

# A Review Paper on Human Computer Interaction

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**ABSTRACT:** *The idea of human computer interaction comes because of the advancement in the development of computer technology. The new generation of people (young age group people), who's educated and technically knowledgeable involves research experiments in human computer interaction. HCI (human-computer interaction) covers both technical and human behavioral concerns. The main purpose of practical research in human-computer interaction is to disclose unknown perception about behavior of humans and its relationship to technology. Resilience is just a set of routines that allow us to recover from obstacles. The term resilience has been applied to almost everything from the economy, real estate, events, sports, business, psychology, educational field and more. Resilience is basically made up of a number of various abilities and skills for the purpose of building strong relationships, self-efficacy, optimism, self-awareness, creating meaning from other experiences that are some of the basic ingredients. In this through process people should use this for the increased quality of an organization's resilience. For the purpose of building up knowledge of resources which is available to the people for the purpose of confronting existing problems, these all things will be done by the Resilience.*

**KEYWORDS:** *Artifacts, Emotional intelligence, Fidelity Prototyping, Goals of HCI, Human computer interaction, Human Factors, Interactivity, Information Systems, Resilience, Resilience Strategies, Technology, Younger participants.*

## INTRODUCTION

Nowadays the growth of computing is rapidly increasing. And also use of computers for the human is essential in various tasks. HCI (human-computer interaction) is the study of interaction of people with computers and also their behavior i.e. how people interact with computers[1]. And to what range computers are developed for successful interaction with human beings or and also what are the things which are not developed for successful interaction with human beings. HCI includes three parts as its name says: the human (the user), interaction machine itself (the computer) and the methods (ways) they work together. So this is all about the relationship between a computer and a human, and their common understandings. And doing work by humans is done easily by using the software (created using technology). After that people/humans would love to use that software for the purpose of doing work in an efficient way. And people also would be able to use that software (which is developed using any technology). Human-computer interaction, in this basically studied how to interact with the computer/machines, what are the possible ways for interaction with the computer. And also find what other ways can be developed so that people can interact with computers successfully. In the growth of the field of human-computer interaction is not focusing on only how to improve the quality of interaction.

In other words, HCI (human-computer interaction) is a study of how humans perform various tasks using computers. And how they are using it in such a way where people are enjoying and doing effectively through the interaction from the computer. In the starting time only concerned with computers, but nowadays human-computer interaction has expanded in maximum areas to cover almost all forms of information technology design available in our surrounding[2].

In this various ways or methods where humans interact with the computer to do their work easily and efficiently. The abilities to respond and sense appropriately according to humans (the users) affective feedback and detect, interpret the affective states shown by the user instinctually, this is the initial step of an intelligent human-computer interaction (HCI)[3]. And this paper also focuses on the different types of design approaches of the human-computer interaction. Human-Computer Interaction covers various areas, which extract on the fields of cognitive science, and organizational and computer science, psychology, and social sciences in order to know about how the user's ulse and experience about how they use interactive technology[4].

Here various types of research will be going on to know about people's goals, motivations, and behaviors to design for them. Knowledge of the user's ways of thinking is significant and approaching essential while we are scheming for them. The connection between users (the human) and technologies and environment, in which they participate, were in this main aim is to this research in order to determine how they relate organizational environment to improve resilience strategies.

There are two areas: information technology and organizational where current research in resilience has focused. The ability of an organization to survive in the face of threats, including the prevention or mitigation of unsafe, hazardous or detrimental conditions that threaten its very existence consider in the organizational resilience. In stability and quality of service in the face of threats to the computing and networking will be considered as infrastructure Information technology resilience[5].

### *Humans*

There are various human-computer interaction outcomes that are produced and used by the peoples and this product is developed by the humans and that's why this is also known as the product of the user's. For the purpose of knowing all the details where we can analyze humans as an information-processing system, about their characteristics of the human/user as a processor of information- Memory, attention, problem-solving, learning, motivation, motor skills, conceptual models and diversity. Language and how they communicate with the computers, communication and interaction- in the context of language-Pragmatics, syntax, semantics, specialized languages and conversational interaction specialized languages. Anthropometric.

### *Computers*

There are various components which are used to interact with computers, the computers are basically used to interact with the people (the users). There are various facilities which are provided by the computers and with the help of their various components the user can use the computer according to their own needs. Computers can perform various types of operations such as: storing and recalling the information, measuring, easily counting and can perform various types of mathematical operations, quick response of any query and data processing or calculation, in less amount of time repetitive work can be done by computers and performance of the computer will depends on the process of system and time required for that operation.

### *Interaction*

Interaction is always a two way process. Here users can interact with the computers with the help of the components of the computer. User usually interacts with the computer to solve their query. Here it is clear that there are many differences between machines and humans. Human computer interaction ensures that they combined work together successfully. For the purpose of achieving a usable system, in that system, apply whatever you know about computers and humans, and also take suggestions from the various users about the design process. For making a real-time system, there are two important things to consider: first is schedule and the second is the budget for that system. In this basically all of us studies about how the people design, implement and how to use that system.

### *User Interface*

User interface plays an important role in software project. In Human-computer Interaction in this interaction will be done in between the users and the computers, so in computer interaction user interface also plays a vital role because without an efficient user interface not a good communication will be established in between users and the computer system. User Interface (UI) basically managed inputs (what user gives the inputs to the system) and also in displaying output. In the time of designing user interface there are various things will be considered from the developer side in the context of provides better services to the users. Services like:

easy to use, user must satisfied after using that particular interface, also have capability to tolerate the error at real time, and also that interface must be efficient for the users.

## AREAS OF HCI

There are various areas involved in the field of human computer interaction.

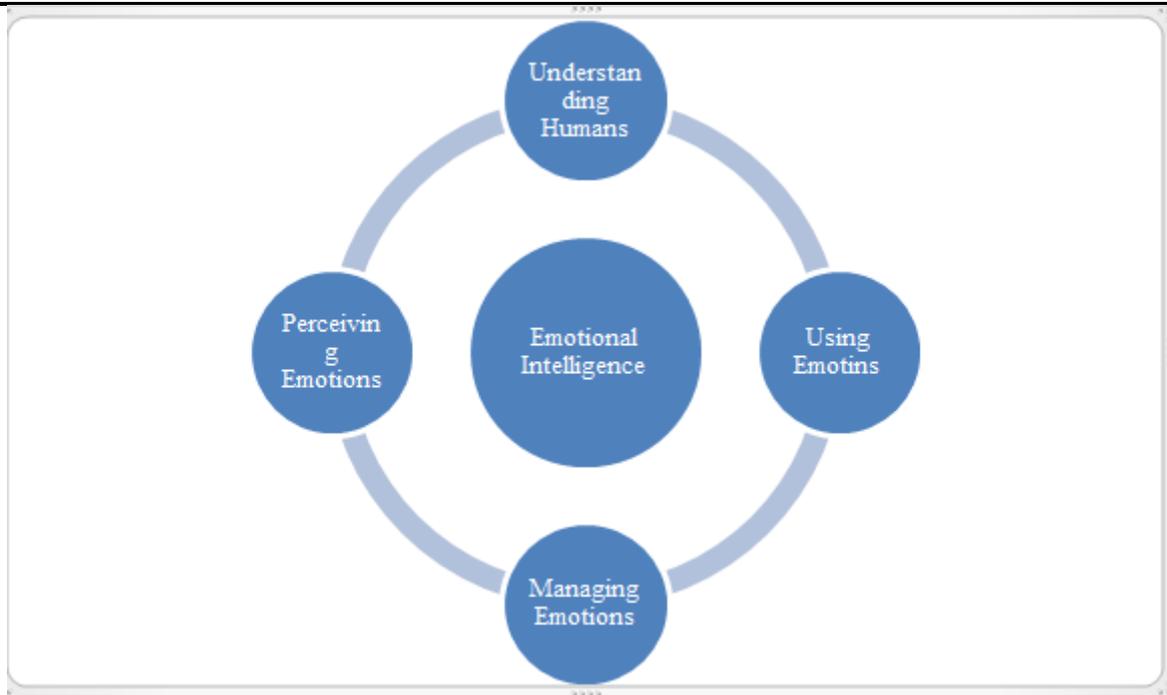
1. Computer Science
2. Language
3. Sociology
4. Psychology
5. Design
6. Ethnography
7. Engineering
8. Semiotics
9. Ergonomics and Human Factor



**Figure 1: Some of the areas involved in the field of human-computer interaction**

## EMOTIONAL INTELLIGENCE

In Human-computer interaction the Facial Expressions are considered as communicative signals or can be considered as being expressions of emotions and they can be associated with such types of emotions like: surprise, anger, happiness, fear, sadness, contempt. And there is also one other tool is emotional speech recognition which is used to detect the emotions[6][7].



**Figure 2: Emotional Intelligence**

### **FIDELITY PROTOTYPING**

Prototyping means just having a basic model from this models there are various models can be created. And other word is fidelity means of this word is that how accurately that product can be reproduced .It also means is that how that product will be look-like after finishing the making process of that product. There are two types of fidelity prototyping such as: low fidelity prototyping (low-tech fidelity) and high fidelity prototyping (high-tech fidelity)[8].

#### **LOW FIDELITY PROTOTYPING**

This prototype is very simple to use and here product and design concepts will be easily translated. Low fidelity prototyping basically used for converting your design idea into a tangible product means that whatever you have design idea in your mind can be converted into tangible product where that product can touch anyone and also testable artifact (where you can feel about that product). In the early stage here demands of the user will be collected and after that demands will be analyzed.

#### **HIGH FIDELITY PROTOTYPING**

In this prototyping there are various interactive functionality which is so close to the finishing product with details and number of functionalities. During workflow and interactivity, there may exist various types of potential issues, for discovering and evaluation of these types of issues can be done by high fidelity prototyping.

Now talking about precedence of human-computer interaction (HCI) is Low Fidelity to High Fidelity such as: paper-based sketches, paper-based storyboard/PICTIVE, computer aided sketches /storyboard, wizard of Oz/slide, shows/video prototyping, computer-based scenario simulation, computer-based horizontal simulation, computer-based full functionality this is the order the precedence in human-computer interaction from Low Fidelity prototyping to high fidelity prototyping.

### **HUMAN FACTORS**

Human Factors basically focus on the way people interact with various jobs; machines and the environment with the consideration have capabilities and limitations. A human factor comes under a cognitive or physical

property of an individual or social behavior which is particular to humans and impact of the human-environment equilibriums and as well as functioning of technological systems. Human factors also impact the way people communicate with computers and its applications. There is a problem because in the software development life cycle (SDLC) methods forsake to take human factors in consideration in the design stage of the user interface[9].



**Figure 3: Human Factor in HCI**

### STRATEGIES OF RESILIENCE

Resilience means the capacity to recover quickly from difficult situations or toughness. There are five pillars of resilience and from these pillars resilience is made up: awareness, mindfulness, positive relationships and purpose, self-care, by strengthening these pillars, we in turn, become more resilient. It's just a concept, which is implanted in social psychology and psychotherapy, ecology and material science and these all branches are the “toughness” of the systems. Now comes, In the discussion about organization resilience then in this the basically the capacity will be rapidly modified and respond to the disruptions in the business and also management of the continuous business operations , for the purpose of enabling the growth and make own self a more trusted partner. In resilience there mainly discussion is centered on the humans activities (properties of human) how they are going to responds in the unexpected situations such as: how they are taking information (Information seeking), how they are communicating (communication ability), and how they are going to deal with redundancy like when there are a more advanced technology available then in that condition how the humans are going to deal with that (redundancy),and when humans have all of the resources then how they are going to deal with that resources when need of that resources to gain a good result (resourcefulness).

In Resilience strategy the first step is to understand the needs of the organization in order to provide services at the time of unpredicted events and also find solutions to those problems when that problem comes at any point of time. Resilience strategies should be planned according to make able the system to face any type of problems which come at any point of time. Like when a person is ill then the strategy of resilience is to how and from which way they can easily and less amount of time that person will be healthy. Resilience planning

is also consider as the human factor: for the purpose of understand how people allocate or use the technology resources and after that how people respond in that difficult situations; due to lack of technical knowledge or lack of training sometimes people make various mistakes, so overcome from this problems people must have the technical knowledge and the skills related to their work. And also people must have the knowledge about the designing approach from that people can easily analyze the design of the system and able to understand the various types of structures.

In this field currently various types of research is going on and in that number of steps is followed by people. In this having a supportive relationship with the people who are available under the organization and also people who's outside the people which does not belong to our organization. So making relationships will build trust among the middle in the process; and also the ability to make realistic plans and also be able to apply the steps to achieve that goal; confidence in our strengths and abilities; In communication and problem solving, skills are some of the elements to improve resilience. There are various types of products and also want to improve any technology then there may be use of various types of strategies[10].

### THE GOALS OF HCI

The main purpose of human computer interaction is to make systems usable, safe and secure, as well as systems must be functional. For making systems easy to use and easy to learn then here usability is concerned. In order to produce computer systems with good usability developers must attempt to

1. Recognize the components that gather details is that how the people are using the technology
2. Developing various tools and techniques that allow to building suitable systems
3. After developing suitable systems the second thing is more important is to achieve effective, efficient and safe interaction with computers.
4. When developing computer systems the best thing to keep in mind is that the system must be usable and easy to use for the users.

### CONCLUSION

Nowadays research in Artificial Intelligence is going on and this is the most global research topic and in this also human computer interaction concept is used. Human computer interaction design makes important changes world-wide. To analyze behavior of humans at a deeper level so for this purpose their various components of human-computer interaction technology are used in this. Computers basically work according to the users instructions. And also got the results according to the instructions which are provided by the computers after some processes. In the coming days human-computer interaction will bring big changes in the world. It's basically easy to use always for humans and also the communication between the human and the computers totally depends on what instructions are fed to the system by the human.

The term resilience has been applied to everything from economy, to the real-state, sports, events, businesses, psychology, and many more areas where resilience helps in difficult situations. The main of this study, with various other perspectives, was to gain information from us as much as possible, by using various methods of research, and after that, analyze the technologies and existing information systems to develop all possible solutions in order to force resilience on either employee at the time of training or performance improvement of the users.

The Human Computer Interaction design approach applied to user technological interfaces design, using different research methods, contributed to satisfying both parts: the user and the organization. The output was mainly the promotion of the use of knowledge and methods for users in particular, and for the organization, in general; the understanding of guidelines and models, to solve encountered problems and, the technology analyses of people in both individuals and organizational contexts.

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