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**Semester: 5**

**Subject: Human Computer Interaction**

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**Article 1:**

Research on Human-Computer Interaction Design of Office Chair Based on QFD Method

**Abstract:**

Based on quality function deployment (QFD) and emotional design theory, the psychological needs of users are explored, and the interactive design system of office chairs is developed centering on users, thus solving the problems of space efficiency, office mode and human-computer interaction. First of all, through the relationship between the emotional concept and "function-behavior-benefit" in QFD method, from the perspective of emotional experience, the man-machine relationship is analyzed, and the principles and methods of contemporary office chair comfortable and healthy experience design are summarized. Secondly, based on the product structure and human-computer interaction design, the internal demand of consumers is transformed into the actual demand of products, and the QFD house of quality model is output to obtain the best design scheme. Finally, through design demonstration, the integrated application of emotional design and QFD method is feasible and effective, which can form a mapping relationship between product benefits and user needs, thus realizing the man-machine interaction design of multi-adaptive office chairs.

**Summary:**

As far as the current working environment is concerned, office people may spend 1/3 or even 2/3 of their time on chairs every day. Such living habits can easily lead to diseases, so it is necessary to improve the comfort of office chairs. Keeping a good sitting posture can improve work efficiency and relieve people's work pressure and fatigue, so that all systems of the body can be relaxed and rested. It takes the behavior style and habits of the office crowd as the basic elements to find and establish an efficient and comfortable office environment, and optimizes the office chair to complete the innovation of its function and form.A design for an interactive office chair based on the user's wants and requirements, which adds value and overcomes space, office mode, and HCI issues. As a foundation, the deployment of quality functions. To begin, the relationship between man and machine is examined, with special attention paid to the emotional impact that the machine has on the user's brain or the emotions that the user experiences while interacting with the machine, as well as the principles and methods of designing an ideal, comfortable, and healthy-experience office chair. Second, the QFD quality home model was created to depict the actual product in demand and to achieve the best design for the product that was to be constructed. Finally, the customer's requirements are sketched out. Emotional layout specially consists of intuition degree, conduct degree and mirrored image degree. Emotional layout emphasizes the emotional communique among guy and machine, which makes the layout extra in keeping with people's emotional needs.

**Article 2:**

On-the-Move and in Your Car: An Overview of HCI Issues for In-Car Computing

**Abstract:**

The introduction of computing and communications technologies within cars raises a range of novel human-computer interaction (HCI) issues. In particular, it is critical to understand how user-interfaces within cars can best be designed to account for the severe physical, perceptual and cognitive constraints placed on users by the driving context. This article introduces the driving situation and explains the range of computing systems being introduced within cars and their associated user interfaces. The overall human- focused factors that designers must consider for this technology are raised. Furthermore, the range of methods (e.g: use of simulators, instrumented vehicles) available to designers of in-car user-interfaces are compared and contrasted. Specific guidance for one key system, vehicle navigation, is provided in a case study discussion. To conclude, overall trends in the development of in-car user-interfaces are discussed and the research challenges are raised.

**Summary:**

The advent of computing and communications technology inside vehicles increases quite anumber novel human-computer interaction (HCI) issue. As the automobile is the principal supply of visiting from one location to every other and the improvement of human computer interplay technology with in vehicles raised a number of HCI issues. It then grows to be vital of understand the operating of consumer interfaces within the vehicles and the way the interface can nice be designed to account for specific physical, perceptual and cognitive barriers located at the consumer with the aid of using riding context. This article gives you with an advent to the riding scenario and additionally gives them a couple of computer structures which are being added with in vehicles and additionally their related consumer interfaces. This article additionally tells the designer which element are to be targeted on in vehicles like on what interfaces human beings mainly cognizance on while driving the car or visiting within the automobile. As we realize specific human beings have specific priorities as some distance because the consumer interface and the functionalities present with the aid of using the user interface is concerned so this article additionally examine and contrasts all of the viable consumer interfaces and functionalities that may be supplied with the aid of using the designers. This article additionally specializes in one key system, this is car navigation, and a case have a look at is used to teach target market approximately this unique topic. In end the development of in-automobile consumer-interfaces are discussed.

**Article 3:**

The Interactive Workspaces Project: Experiences with Ubiquitous Computing Rooms

**Abstract:**

Ubiquitous computing embodies a fundamental change from traditional desktop computing. The computational environment is augmented with heterogeneous devices, choice of input and output devices, mobile users, and contextual information. The design of systems and applications needs to accommodate this new operating environment. In this paper, we present our vision of future computing environments we term User Virtual Spaces, the challenges facing developers, and how they motivate the need for new application design. We present our approach for developing applications that are portable across ubiquitous computing environments and describe how we use contextual information to store and organize application data and user preferences. We present an application we have implemented that illustrates the advantages of our techniques in this new computing environment.

**Summary:**

In Ubiquitous computing we generally tend to embed computational functionality into ordinary gadgets to cause them to successfully talk and carry out beneficial obligations in a manner that minimizes the cease person's want to have interaction with computer systems as computer systems. As the computational surroundings is increasing at a fast tempo with sizable type of gadgets, sizable selections of enter and output gadgets entering the market, and additionally with the boom of cellular customers as we've got were given a sizable kind of shows to address with. Due to this the outline of the structures and the software application programs being progressed wishes to be adjusted with this kind of recent computational surroundings. In this article, because the computational surroundings are growing, we offer you with the summary of a brand-new computing surroundings, that's known as User Virtual Spaces, additionally the demanding situations confronted with the aid of using builders and the way the builders unfold the want for the brand-new software layout. This paper affords the idea of destiny computing termed as “person digital spaces”, the issues which might be confronted through the builders and the way they encourage us to give you software designs. The technique for growing programs that may be included throughout ubiquitous computing surroundings is provided and the outline of ways contextual facts is used to keep and arrange software statistics to optimize person experience. At the cease of the paper a software is provided suggests the advantages of the techniques included on this new computing surroundings.

**select any article of your own choice**

**Article 4:**

Voice as a Design Material: Sociophonetician Inspired Design Strategies in Human-Computer Interaction.

**Abstract:**

While there is a renewed interest in voice user interfaces (VUI) in HCI, little attention has been paid to the design of VUI voice output beyond intelligibility and naturalness. We draw on the field of psychophonetics - the study of the social factors that influence the production and perception of speech - to highlight how current VUIs are based on a limited and homogenized set of voice outputs. We argue that current systems do not adequately consider the diversity of peoples’ speech, how that diversity represents sociocultural identities, and how voices have the potential to shape user perceptions and experiences. Ultimately, as other technological developments have influenced the ideologies of language, the voice outputs of VUIs will influence the ideologies of speech. Based on our argument, we pose three design strategies for VUI voice output design - individualization, context awareness, and diversification - to motivate new ways of conceptualizing and designing these technologies.

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that covers various disciplines from computer science and engineering to human

factors and social science. Navigating in this multidisciplinary ﬁeld researchers

and developers intensively seek to master the capability to understand the dia-

logue between humans and computers, reﬂect on the behaviour change caused

by this interaction and encapsulate their knowledge to design, develop and

maintain systems. Our paper aims to put in context and highlight the research

done on the HCI ﬁeld so far. To do so we choose a method that can provide a

well-carved piece of literature and assure legitimacy in the representation of the

research, i.e. a bibliometric analysis. Following this research path, we retrieved a

data set of 962 publications covering the period from 1969 to early 2017. The

analysis revealed a core set of forty-six articles structuring four main factors of

HCI. Preliminary analysis highlights HCI design aspects, data management, user

interaction, psychology and cognition and more recent trends in HCI in the

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**Summary:**

Despite having a newfound interest in voice user interfaces that let you speak to them and reply back using voice/speech, there is not much attention to the detail of natural these voice system sound or how easily they are understood. Based on the field of psychophonetics (the study of the social factors that influence the production and perception of speech), the highlight is made as to how the current VUI’s all have a set of limited and similar voice outputs.IT is argued that in reality, the peoples’ speech is much more diverse, which represents their social and cultural identities, and that voices and speech have the power to change how a person perceives and experiences something. The voice outputs of VUI’s will have a profound effect on how speech is viewed. Three design strategies are presented the design of VUI voice output, namely individualization, context awareness and diversification.

**Article 5:**

Human Computer Interaction using Hand Gesture.

**Abstract:**

In this modern age the advancement in ubiquitous computing has made the use of natural user interface very much required. The presence of computers and making use of the facilities of human computer interaction in our societies will obviously bring and mark a positive impact on our societies. Either it was the day when the technologies had not been so advanced or todays when the technologies have been advanced so much that we spent most of our times to communicate, play, do our jobs with the machines and many more, even then human beings had used and are still using a broad range of gestures to communicate or interact with each other. Human gesture is a mode of non - verbal interaction medium and can provide the most intuitive, originative and natural way to interact with computers. Our main goal is to make the interaction between human and computer as natural as the interaction between humans. The objective of this paper is to recognize the static hand gesture images (i.e frames) based on shapes and orientations of hand which is extracted from input video stream recorded in stable lighting and simple background conditions. We can use this vision based recognized gestures to control multimedia applications (like Windows Media Player, Windows Picture Manager, VLC Player etc.) running on computer using different gestural commands.

**Summary:**

Hand gestures or other gestures were and still are the main mode of non-verbal interaction medium and also it provides the communicator with the most intuitive and natural way to contact other humans as well as computers. As generation has developed and there are computer systems and machines in each component of our lifestyles and it additionally affords us readily and comfort and because of this the machines could be utilized by all varieties of customers technical in addition to non-technical even though it could be less complicated for technical humans address those machines however non-technical and elderly humans will discover it in reality tough to deal and engage with those machines. The interplay among people and computer systems needs to be as herbal because the interplay among people. This will make it manner less complicated for technical in addition to non-technical humans to effortlessly engage with the machine. As we have stated above, gestures are the main and foremost the best and natural way of interacting with other humans, that's why we have implemented this thought and we have used hand gestures to interact with the computer. The objective of this article is to recognize the static hand gestures images and then use these gestures to control multimedia applications, for example, VLC Player, Windows Media Player etc.

**Article 6:**

Design and Development of Hand Gesture Based Virtual Mouse

**Abstract:**

The technique of establishing a process of interaction between human and computer is evolving since the invention of computer technology. The mouse is an excellent invention in HCI (Human-Computer Interaction) technology. Though wireless or Bluetooth mouse technology is invented still, that technology is not completely device free. A Bluetooth mouse has the requirement of battery power and connecting dongle. Presence of extra devices in a mouse increases the difficulty to use it. The proposed mouse system is beyond this limitation. This paper proposes a virtual mouse system based on HCI using computer vision and hand gestures. Gestures captured with a built-in camera or webcam and processed with color segmentation & detection technique. The user will be allowed to control some of the computer cursor functions with their hands which bear colored caps on fingertips. Primarily, a user can perform left clicks, right clicks, and double clicks, scrolling up or down using their hand in different gestures. This system captures frames using a webcam or builtin cam and processes the frames to make them track-able and after that recognizes different gestures made by users and perform the mouse function. So, the proposed mouse system eliminates device dependency in order to use a mouse. Therefore, it can be proved beneficial in order to develop HCI technology.

**Summary:**

At first, we had wired mouses, but these days, we have wireless or

Bluetooth mouses as we see technology is improving day by day it still

needs to be improved a lot. As we see there is still some hardware

attached to Bluetooth mouse. The motive of HCI from the start is to offer less difficult and useful interplay of human beings with computer systems and because the era has developed higher and higher gadgets had been advanced for the less difficult use of human beings, one in every of them is the mouse that's an amazing invention withinside the discipline of HCI. After easy mouses the wi-fi or Bluetooth mouse era changed into invented however nevertheless that era isn't absolutely freed from tool as it calls for battery energy additionally the connecting dongle which growth the problem of the usage of it. This article suggests a virtual mouse that can be operated via hand

gestures and these will be captured through cameras. User will be able to

perform all actions with virtual mouse that he is able to do with physical

one e.g.: left click, right click, double click. This tool gets rid of the tool dependency that's required to apply a mouse.

**Article 7:**

Tangible user interface for digital Museum applications

**Abstract:**

Virtex is the acronym for VIRTual EXhibit. It is an

innovative approach for museum storytelling, based on a tangible

interface. This article illustrates how the Virtex and Virtex Light

systems have been integrated in the international exhibition Keys

to Rome and how tangible interfaces can be used to enhance

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Virtex is the acronym for VIRTUAL Exhibit. It is an innovative approach for museum storytelling, based on a tangible interface. This article illustrates how the Virtex and Virtex Light systems have been integrated in the international exhibition Keys to Rome and how tangible interfaces can be used to enhance visitor experience in the museum**.**

**Summary:**

In this article, Virtex and Virtex Light is mentioned which stands for 'VIRTual Exhibit". Virtex is primarily based totally on an interactive three-D published reproduction of an item that's used as tangible interfaces and storytelling device. Users can freely contact and maintain the reproduction and engage with it way to electronics and sensors inside. There are variations of this interface i.e., Virtex and Virtex Light. Virtex is designed to inform the tale of movable items and additionally to reveal the item interactively from all sides, whilst that item isn't always there. Virtex Light rather is designed to inform the tale of non-movable items together with monuments and sites. The reproduction of the monument or web website online acts as an interactive model, giving a top-level view of the monument or web website online and telling its tale. The three-D published reproduction must be the precise replica of the real monument or web website online in 1:1 scale of the authentic artefact however it is able to have extraordinary sizes appropriate to maintain the item and discover it. the usage of this tangible media era as an exhibitor for samples. The results confirmed that the interplay with the interface thrilled the traffic and that it has utility area inside geological exhibitions.

**Article 8:**

Embedded Speech recognition system for intelligent robot

**Abstract:**

Automatic speech recognition (ASR) is a task that requires high computation capability and enough memory, which is difficult to work in the embedded devices. We have successfully developed an embedded speaker-independent speech recognition system. Specifically, we have also successfully designed a hardware module that can be embedded into the toy robot. We evaluated the speech-controlled robot and the recognition performance was quite good.

**Summary:**

Automatic Speech Recognition or ASR, because it's acknowledged in short, is the generation that permits people to apply their voices to talk with a computer interface in a manner that, in its maximum state-of-the-art variations, resembles everyday human conversation. As the technology is evolving so customers wished an extra effective and pleasant interface via which they are able to educate the gadget with the assist in their voice however the trouble changed into that it changed into now no longer viable to increase a speech reputation machine in a small embedded tool because it calls for excessive computation functionality and sufficient memory. In this article, we've correctly advanced an embedded speaker-unbiased speech reputation machine. We have additionally designed a hardware module which may be embedded right into a robotic which offers customers with the capacity to educate the robotic the use of speech and as we evaluated the speech-managed robotic and the robotic changed into capable of understand the speech.

**Article 9:**

Sandscape exhibit a hit with Wonder lab visitors.

**Summary:**

Sandscape is very interactive sandbox that uses augmented reality. Visitors experience different scenarios as they are doing it for real e.g: carving rivers, building mountains. It is super fun! for kids of age 6 or more. In the museum, it is located on the second floor of gallery. One can pour rain down over the biomes with rain sticks in that box and this is because of the projected lights over them. When the desert appears so the water evaporates. In its quick time on the museum, Sandscapes has made a long-lasting impact at the Wonder Lab family. It affords the possibility to discover and benefit expertise of various landforms round the sector without leaving the consolation of Bloomington.