NAME:-SOHAM KULKARNI **MOODLE ID:-20102018**

DIV :-B **ClASS:-T.E.**

A Methodological Study of Human-Computer Interaction: A Review

The study of human-computer interaction (HCI) is essentially straightforward. This study generally discusses human-computer interaction (HCI) as it relates to cloud computing and mobile computing.

Digital technologies are now used for interaction in the contemporary environment. Computing has received a boost and hence mobile computing has emerged as the new trend in modern technology. The field of human-computer interaction (HCI) is mostly utilized to facilitate user engagement with technology. Usability is nothing but it's all about the interaction between the person and the machine and thus developing software that would make life easier It consists of three components, the user, the computer, and how they interact, as the name would imply. It has various stages of development.

The first stage in developing an intelligent HCL is to equip it with the skills necessary to detect, understand, and react correctly to the affective input provided by the user. Memory, attention, problem-solving, learning, motivation, motor skills, conceptual models, and diversity are characteristics of the human/user as a processor of information that must be understood to comprehend humans as an information-processing system, how they interact, and these characteristics. On the other hand, computers also give users a platform to think through and engage with the elements, facilitating efficient learning. The interaction between a user and a computer is two-way. Through a specially designed interface, the processes of importing and extracting data and information take place during human-computer contact. The elements of an HCI discipline would also appear to be straightforward. There is an artifact that has to be developed and put into use.

The study will provide a detailed analysis of the evaluated works that pertain to human-computer interaction design techniques in the sections that follow by synthesizing the prior works. Improvements in HCI technology can lead to better virtual reality (VR) and augmented reality (AR) experiences by providing more natural and efficient ways for a user to interact with a real or virtual environment. The following are just a few examples of applications for virtual reality and augmented reality (VR and AR): Training for medical professionals, law enforcement, the military, and emergency responders; medical and healthcare - treatments for PTSD, phantom pain, anxieties and phobias, and autism in children; support for challenging tasks like surgery, equipment assembly, or maintenance and repair by adding pertinent information to the user's field of view;

engineering and design; telepresence - for meetings and remote workers; market research having a design experience in architecture virtual building before it is built; Tourism, product advertising and promotion, computer games, and entertainment including movies, music, and sports. Based on their observations of someone's face, body, and voice, people are able to forecast someone's emotional condition.

Machine categorization of emotion performs better when based on facial and body data as opposed to using either modality alone. Multimodal Systems for People with Disabilities Supporting and accommodating people with disabilities is one efficient way to use multimodal systems (such as persons with hand disabilities). Interactive control of music can be achieved by moving the subject's body in different emotional expressions. HCI technology has numerous components that deal with more in-depth analyses of human behavior. It is still far from being fully resolved in a form that is adequate for anticipatory interfaces and the application domain of human computing, but understanding human behavior is a complex and difficult topic. Although there is still more work to be done in the sector, researchers are optimistic about its future growth. Even though there are still significant scientific and technical difficulties that need to be solved and despite the fact that study in some areas is still fragmented, researchers are optimistic about the field's future development. The main justification for this is that anticipatory applications and interfaces are likely to surpass other issues as the ones that interest academics in AI and HCI the most. A substantial and constantly growing number of research projects are currently centered on the in-depth analysis of human behavior.

To solve this, Ebert has developed a design process for human-computer interaction that may be used when making user interface designs. The anthropomorphic approach, cognitive approach, empirical approach, and GOMS method are all included in this methodology.

1) Anthropomorphic Approach: This methodology entails creating a human interface with human-like traits.

2) Cognitive Approach: This methodology is used to create an interface that helps the user and takes into account the capabilities of the brain and sensory perception.

3) Empirical Approach: Utilizing this method, multi-conceptual designs' usefulness is examined and contrasted.

4) GOMS Method: The acronym GOMS is made up of the letters G for goals, O for operators, M for methods, and S for section rules. The GOMS approach is used to look at and assess a user's experience in terms of how long it takes them to efficiently and effectively fulfill a goal.

The final section, Applications of Human-Computer Interaction, highlights the importance of creating new hardware and software that can recognize human traits and characteristics in order to improve human-computer interactions. The three senses that are sight, hearing, and touch are the foundation of contemporary HCI practices and technologies. The input methods that call for switching are the most visually reliant. These switch-based devices include things such as keyboards, mice, joysticks, touch screens, graphic tablets, trackballs, and pen-based input. In today’s world, modern voice recognition software is frequently dependent on hearing. Even

while these devices want to make interaction as simple as possible, it gets harder for them to develop. These devices can be used for expanded AR, VR, and multimodal Human-Robot applications.

This study work is divided into six parts, as can be seen. The following sections are provided in ascending order: introduction, literature review, human-computer interface design process, state of the art, application, and conclusion. In addition, 58 sources were referenced in this study. The abstract of the study paper, which describes the HCI terminology and its applications, is also accessible. This research paper is formatted using the IJRASET style. There is a single page and no 2-column break in this document. Roman numerical bullets have been used for the major headings, and either capital letters or numeric bullets, as indicated in the design process for human-computer interaction, have been used for the subheadings.

Some of the IEEE formats have been used in this research article, but other parts have not. Although the column break and diagram representation may not follow the IEEE style, the font sizes of the headings, subheadings, and text do.