Help and Error Assistance Features: Provide voice-activated help commands, like “Help me use this,” that trigger a simple guide for the current task. This feature aligns with user-centered design and learnability, enabling users to receive help in real-time.

5. Customizable Command Options: Allow users to customize commands based on their preferences (e.g., saying “Lights” instead of “Turn on lights”). This customization aligns with the principle of flexibility and efficiency, allowing users to develop a personalized interaction style.

By designing with these considerations, the system becomes more accessible to novice users, improving usability and satisfaction.

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