PUNE RESEARCH WORLD ISSN 2455-359X
AN INTERNATIONAL JOURNAL OF INTERDISCIPLINARY STUDIES SPECIAL ISSUE 1 (OCT 2016)

HUMAN COMPUTER INTRACTION IN DIGITAL INFRASTRUCTURE

*R. BHARATHI *Assistant Professor, Hindusthan College of Arts and Science, Coimbatore. (TN)* INDIA

Abstract

Human–computer interaction researches the design and use of computer technology, focused on the interfaces between people and computers. Humans interact with computers in many ways; and the interface between humans and the computers they use is crucial to facilitating this interaction. Human–computer interaction studies the ways in which humans make, or don't make, use of computational arti facts, systems and infrastructures. The user interacts directly with hardware for the human input and output such as displays, e.g. through a graphical user interface. The user interacts with the computer over this software interface using the given input and output (I/O) hardware. In recent years, there has been an explosion of social science research focusing on interactions as the unit of analysis. Much of this research draws from psychology, social psychology, and sociology.. CHI is a large conference, with thousands of attendants, and is quite broad in scope. It is attended by academics, practitioners and industry people, with company sponsors such as Google, Microsoft, and PayPal.

Keywords: *Human Computer Interaction, Hardware, Peoples.*

Introduction

HCI (human-computer interaction) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings. A significant number of major corporations and academic institutions now study HCI. Historically and with some exceptions, computer system developers have not paid much attention to computer ease-of-use. Many computer users today would argue that computer makers are still not paying enough attention to making their products "user-friendly." However, computer system developers might argue that computers are extremely complex products to design and make and that the demand for the services that computers can provide has always out driven the demand for ease-of-use.Humans interact with computers in many ways; and the interface between humans and the computers they use is crucial to facilitating this interaction. Desktop applications, internet browsers, handheld computers, and computer kiosks make use of the prevalent graphical user interfaces (GUI) of today.

Goals

Human–computer interaction studies the ways in which humans make, or don't make, use of computational arty facts, systems and infrastructures.

- ✓ Methods for designing novel computer interfaces, thereby optimizing a design for a desired property such as, e.g., learn ability or efficiency of use.
- ✓ Methods for implementing interfaces, e.g., by means of software libraries.
- ✓ Methods for evaluating and comparing interfaces with respect to their usability and other desirable properties.
- ✓ Methods for studying human computer use and its socio cultural implication more broadly.
- ✓ Models and theories of human computer use as well as conceptual frameworks for the design of computer interfaces, such as, e.g., cognitive user models, Activity Theory orethno methodological accounts of human computer use.
- ✓ Perspectives that critically reflect upon the values that underlie computational design, computer use and HCI research practice.

Researchers in HCI are interested in developing new design methodologies, experimenting with new devices, prototyping new software and hardware systems, exploring new interaction paradigms, and developing models and theories of interaction

Principles

The user interacts directly with hardware for the human input and output such as displays, e.g. through a graphical user interface. The user interacts with the computer over this software interface using the given input and output (I/O) hardware. Software and hardware must be matched, so that the processing of the user input is fast enough, the latency of the computer output is not disruptive to the workflow.

1. The interface, and will not use the interface in the future, is most likely not a valid user. In addition, define the task(s) the users will be performing and how often the task(s) need to be performed.

2. 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. Establish quantitative usability specifics such as: the number of users performing the task(s), the time to complete the task(s), and the number of errors made during the task(s).

3. Iterative design: After determining the users, tasks, and empirical measurements to include, perform the following iterative design steps:
    1. Design the user interface
    2. Test
    3. Analyze results
    4. Repeat

Memory Principles

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 (e.g., an expert computer operator would rather use direct commands from memory than refer to a manual). 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.

Human-Computer Interface

The user interacts directly with hardware for the human input and output such as displays, e.g. through a graphical user interface. The user interacts with the computer over this software interface using the given input and output (I/O) hardware. The flow of information

between the human and computer is defined as the loop of interaction. The loop of interaction has several aspects to it, including:

- ✓ Visual Based: The visual based human computer inter-action is probably the most widespread area in HCI research.
- ✓ Audio Based: The audio based interaction between a computer and a human is another important area of in HCI systems. This area deals with information acquired by different audio signals.
- ✓ Task environment: The conditions and goals set upon the user.
- ✓ Input flow: The flow of information that begins in the task environment, when the user has some task that requires using their computer.
- ✓ Output flow: The flow of information that originates in the machine environment.

Social Computing

In recent years, there has been an explosion of social science research focusing on interactions as the unit of analysis. Much of this research draws from psychology, social psychology, and sociology. For example, one study found out that people expected a computer with a man's name to cost more than a machine with a woman's name. Other research finds that individuals perceive their interactions with computers more positively than humans, despite behaving the same way towards these machines.

Factors of Change

Traditionally, as explained in a journal article discussing user model and user-adapted interaction, computer use was model as a human-computer dyad in which the two were connected by a narrow explicit communication channel, such as text-based terminals.

1. Decreasing hardware costs leading to larger memory and faster systems.
2. Miniaturization of hardware leading to portability.
3. Reduction in power requirements leading to portability.
4. New display technologies leading to the packaging of computational devices in new forms.
5. Specialized hardware leading to new functions.
6. Increased development of network communication and distributed computing.

Conclusion

The subject of Human Computer Interaction is very rich both in terms of the disciplines it draws from as well as opportunities for research. Discussed here was

just a small subset of the topics contained within HCI. The study of user interface provides a double-sided approach to understanding how humans and machines interact. By studying existing interfaces (such as the graphical user interface or the command line interface), we gain an understanding of how the human mind processes information. We gain insight into how human memory deals with the information presented, as well as its limitations.

Alternatively, from studying how human physiology and psychology, we can design better interfaces for people to interact with computers. Work in this domain is only beginning (indeed the number of papers written on this topic has increased in the past few years), and there is much that we don't yet know about the way the human mind works that would allow more perfect user interfaces to be built.

References

1. A Brief History of Human Computer Interaction Technology -Brad A. Myers
2. Introduction to Human Computer Interaction - Matthias Rauterberg
3. Human Computer Interaction - Prof. Dr. Keith Andrews
4. Ramesh Subramanian, "Relevance of Local Area Banks to Achieve Financial Inclusion," Journal of Business Management & Social Sciences Research 3.8 (August 2014).
5. Sonja Kelly and Elisabeth Rhyne, Growing Income, Growing Inclusion: How Rising Incomes at the Base of the Pyramid Will Shape Financial Inclusion, June 2013.