

## *Human computer interaction*

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## **Abstract:**

As technology has improved, the concept of human-computer interaction has been born out of it. Human-computer interaction tests are conducted with young adults who are both educated and technologically savvy. Human-Computer Interaction (HCI) is the topic of this paper. Many approaches are taken, including highlighting current methodologies, outcomes, and trends in human-computer interaction, as well as looking for research that has been around for a long time but is currently falling behind. It also focuses on emotional intelligence and user-like prototyping in this article. The design and creation about an automated system capable of carrying out this task is still in the works.

## **Keywords:**

Bilometric coupling Emotional intelligence, Human computer interaction, Interactivity.

## **1. Introduction:**

The research and practice of usability are at the heart of human-computer interaction. In order to create software that both humans and computers can appreciate and benefit from, this project focuses on the interplay between the two species (Interaction design foundation, 2021). It's also possible to describe it as an investigation into the ways in which people interact with computers and how they might be made to have fun while doing so. User, computer, and interaction are indeed the three components of this system. High and low fidelity, or the level of accuracy to be reproduced, is both involved in this process (Interaction design foundation, 2021). An intelligent HCI must be able to respond and perceive appropriately to the emotive feedback of users and detect and interpret the Affective states presented by users instinctually as a first step in that direction.

### **1.1. Background:**

Understanding the way humans and computers interact so that we may develop human-centered design principles and approaches for future technology interfaces. Education and health care are two fields where computers now play a big role (Rohit Kumar, Vinay Jaiswal & Vishwanath Nishad, 2021). Digital devices, such as laptops, tablet computers, and smart phones, have become commonplace in our daily lives. Medical and educational environments benefit greatly from incorporating electronic gadgets due to their attractive, more realistic and intriguing facilities (Rohit Kumar, Vinay Jaiswal & Vishwanath Nishad, 2021). At the same time, the purpose of allowing students to use digital devices in class is to make the learning experience better for everyone. Students' motivation, ability to apply what they learned in class and overall academic accomplishment all improved significantly when digital devices were used in the classroom (Rohit Kumar, Vinay Jaiswal & Vishwanath Nishad, 2021).

### **1.2. Research aim:**

The main aim of HCI would be to improve overall interactions between users as well as machine and computing interaction.

### **1.3. Research objective:**

The objective of HCI is concerned with creating safe and functioning systems that can be used by people. In order to create usable computer systems, engineers must first try to understand the elements that influence how humans interact with technology.

### **1.4. Research question:**

- 1) What is human computer interaction (HCI)?
- 2) What is the primary objective of human-computer interaction?
- 3) A human-computer interface has what advantages?
- 4) What is the current impact of human-computer interaction on society?
- 5) What will the future of human-computer interaction look like?

## **2. Literature Review:**

Two powerful information processors (the human and the machine) are attempting to communicate with each other across an extremely limited bandwidth, highly confined interface when they engage with each other (Rohit Kumar, Vinay Jaiswal & Vishwanath Nishad, 2021). As defined by ACM SIGCHI (1996), Human-Computer Interaction (HCI) includes "a discipline involving the design, evaluation, including implementation for computing systems in human use and with the research of significant phenomena surrounding these systems".

### **2.1. Humans:**

Humans, who are the product's end consumers, design and build the HCI. A person's memory, attention, problem-solving skills, learning motivation, physical skills, conceptual models, and diversity are all important for gaining a better understanding of humans as information processing systems (Bansal and Khan, 2018). Linguistics, communication, and interaction Language, pragmatics, semantics, conversational interaction, and specialized languages are just few of the various aspects of language. It is the systematic measurement of the physical attributes of humans, such as dimensional descriptors of body size and shape, as well as the physiological characteristics of people and their link to workplaces and their surrounding environments (Bansal and Khan, 2018). Fuzzy/hard computations can be handled by people.

### **2.2. Computers:**

Users connect with computers because they have specific components that can communicate with them. It's also possible to create as well as interact with components on a computer, which allows for more efficient learning and teaching (Bansal and Khan, 2018). computers excel at simple tasks that can be counted and measured precisely, stored and retrieved quickly and reliably; data processing or calculation; formulations; repetitive operations; as well as performance over time.

### **2.3. Interaction:**

In a way, the abilities on this list complement one another. A computer's output is largely determined by the quality of the human-computer interaction that produces it (Bansal and Khan, 2018). A user as well as a computer engages in a two-way conversation throughout the process of interaction. Figure 1 depicts the progress of human-computer interaction.

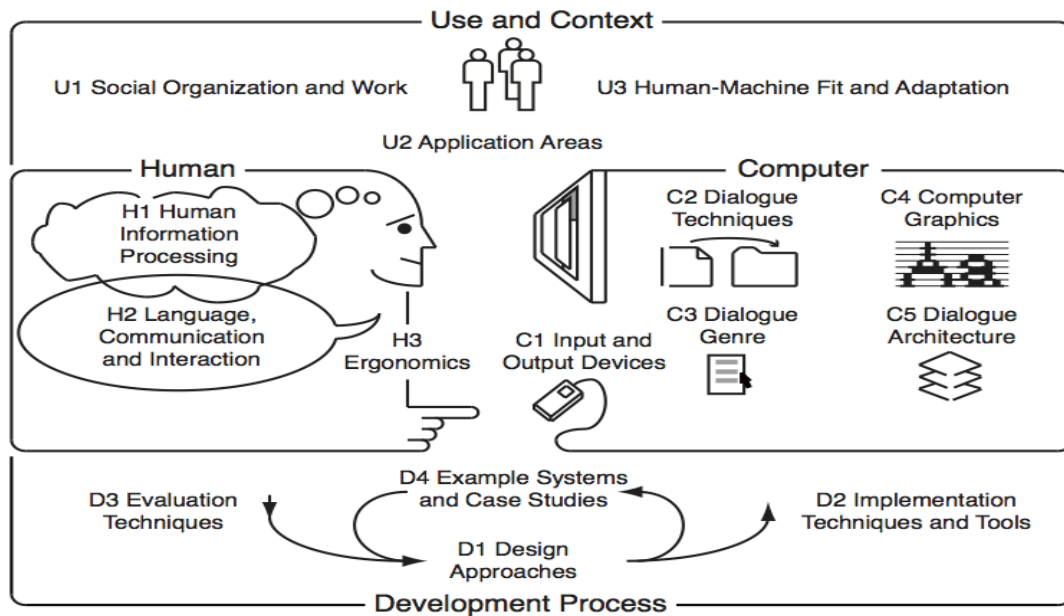


Figure.1: Human computer interaction development process (source: foundationsofhci, 2021)

## 2.4. Multiple concerns of human-computer interaction:

As a result of current developments and work in HCI from a variety of related fields, it is necessary to re-examine the underlying goals or concerns for human interaction with technology. On the other hand Zhang and colleagues re-examined the Maslow's Hierarchy of Human Needs to see if technology may be used as a means of enhancing human well-being by addressing the higher levels of the needs hierarchy. While using a somewhat different approach, Maxwell proposed utilizing Maslow's hierarchy of requirements as an analogy for such an HCI maturity model to illustrate the growth of the kinds of human needs and desires supported by the HCI discipline.

## 2.5. Bibliographic coupling:

The term "bibliographic coupling" refers to the process of determining the degree to which various items are linked together (HABIB and AFZAL, 2017). Using proximity analysis for bibliographic coupling to increase the accuracy of paper suggestion is examined. Based on the finding that co-citation analysis accuracy has improved thanks to proximity analysis (Farrukh, Meng, Wu and Nawaz, 2020). By using a bibliographic coupling network ever since start, this

Business Strategy as well as the Environment Journal has been analyzed for its publication trends.

### **3. Methodology:**

#### **3.1. Data collection:**

Books, newspaper articles, journals, and published and unpublished research reports are examples of secondary sources, as are websites with secondary data. The goal of this study is to help HCI researchers better communicate their findings to the general public. Data from Scopus can be used to conduct citation-based HCI research and evaluation, according to previous studies. There were 1,843 papers uncovered in this procedure, which were spread over a variety of sources and academic interests. 962 publications were collected from this data set, including a qualitative measure and using with an advanced bibliometric method.

#### **3.2. Data analysis:**

Bibliometric techniques have gained appeal as a valuable tool for measuring a field's corpus of information. Recent interest in bibliometric analysis may be due to increased access to databases providing bibliometrics such as publication numbers, citations, co-citations, as well as bibliographic couplings. As in other domains, developments in technology & processing have made it feasible to examine complex bibliometric data with modest means (e.g. time and human resources). Bibliographic coupling (BGC) is used to detect publishing clusters linked by the same cited article. Counting related documents measures a document's link as well as association strength. Bib Excel analyzes bibliographic coupling information to construct a matrix with BGC frequency. From the BGC matrix, Pearson's correlation analysis matrix measures publication similarity. Next, perform an advanced factor analysis just on correlation matrix to group articles that represent unique research areas in the field (s).

### **4. Findings and Discussions:**

The interaction of humans and computers, also abbreviated as "HCI," can refer to a number of significant facets that need to be investigating (HCI). Redesigning a human computer interface might potentially make a big difference in a variety of areas, including data time, performance, speed, mistake rates, and user delight, according to the findings of some researchers.

## 5. Conclusion:

In this work, we discuss how Human Computer Engagement (HCI) can be used to achieve the highest levels of user-device interaction. As a result, we've concluded that in order to create a worthwhile computer-human interaction, we need to carefully consider the intended audience while selecting the proper interaction style and interface type. As a result, we advocate for features like multi-device compatibility, simultaneous input, voice recognition, and handwriting recognition. Designing human-computer interactions that are tied to one another is something we suggest. All existing methods of human-computer interaction have now been analyzed in order to improve the efficiency using devices.

## 6. Reference:

- (1) Bansal, h. and khan, r., 2018. a review paper on human computer interaction. international journal of advanced research in computer science and software engineering, 8(4), p.53.
- (2) Farrukh, m., meng, f., wu, y. and nawaz, k., 2020. twenty-eight years of business strategy and the environment research: a bibliometric analysis. business strategy and the environment, 29(6), pp.2572-2582.
- (3) Foundation sofhci, 2021. foundations of human-computer interaction. [online] foundations of human-computer interaction. available at: <<https://foundationsofhci.wordpress.com/>> [accessed 19 july 2022].
- (4) Habib, r. and afzal, m., 2017. paper recommendation using citation proximity in bibliographic coupling. turkish journal of electrical engineering & computer sciences, 25, pp.2708-2718.
- (5) Interaction design foundation, 2021. what is human-computer interaction (hci)?. [online] the interaction design foundation. available at: <<https://www.interaction-design.org/literature/topics/human-computer-interaction>> [accessed 19 july 2022].
- (6) Mahendra kumar sahu, 2022. [online] digitalcommons.unl.edu. available at: <<https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=9659&context=libphilprac>> [accessed 19 july 2022].

- (7) Rohit kumar, vinayjaiswal and vishwanath nishad, 2021. [online] available at: <<https://www.ijert.org/research/human-computer-interaction-hci-ijertconv9is05068.pdf>> [accessed 19 july 2022].
- (8) Zhang, p., carey, j., te'eni, d. and tremaine, m., 2005. integrating human-computer interaction development into the systems development life cycle: a methodology. communications of the association for information systems, 15.