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Definition

Human-computer interaction is a discipline Concerned with the study of the interaction between users and computers and the design, evaluation and implementation of user interfaces for computer systems that are receptive to the user's needs and habits. It is a multidisciplinary field, which incorporates computer science, behavioural sciences, and design. A central objective of HCI is to make computer systems more user-friendly and more usable.

Goals

The goals of HCI are to produce usable and safe systems, as well as functional systems. Usability is one of the key concepts in HCI. It is concerned with making systems easy to learn and use. Usability in generally regarded as ensuring that interactive products are easy to learn, effective to use, and enjoyable from user perspective. It involves optimizing the interactions people have with interactive product to enable them to carry out their activities at work, school, and in their everyday life.

Design Principles

Design principles focus on, early focus on user and task to determine the appropriate user and how the user will interact and perform the task. empirical measurement, test the interface early on with real users who come in contact with the interface on a daily basis. Keep in mind that results may vary with the performance level of the user and may not be an accurate depiction of the typical human-computer interaction. Iterative design, after determining the users, tasks, and empirical measurements, it is time to design user interface, test, analyze result and repeat for update and upgrading.

Methodology

Various methodologies have materialized since the inception that outline the techniques for human computer interaction. Here are the types of methodology, activity theory provides reasoning, analytical tools and interaction designs. User-Centered Design, it provides users the center-stage in designing where they get the opportunity to work with designers and technical practitioners. Principles of User Interface Design, tolerance, simplicity, visibility, affordance, consistency, structure and feedback are the seven principles used in interface designing. Value Sensitive Design, this method is used for developing technology and includes three types of studies − conceptual, empirical and technical.

Display Design

Displays are human-made artifacts designed to support the perception of relevant system variables and to facilitate further processing of that information. It is inherently interdisciplinary, drawing on and influencing diverse areas such as computer graphics, software engineering, human factors and psychology

Principles of human perception and information processing can be utilized to create an effective display design. A reduction in errors, a reduction in required training time, an increase in efficiency, and an increase in user satisfaction are a few of the many potential benefits that can be achieved through utilization of these principles.

Principal Of display Design

Perceptual principles Make displays legible. A display's legibility is critical and necessary for designing a usable display. If the characters or objects being displayed cannot be discernible, then the operator cannot effectively make use of them. Avoid absolute judgment limits. Do not ask the user to determine the level of a variable on the basis of a single sensory variable. These sensory variables can contain many possible levels. Top-down processing. Signals are likely perceived and interpreted in accordance with what is expected based on a user's experience. If a signal is presented contrary to the user's expectation, more physical evidence of that signal may need to be presented to assure that it is understood correctly. Redundancy gain. If a signal is presented more than once, it is more likely that it will be understood correctly. This can be done by presenting the signal in alternative physical forms, as redundancy does not imply repetition. A traffic light is a good example of redundancy, as colour and position are redundant. Similarity causes confusion: Use distinguishable elements. Signals that appear to be similar will likely be confused. The ratio of similar features to different features causes signals to be similar. Mental model principles

Principles based on mental model includes Principle of pictorial realism and Principle of the moving part.Principle of pictorial realism.A display should look like the variable that it represents.If there are multiple elements, they can be configured in a manner that looks like it would in the represented environment. Principle of the moving part.Moving elements should move in a pattern and direction compatible with the user's mental model of how it actually moves in the system. For example, the moving element on an altimeter should move upward with increasing altitude.

Principles based on attention

Minimizing information access cost.When the user's attention is diverted from one location to another to access necessary information, there is an associated cost in time or effort. A display design should minimize this cost by allowing for frequently accessed sources to be located at the nearest possible position. However, adequate legibility should not be sacrificed to reduce this cost.

Proximity compatibility principle.Divided attention between two information sources may be necessary for the completion of one task. These sources must be mentally integrated and are defined to have close mental proximity. Information access costs should be low,which can be achieved in many ways. However, close display proximity can be harmful by causing too much clutter.Principle of multiple resources.A user can more easily process information across different resources.

Memory principles Principle based on memory Replace memory with visual information: knowledge in the world. A user should not need to retain important information solely in working memory or retrieve it from long-term memory. A menu, checklist, or another display can aid the user by easing the use of their memory.However, the use of memory may sometimes benefit the user by eliminating the need to reference some type of knowledge in the world. The use of knowledge in a user's head and knowledge in the world must be balanced for an effective design. Principle of predictive aiding. Proactive actions are usually more effective than reactive actions. A display should attempt to eliminate resource-demanding cognitive tasks and replace them with simpler perceptual tasks to reduce the use of the user's mental resources. This will allow the user to focus on current conditions, and to consider possible future conditions. An example of a predictive aid is a road sign displaying the distance to a certain destination. Principle of consistency. Old habits from other displays will easily transfer to support processing of new displays if they are designed consistently. A user's long-term memory will trigger actions that are expected to be appropriate. A design must accept this fact and utilize consistency among different displays

Question Two

Definition

The internet is the global system of interconnected computer network that uses the internet protocol to communicate between networks and devices. Internet is a network of network that is linked by array of electronic, wireless and optical networking technologies.

Origin Of internet

The Internet started in the 1960s as a way for government researchers to share information. Computers in the '60s were large and immobile and in order to make use of information stored in any one computer, one had to either travel to the site of the computer or have magnetic computer tapes sent through the conventional postal system.

Another catalyst in the formation of the Internet was the heating up of the Cold War. The Soviet Union's launch of the Sputnik satellite spurred the U.S. Defense Department to consider ways information could still be disseminated even after a nuclear attack. This eventually led to the formation of the ARPANET (Advanced Research Projects Agency Network), the network that ultimately evolved into what we now know as the Internet. ARPANET was a great success but membership was limited to certain academic and research organizations who had contracts with the Defense Department. In response to this, other networks were created to provide information sharing.

January 1, 1983 is considered the official birthday of the Internet. Prior to this, the various computer networks did not have a standard way to communicate with each other. A new communications protocol was established called Transfer Control Protocol/Internetwork Protocol (TCP/IP). This allowed different kinds of computers on different networks to "talk" to each other. ARPANET and the Defense Data Network officially changed to the TCP/IP standard on January 1, 1983, hence the birth of the Internet. All networks could now be connected by a universal language.

Components of the web

Web servers are computers that hold information for distribution over the Internet. The information would be formatted using t HTML (HyperText Markup Language). The data on available seats and their price would be held in a database with links to specific forms that are published using HTML.

Servers which can be PCs, Macintosh systems or UNIX workstations: it is the server software that makes them special, rather than the computer itself. That said, servers need to be fairly up-market machines.

Web client is a client-side component within the Java 2 Platform Enterprise Edition (J2EE), a distributed multi-tiered application model used for building and developing enterprise applications. Client-side components are typically computer applications running on a user's computer and connect to a server.

Hypertext Transfer Protocol (HTTP) is an application-layer protocol for transmitting hypermedia documents, such as HTML. It was designed for communication between web browsers and web servers.

A web browser (commonly referred to as a browser) is a software application for retrieving, presenting, and traversing information resources on the World Wide Web (also known as the internet or the Net).

URL

A URL is a unique identifier used to locate a resource in internet also called web address. URL consist multiple parts ,including protocols and domain names that tell browser how and where to retrieve a resource.The first part of a url identifiers what protocal to use as the primary access medium. The second part identifies the IP address or domain name.URL protocols include HTTP and HTTPs for web resource, mail for email address, FTP for files and telnet for a session to access remote computer.

HTML

The HyperText Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browse. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets.

XML

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. The design goals of XML emphasize simplicity, generality, and usability across the Internet.[6] It is a textual data format with strong support via Unicode for different human languages. Although the design of XML focuses on documents, the language is widely used for the representation of arbitrary data structures[7] such as those used in web services.