

## Human-Computer Interaction: Definition, Terminology

The rapid growth of computing has made effective human-computer interaction essential. 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. Utilizing computers had always begged the question of interfacing. The methods by which human has been interacting with computers has travelled a long way. The journey still continues and new designs of technologies and systems appear more and more every day and the research in this area has been growing very fast in the last few decades. The growth in Human Computer Interaction (HCI) field has not only been in quality of interaction, it has also experienced different branching in its history. Instead of designing regular interfaces, the different research branches have had different focus on the concepts of multimodality rather than unimodality, intelligent adaptive interfaces rather than command/action based ones, and finally active rather than passive interfaces [66].

Gustav Evertsson describes Human Computer Interaction is about designing computer systems so the user can carry out their activities productively and safely. It is not how easy something is to use, it is about how usable it is. Or, a broader definition of HCI is; —Human Computer Interaction is a discipline concerned with the design, evaluation and implementation of interactive computer systems for human use and with the study of major phenomena surrounding them|| [36][13]. 3 “ It is a wide variety of different kind of people and not just technical specialists as in the past, so it is important to design HCI that supports the needs, knowledge and skills of the intended users” [36][13]. As its name implies, HCI consists of three parts: the user, the computer itself, and the ways they work together.

User: By "user", we may mean an individual user or a group of users working together. An appreciation of the way people's sensory systems (sight, hearing, touch) relay information is vital. Also, different users form different conceptions or mental models about their interactions and have different ways of learning and keeping knowledge. In addition, cultural and national differences play an important part.

Computer: When we talk about the computer, we're referring to any technology ranging from desktop

computers, to large scale computer systems. For example, if we were discussing the design of a Website, then the Website itself would be referred to as "the computer". Devices such as mobile phones or VCRs can also be considered to be —computers||. Interaction: There are obvious differences between humans and machines. In spite of these, HCI attempts to ensure that they both get on with each other and interact successfully. In order to achieve a usable system, you need to apply what you know about humans and computers, and consult with likely users throughout the design process. In real systems, the schedule and the budget are important, and it is vital to find a balance between what would be ideal for the users and what is feasible in reality [13]. Human-Computer Interaction studies how people design, implement and use computer interfaces [31]. HCI has become an umbrella term for a number of disciplines including theories of education, psychology, collaboration as well as efficiency and ergonomics [32].

Recent developments in the area of HCI have shown an interest in adaptive interfaces, speech recognition, gestures and the role of time [33] [34] [35] [1]. 5 Having these concepts in mind and considering that the terms computer, machine and system are often used interchangeably. In this context, HCI is a design that should produce a fit between the user, the machine and the required services in order to achieve a certain performance both in quality and optimality of the services [61]. Determining what makes a certain HCI design good is mostly subjective and context dependant. For example, an aircraft part designing tool should provide high precisions in view and design of the parts while a graphics editing software may not need such a precision. The available technology could also affect how different types of HCI are designed for the same purpose. One example is using commands, menus, graphical user interfaces (GUI), or virtual reality to access functionalities of any given computer [66]