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# **Human Computer Interaction**

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**Abstract :** The Human-Computer Interface deals with the way computers and their users communicate. It is a process of designing a visual interface software so that computers can be fun, easy to use and do what people want them to do. Dealing with HCI requires learning not only computer hardware, but also the human side. Consideration should also be given to the human mind and physiology. This is because to build a better two-way connection, one must know the capabilities and limitations of both parties. This paper focuses on the psychological model in Human Computer Interaction. There are various versions of this review paper and one of them highlights the current approach, results and styles in human computer interactions and the second is to find the research that was established long ago and is lagging behind. This paper also focuses on the emotional intelligence of the user to become users such as, fidelity prototyping.

Keywords - Human computer interaction, Emotional intelligence, Interactivity, Fidelity Prototyping

# I. INTRODUCTION

The Human computer interaction is the practice and learning of usability. It is about the relationship between a person and a computer, their interactions and the development of software that will simplify a person's work and that people would like to use it, and will not be able to use it. It can also be said that it is a study of how people use computers to perform certain tasks and use them in a way that makes communication fun and effective. As the name suggests, it consists of three parts namely the user, the computer and their interaction. It involves the design of low and high fidelity, that is, the level of accuracy of the recycled material. The first step to a smart HCI is to have the ability to respond and feel right in terms of the user's emotional response and perception, to translate the affected situations that the user automatically displays. This paper also focuses on various types of HCI design methods.

Research in the human computer (HCI) environment is fascinating and complex. It is interesting because there are many interesting questions and many changes over time (due to technological advances). It is complex because we borrow research methods from many different fields, refine them, and create our own "standards" of what is considered acceptable research. It is also complicated because our research involves people who, if we put it right, are complex. It is important to understand the roots of the field, to understand the development of research methods in HCI, to understand how HCI research has changed over time, and to understand the many dimensions to be considered when conducting HCI research.

# II. HEADINGS

# 1. Research Background

Until the late 1970's, the only people who worked with computers were information technology professionals and dedicated hobbyists. This changed dramatically with the advent of the personal computer in the 1970's. Creating a personal computer, which includes both personal software (production applications, such as

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text editors and spreadsheets, and computer games) and personal computer platforms (operating systems, programming languages, and hardware), has made everyone in the world a computer user, and obviously highlighting the lack of computers in relation to the usability of those who want to use computers as tools.

The challenge of using a personal computer became evident at the right time. A comprehensive project for the science of cognition, including psychology, artificial intelligence, language science, cognitive anthropology, and psychology, was established in the late 1970's. Part of the psychological science program was to describe systematic and knowledgeable scientific applications that would be known as "cognitive engineering". Therefore, once personal computer use introduces the real need for HCI, psychology introduces people, concepts, skills, and ideas to address such needs through a combination of scientific and engineering excellence. HCI was one of the first examples of mental engineering. Some historically fortunate events contributed to the establishment of HCI. Software engineering, full of uncontrolled software complexity in the 1970s ("software problem"), began to focus on inefficient needs, including usability and maintenance, and on robust software development processes that relied heavily on repetitive simulations and experimental testing. Computer graphics and information retrieval appeared in the 1970's, and it quickly became apparent that collaborative systems were the key to progress beyond previous successes. All of these advances in computer science point to the same conclusion: The advanced computer programming involves understanding and empowering users better. These different forces of need and opportunity came together around the year 1980, focused on the massive explosion of human potential, and formed the most visible project of various structures.

#### 2. Research Purpose and Significance

There is no integrated concept of HCI experts. In the 1980s, the HCI Psychology side was sometimes compared to software tools and the HCI user interaction side. The state of mind and skills in the HCI context is very different and complex now. HCI education programs train many different types of professionals: user experience designers, collaborative designers, visual engineers, application designers, usable engineers, visual application developers, application developers, technology / web designers, and more. And in fact, many lower HCI communities are also very different. For example, ubiquitous computing (aka ubicomp) is under HCI, but also a high level of integration, for example mobile computing, geo-spatial information systems, automotive systems, public informatics, distributed systems, handheld, wearable , surrounding. intelligence, sensory networks, and specialized visual inspections, editing tools and techniques, and application infrastructure. The relationship between ubiquitous computer and HCI is paradise: HCI is the name of the community.

#### 3. Humans

The HCI product is manufactured and used by product users. To understand people as a process of information processing, communication, human / user characteristics as an information analyst - Memory, attention, problem solving, learning, inspiration, motor skills, thought models and variety. Language, communication and communication.

Language features - Syntax, pragmatics, semantics, conversational communication and special languages. Anthropometric, which is a systematic measure of human material, such as definitions of body size and shape and physiological characteristics of humans and their relationship to the workplace and the environment around them. People can do vague / difficult math.

#### 4. Computers

When we work with computers, what are we trying to achieve? Think about that happens when we communicate alone - we transmit information to it other people, or getting information from them. Often, the information we receive is responds to the information we have just given them, and to us it may respond to that. Collaboration is therefore a process of transmitting information. In this case on the electronic computer, the same principles apply: the interaction is a the process of transferring information, from user to computer and from computer to user.

Computers are used to communicate with users as they have special features that can communicate with users. Computers also provide a platform for the user to build and interact with components and provide effective learning. Computers can calculate and measure, precision and memory, quick and consistent responses, data processing or calculation, composition, duplicate actions, and timely operations, "Simple and sharp objects".

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## 5. Interaction

The list of skills is related in some way. Collaboration between a computer and a person to produce effective output. The interaction involves at least two participants: the user and the system. Both are complex, as we have seen, and are complex different from each other in the way they communicate and view the background and work. So the visual connector must successfully translate between them in order to allow working together for success. This translation may fail in the number of points as well for many reasons. The use of communication models can help us to understand exactly what happens in the interaction and identify the source of the potential difficulty. They also provide us with a framework for comparing different styles of interaction as well considering interaction issues.

## 6. Why is HCI important

According to the State University of New York, the interaction of people with computers is important because it is essential for products to be efficient, secure, usable, efficient and, over time, pleasing to the user. HCI is a study of how humans interact with computers and how computers are developed to communicate with humans more effectively.

HCI is concerned with the design, testing and implementation of interactive human resource management programs and the study of large ecosystems, according to the Association for Computing Machinery. A large number of large companies and educational institutions are now studying HCI. It is a field cited as one of the key elements of future research by industry experts. In fact, the U.S. News and World Report ranks HCI as one of the best places to work in the future.

Cultural and international diversity play a role in the formation of HCI, as different users have different ways of learning and retaining knowledge and skills. Another consideration in HCI research or design is that user interaction technology changes rapidly, providing new interaction opportunities where previous findings may not work. User preferences are changing as users gradually adapt to new interactions. Opinions about what researchers in the field want to achieve vary. In pursuit of a cognitivist perspective, HCI researchers may want to align computer communication with the psychological model people have for their work. In pursuit of the post-cognitivist concept, HCI researchers may seek to integrate computer communication with existing social norms or existing social and cultural values.

Researchers at HCI are interested in developing new design methods, experimenting with new devices, developing new software and hardware programs, exploring new interoperability paradigms, and developing interactive models and ideas.

• Quality of life. The vital use of computers in medicine is only possible if both are practical and easy to use by doctors, nurses, and assistants; similarly, the use of computers in education requires them to be practical and easy to use by students and teachers. Computers can help people with disabilities; at the same time, specialized techniques are needed to allow computers to be used by some disabled people.

• National competition. Information technology is one of the factors that improve productivity. As more and more employees use computers in their work, training time and ease of use are even more economically important.

• Growth in the computer and telecommunications industry. Powerful, interesting, and usable applications are the fuel for the continued growth of these industries. The current growth cycle is a direct result of the visual effects developed by Xerox and marketed by Apple and Microsoft, as well as the low cost of computing made available by microprocessor. The large resulting market supports the price of goods in both hardware and software. Future growth cycles will in part be driven by current HCI research, which will lead to new and increasingly easy-to-implement programs.

#### 7. Fundamental HCI research:

The development of computer interactions has been the result of research into new computer systems and software technologies as well as new ways of thinking about personal and computer interactions. As computers become everywhere and play a growing role in our lives, the importance of computer-assisted research is highlighted. The development of various novels, electronic communities, and new computer-based media has

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begun. However, many current user interactions use statistics primarily to mimic older media methods. While there are important intellectual, cultural, and engineering reasons for using the most successful presentations, imitating old methods and using newer ones. Basic research is needed to effectively use statistics and to ensure that they play a productive role in our lives. The purpose of the JTEC panel was to summarize research across the broad range of human computing interactions, as well as to highlight issues that could benefit most from expanded research activities.

#### 8. Fidelity Prototyping

Reliability refers to the level of accuracy until a product is reproduced. Prototyping means making basic models with which other models are made. Includes-

1. Low Fidelity Prototyping: Also known as low-tech prototyping, it is a simple and easy translation of product and design concepts. It is used to transform design ideas into visual and audible artwork, collecting and analysing users' needs in advance.

2. High Fidelity Prototyping: It works very well and interacts with prototyping very close to the end product with a lot of functionality and detail. It is used in practical tests to detect potential problems during recent workflows, interactions.

## III. METHODOLOGY

A number of different ways of explaining human computer programming techniques have emerged since the growth of the industry in the 1980s. Many design methods are based on the model of how users, designers, and technology systems work together. Early methods, for example, treat users' mental processes as predictable and measurable and encouraged designers to look at psychological effects in areas such as memory and attention when designing user interactions. Modern models tend to focus on consistent feedback and dialogue between users, designers, engineers and push technology systems to be integrated with the types of emotions users want to have, rather than encapsulating user information in a completed system.

Occupational theory: used in HCI to describe and study the context in which human interactions with computers occur. Work theory provides a framework for consulting about actions in these situations, analytical tools that form a list of things that researchers should consider, and informs the structure of interaction with a work-focused perspective.

User-centered design: User-centered design (UCD) is a modern, philosophical design philosophy based on the idea that users should take a central place in the construction of any computer system. Users, designers and technical staff work together to articulate the needs, needs and limitations of the user and create a system that addresses these issues. Typically, user-focused design projects are informed by ethnographic studies of the areas where users will be interacting with the system. This practice is similar but not the same as participatory design, emphasizing that it is possible for end users to actively contribute to shared design sessions and workshops. The principles of visual design: these are the seven principles of visual design that can be considered at any time during the design process in any form: tolerance, simplicity, visibility, payability, consistency, composition and response.

Value Sensitive Design: Value Sensitive Design (VSD) is a way of building technologies that target the numbers of people who use the technology directly, as well as those who are affected by the technology, directly or indirectly. VSD uses a repetitive design process that involves three types of investigations: conceptual, material and technical. Conceptual research aims to understand and expose the various technical stakeholders, as well as their values and any ethical issues that may arise for these stakeholders through the use of technology. Intensive research is the study of quality or quantity design studies that are used to inform designers' understanding of the values, needs, and processes of users. Technological research may include either an analysis of how people use related technologies, or the development of value-added systems identified in psychological and information research.

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# IV. FIGURES AND TABLES



## V. CONCLUSION

HCI will probably be the only global research topic in the AI (Artificial Intelligence) research community. The sudden discovery in the development of HCI could bring about a major change in the world. Many aspects of HCI technology, related to the definition of human behavior at a deeper level. HCI will bring great change to the world. Since human interaction is based on human interaction with computers, it can be very selective as it is easy to use and completely dependent on people / users and applies to user guidelines. A little work in this field will extend human activity in the future.

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