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**COURSE TITLE: HUMAN COMPUTER INTERACTION**

FIVE ADVANTAGES OF GUI OVER HCI

1. Ease of Use: GUIs are user-friendly, offering visual representations (e.g., icons, buttons, and menus) that make it easier for users to interact with the system, even without prior training or technical knowledge.

2. Intuitive Interaction: The visual and tactile elements of GUIs mimic real-world interactions (e.g., drag-and-drop, resizing), making them more intuitive compared to text-based interfaces.

3. Multitasking Support: GUIs enable users to work on multiple tasks simultaneously by providing features like windows, tabs, and taskbars, which are harder to implement in command-line interfaces.

4. Accessibility: GUIs are more accessible to a wider audience, including those with limited technical skills or disabilities, as they often include features like screen readers, color contrast, and visual cues

5. Learnability and Memorability: Users can quickly learn and remember how to perform tasks using a GUI due to its visual and consistent design, as opposed to memorizing commands in a text-based interface.

TWO EMERGING HCI STYLES

1. Voice User Interface (VUI):

Description: This style involves interacting with computers using spoken language. Virtual assistants like Alexa, Siri, and Google Assistant exemplify VUI.

Key Features: Speech recognition, natural language processing (NLP), and text-to-speech systems.

Advantages: Hands-free operation, accessibility for individuals with disabilities, and convenience in smart environments (e.g., smart homes).

2. Augmented Reality (AR) Interfaces:

Description: AR overlays digital information (e.g., images, text, or 3D models) onto the physical world, blending virtual and real environments.

Key Features: Wearable devices (e.g., AR glasses), cameras, and motion tracking.

Advantages: Enhances user experiences by providing contextual information (e.g., for education, gaming, and industrial applications) and supports hands-on, immersive learning.

HOW USABILITY CAN BE ACHIEVED IN HCI DESIGN FOR 5 CATEGORIES

1. Novice Users:

Key Usability Principles: Simplicity and guidance.

Design Strategies:

Provide intuitive interfaces with clear instructions.

Use tooltips, onboarding tutorials, and step-by-step wizards.

Avoid overwhelming the user with too many features initially.

2. Expert Users:

Key Usability Principles: Efficiency and flexibility.

Design Strategies:

Incorporate shortcuts, advanced settings, and customization options.

Allow for quick navigation and minimal interruptions.

Ensure the system supports complex workflows seamlessly.

3. Users with Disabilities

Key Usability Principles: Accessibility and inclusivity.

Design Strategies

Follow accessibility standards (e.g., WCAG).

Add screen reader support, keyboard navigation, and voice control.

Ensure color contrast, font size options, and alternative text for images.

4. Elderly Users:

Key Usability Principles: Simplicity and readability.

Design Strategies:

Use large, legible fonts and high-contrast colors.

Ensure intuitive navigation with minimal cognitive load.

Avoid fast animations and provide clear error messages with solutions.

5. Children:

Key Usability Principles: Engagement and simplicity.

Design Strategies:

Use bright colors, large buttons, and playful animations.

Include gamified elements to sustain interest.

FOUR IMPORTANT RULES OF USER INTERFACE DESIGN

1. consistency:

Explanation: Maintain uniformity in design elements, such as colors, fonts, icons, and navigation patterns, across the interface.

Importance: Consistency helps users predict system behavior and reduces the learning curve, making the interface more intuitive.

2. Feedback:

Explanation: Provide clear and immediate feedback for user actions, such as visual, auditory, or haptic responses (e.g., highlighting buttons when clicked).

Importance: Feedback reassures users that their actions have been registered, preventing confusion and enhancing confidence in the system.

3. Simplicity:

Explanation: Keep the interface as simple as possible by minimizing unnecessary elements and focusing on core functionalities.

Importance: A clutter-free design helps users focus on their tasks, improving usability and reducing cognitive load.

4. Error Prevention and Recovery:

Explanation: Design the interface to prevent errors (e.g., disabling irrelevant options) and provide easy recovery mechanisms, such as undo or confirmation dialogs.

Importance: This reduces frustration and ensures a smoother user experience by allowing users to correct mistakes effortlessly.