

True Human Computer Interaction - Computer a Compliant

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ABSTRACT: This article summarizes the initial steps of Human Computer interaction from the ancient time and its current growth as a technology called (HCI) Human Computer Interaction. Research has been done on most recent promising projects in HCI. Overview includes the urge that is taking HCI ahead and lack of input, output devices for the same when comes to human conveying to computer. The paper has proposed a system to make a computer compliant to human - by human sound as the main source for computer to perform desired human instruction.

KEYWORDS: Sensed technology, human sound, synthesizing, and computer performance/compliance.

I. INTRODUCTION

Human computer interaction basically means a interface between a user and computer by means of some sensation. Aims to have computer aid in different fields through understanding of human reactions by computers itself. In this filed there are researchers who have observed and studied the way in which the people interact with the computer, and the Programs are designed accordingly to meet there needs[1].

Till 1970's one who interacted with the computer was the IT professionals and Specialist. But, after 1970 the emergence of Personal Software like computer games, spreads sheets etc and various Platforms were built, and the people realized the lack of knowledge they had about computers. Then till the end of 1970 the people were eager to study the tools, develop the intelligence, power and skill. As the time passed the growth of people NAD their thoughts led to need of some HCI technology [5].

Thus, knowledge about computers also came up with the need of usability and easibility taking HCI to where it stands today.

II. RELATED WORK

Recent HCI Projects[based on Sensed Interactions]:

Research has made understand that driving force to any new technology is "need for better in today" than just a vague "whatever" technology to be launched. The Sensed interaction can be in 4 ways:-seeing, hearing, touching and smell.

For instance, the need for user friendly GUI led to multitouch systems, tangible systems.

1. Facial Module for Inter-Process communication [4]

The flow of this Module is as follows:

- i. First the sound i.e some words are sent as a Input to the module.
- ii. Then the sound is been analysed and the corresponding lip movements, tongue n muscles movements are prepared.
- iii. Then the signals are made available for the computer face model, and the movements are fed on to it.
- iv. Then the output is expected as the Model speaking like that of human.

2. Transferring Data through Human Body -RedTacton [10]

The flow of this module is:

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- i. Uses human body as transmission path to send data.
- ii. Data can be anything like a document in mobile.
- iii. This data would be transmitted into a printer for printing just by human touch.

3. The HotHand device [8]

A ring worn by electric guitar players that uses motion sensors and a wireless transmitter to create different kinds of sound effects by various hand gestures.

III. OVERVIEW

The growth in Human-Computer Interaction (HCI) field has given way to different branching in technology. 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.

The HCI (cognitive Engineering) in branch of Intelligence systems is distributed as neuroscience, Psychology, Behaviour and computational intelligence beginning from natural intelligence to artificial intelligence systems respectively. Sensed Interaction is one of the fields highly looked and worked upon (Pressure Input, Recognition Algorithms) because other branches include communication from computer side using input output devices created by humans and is comparatively easier when comes to feeding human language, gestures and other behaviours[7]. This shows the difficulty of computer in taking inputs from humans and the main challenge in development of intelligence systems, thereby resulting into sensing human's body and actions.

This shows the need to be aware of input and output devices availability to meet a specific requirement of information feeding [12].

Relation of human senses and computer working:

If we consider the working of human it is as follows:

- Humans have senses like touch, hearing, sight, smell, taste.
- This senses is been identified by the respective organs like skin, ear, eyes, nose, tongue
- This information of sense is sent to the brain cortex from the colliculus as a sensory signal.
- Brain will analyse the signal and develops a appropriate feedback and then decides what to see, what to hear, what to feel and more importantly what to do.

Computer working is as follows[2]:

- Computer would include single, multimode input, databases, knowledge processing power, user intelligent agent and various apps.
- Input would include fingerprint, speech, color, symbol, picture, human face, animation, handwriting.
- Output would be some image, action, sound or some multimode output.

There are various methods and models used in human computer interaction. This also means the way in which the communication happens between the user and computer using some means i.e platform to express is done through some HCI interface [3].

IV. SYSTEM PROPOSAL

Ignite to Proposal [Computer as a compliant]

The increasing need for comfort has ignited this proposal. Proposal focuses on Audio based modality from the other modalities based on senses like visual and sensor ones. Speech input has been a long standing area of research. Thus, **audio based HCI has been divided into Speech recognition, Speaker Recognition, Auditory Emotion Analysis, Human made noise/sign Detections** [13]. The best advancement in audio based perception technology is the computer accessing ways for people disabled by hands. But this system needs speech recognition as well as head movement trackers to work.

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The system proposal referenced in the paper needs all the above mentioned audio based HCI to be used. The proposal is a system that understands human natural language and executes as it is asked to, without the need of human to actually look into the system. This would allow humans to do different activities and simultaneously get things done by computer in computer. This requires artificial integration [11]. The human-robot interface built by the Naval Research Laboratory (NRL) is also a kind of the explained proposal that uses speech recognition to allow users to point to a location while saying “Go there” [13]. Google Patent unlock features use sound to unlock a mobile device. A similar technique can be worked upon for computers increased performance and its features. Various sound synthesizing softwares are available that use SFS methodology like SFSWIN.

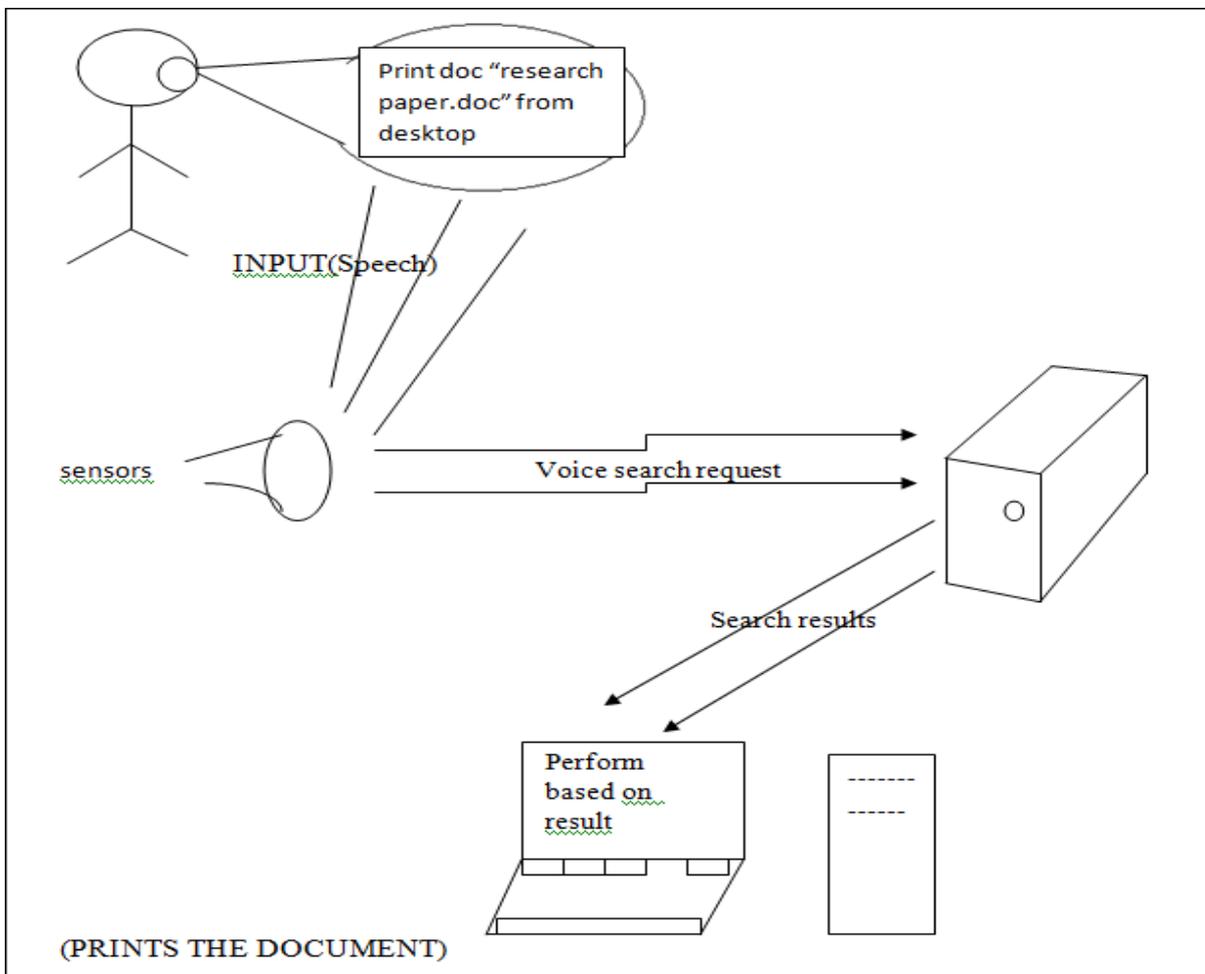


Fig 1: Demo of computer compliancy to human instructions via sound

V. CONCLUSION

BENEFITS

The System proposal has been brought up keeping in mind daily needs and to increase friendliness of humans with computers, but if worked well in sound technology can be beneficial in the field of research and new technologies. The benefit can be understood by imagining as a person instructing a computer to search for cooking recipes of a

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particular dish or to take some printouts of some documents while the person is not physically in front of the system but just by sound access of human to computer system, thereby saving time. It can contribute immensely in multitasking.

The system proposal needs research and working on integrating instructions into embedded systems[11], working on limitations of speech recognition and an exclusive research on input devices to make speech a better way of inputting data into a system. Using sound for sensed interaction has not evolved as other senses in the field of technology due to limitations like capturing sound, filtering noise in sound and finally synthesizing it. Thus the paper has discussed various advancements possible by using sound as a medium of interaction but extensive research requirement is needed on sound synthesizing and capturing devices.

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