

Research paper on the human-computer interface

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Human computer interface has continued to advance with the advancement in technology. The design of graphical user interface has continued to advance to accommodate the natural feedback from the user. These advancements have made it easy for the user to communicate to the computer and the computer to communicate to the user. Advancement in human computer interface such as the use of touch-screen and motion detectors have made for the user to work more quickly while reducing user stress.

Haptic feedback

Haptic refers to nonverbal communication, which involves the sense of touch. This requires that the system sends feedback to the user through the use of vibration, forces and/or motions. The haptic feedbacks are provided through the user's hands. The haptic system is needed because it provides communication between the computer and the user through detection of movements coming from the user and depending on this input, it responds by exerting force to the user.

Types of Human Memory and Their Impact on the Human-Computer Interface

The human brain works like a computer with different memory areas. The human brain has three main areas; that is a long term memory, the short term memory, and the sensory register. The work of the sensory register is to react to stimuli detected by the senses. For example, a person will quickly move away from the source of fire. The sensory memory is used in the human computer interface to send signal or information to the user. This can be achieved through use of vibration or sounds.

Short term storage refers to the sections of the brain where data is held temporarily. For example, a person will remember a phone number given to him for a short period and may then forget it after dialing it. The human uses short term memory to remember simple instructions in the computer such as locating an icon on the desktop.

Long term memory is used in the human brain to store those things that will be remembered for a long time. To ensure that the something is remembered for a long time, it is necessary to commit it to the long time memory by rehearsing. The long term memory is used in human computer interface to remember the procedure of conducting a particular task on the computer.

Potential Outcomes of Not Using Consistency in the Human-Computer Interface

Consistency helps ensure that the same design is used throughout the program and in different programs. During the design process, the developers should ensure that suitable fonts and sizes are used throughout. This helps to ensure that the user does not confuse the meaning of various gadgets on the interface. Not using consistency in the human computer interface will lead to problems sustaining the context of the user's tasks. This will be as a result of lack of continuity in the meaning and appearance of some features of the computer interface. Lack of consistencies across products will also make it difficult for the user to use the experience gathered in using one product in another product.

Lack of consistencies in presentation will lead to the user seeing information and objects in different logic either visual or physical while interacting with

different parts of the product. This will result to confusion.

Lack of consistency in behavior means that the manner in which an objects works is not the same in all parts of the product. This includes the behavior of computer interfaces such as the buttons, lists, and menu items. If these items are not consistent within a program or between programs, it will require the user to learn their use in the other program which may result in confusion and frustration.

Lack of consistency in the interaction techniques will also lead to problems when the user is interacting with the computer. For example, if different shortcut keys are used in similar programs, then it will be difficult for the user to understand and remember them easily. Also, if interaction techniques such as the buttons of the mouse are different, then they will not produce same results I different parts of the interface, this will result to frustration since the user will have to learn new methods each time when using a different program. Also, if the same keyboard mnemonics are not consistent for the same menus from one program to another, then the user will experience problems interacting with the computer interface (Grifoni, 2009).

Steps of the User-Centric Design Process

User centric design process is an approach to the interface design that focuses on user centred activities throughout the design of the human computer interface. This helps in creating applications that are easy to use.

User centric design has four steps, namely, planning, analysis and requirements, design and evaluation. In planning, the developer needs to have a clear understanding of the user and the task that will be performed

by the user.

Analysis and requirements will involve incorporating user feedback in the program. This will help in refining requirements and design. Analysis and requirements involve interacting with the user in the design process to find out what the user expects from the program.

In the design, the user is allowed to evaluate the design. This helps the developer to find out what the user finds difficult in the design. Also, it helps the developer understand what the user already knows and what she or he expects from this particular design. Prototypes of the design are developed, and the user is allowed to test them. From the feedback, the developer will be able to change the design as appropriate (Chen, 2001).

Evaluation involves conducting tests and measure. This will involve integration of the user centered design activity requirement in the program to find out if they will work together. This will then be followed by testing of the program to find out whether it works as intended. The best way to evaluate and test program is with typical users. The feedback from these users will help the developer identify any problems or difficulty in using the program.

Role of Human Motion in the Design of the Human-Computer Interface

Human motion is a crucial part that must be considered in the design phase for the human computer interface. In human computer interaction, human motion is required to send instructions or feedback from the user to the computer. Keyboard and mouse have been used to cater for human motion. Currently, the existing human motion tracking and analysis systems can be

classified as position sensing and vision-based tracking systems. In position sensing, the computer senses the position of the body and detects any changes (Beckhaus, & Kruijff, 2004).

With the advancement of computing, it has become necessary to develop more natural ways in which the user can interact with the computers. Human motion estimation and recognition of human gestures will help in improving the human computer interaction. This is because; the computer will be able to detect such motions and interpret them appropriately and perform the required task.

References

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