

**The Blue Eyes Technology and its Applications**T.Jebeula¹, K.Sutha², Rajkumar.D³¹Assistant Professor, Department of Computer Applications, SRMIST, Ramapuram, Chennai²Assistant Professor, Department of Software Applications, Agurchand Manmull Jain College, Chennai³Assistant Professor, Department of Computer Applications, SRMIST, Ramapuram, Chennai

Abstract - Nowadays almost everything in the world is being computerized. Computerized machines are collaborating with humans to achieve any unimaginable tasks easily. Today one step ahead, a new technology, Blue Eyes Technology, which makes the computer to understand and interact with humans according to their mood variations. The basic idea behind this technology is to make the computer “see” and “feel”. We, as a human being can understand each other with some perceptual abilities. This technology empowers the computer with those perceptual and sensory abilities, to make it to interact with human naturally. This machine can gather information through facial recognition, speech recognition and other sensing technologies. It enables the computer to understand where the user is looking at, what the user wants, and also realizes his/her physiological and emotional state.

Keywords- Blue Eyes Technology, Bluetooth, Affective Computing

I. INTRODUCTION

Since 1997, a research team of IBM, introduced Blue Eyes Technology, at its Almaden Research Center in San Jose, California. The first term “Blue” stands for Bluetooth technology, which provides reliable wireless communication and the term “Eyes” comes from eyes movement (Eyes Tracking device), which is used to obtain information about human emotional and physiological state. Blue Eyes Technology makes the computer to understand and sense the human feelings and interact according to the sensed emotion states, which leads to personal intimacy with humans.

The aim of the Blue Eyes technology is to give human perceptual and sensory power to the computer, so that it can communicate naturally with the humans. Blue Eyes Technology uses sensing technologies to extract information from a user's action. The obtained information is then analyzed to find out the user's emotional, physical or informational state. Even it has the ability to gather information about the user's feeling at the time of mouse touch. The process of making a computer having sensing and emotional capabilities is termed as “Affective Computing” [2].

Human cognition relies upon on tremendously developed skills to perceive, integrate, and interpret visual, auditory, and contact information. Without any doubt, computer systems would be plenty extra effective if they had even a small fraction of the perceptual capacity of animals or humans. These are to be delivered in a laptop via the assist of small structures constructed for every function. Researchers are trying to add greater competencies to computer systems that will enable them to engage like humans, apprehend human presents, talk, listen, or even wagger their feelings [3]

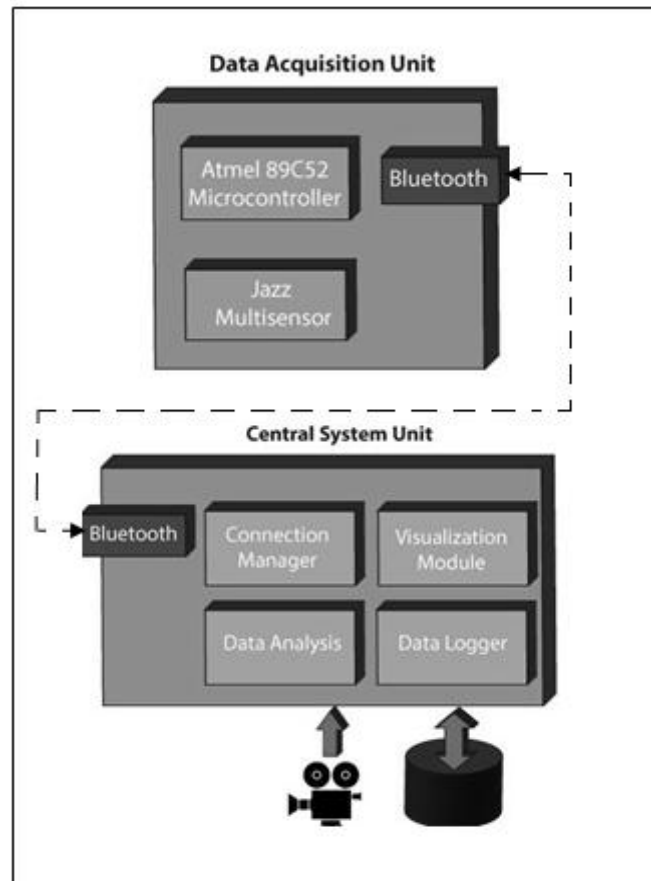
II. SYSTEM OVERVIEW

Blue Eyes Technology gadget gives technical ability for monitoring and recording the operator's simple physiological parameters. The most vital parameter is saccadic activity, which permits the gadget to screen the popularity of the operator's visible interest alongside with head acceleration, which accompanies giant displacement of the visible axis (saccades large than 15 degrees). Complex industrial surroundings can create a threat of exposing the operator to poisonous substances, which can affect his cardiac, circulatory and pulmonary systems. Thus, on the grounds of lethysmographic signal taken from the brow pores and skin surface, the device computes coronary heart beat fee and blood oxygenation. The blue eyes device tests above parameters towards atypical (e.g. a low stage of blood oxygenation or a excessive pulse rate) or undesirable (e.g. a longer duration of decreased visible attention) values and triggers user-defined alarms when necessary. Quite frequently in an emergency scenario operator's talk to themselves expressing their shock or mentioning verbally the problem. Therefore, the operator's voice, physiological parameters and an ordinary view of the working room are recorded. This helps to reconstruct the route of operators' work and affords facts for long-term analysis. This device consists of a cellular measuring machine and a central analytical system. The cell system is built-in with Bluetooth module supplying wi-fi interface between sensors worn by using the operator and the central unit. ID playing cards assigned to every of the operators and enough person profiles on the central unit facet supply vital statistics personalization so exclusive humans can use a single cell machine [4] [5].

III COMPONENTS OF BLUE EYES SYSTEM

Blue Eyes System is the combination of hardware and software [2], It consists of,

- i. Data Acquisition Unit
- ii. Central System Unit
- iii. Blue Eyes Software
- iv. Hardware



a. Overview of Blue Eyes System

3.1 Data Acquisition Unit

Data Acquisition Unit is a cellular phase of the Blue eyes system. Its fundamental venture is to fetch the physiological records from the sensor and to ship it to the central device to be processed. To accomplish the mission the machine ought to manipulate wi-fi Bluetooth connections (connection establishment, authentication and termination). Personal ID cards and PIN codes supply operator's authorization. Communication with the operator is carried on the usage of a easy 5-key keyboard, a small LCD show and a beeper. When an wonderful state of affairs is detected the gadget uses them to notify the operator. Voice records is transferred the use of a small headset, interfaced to the DAU with fashionable mini-jack plugs

3.2 Central System Unit

Central System Unit hardware is the second peer of the wireless connection Central System Unit [2] receives and buffers the data from DAU, performs data analysis, stores the result and provides visual interface. Bluetooth technology provides communication between the operators and the central system unit.

3.3 Blue Eyes Software

Blue Eyes Software [1] continuously monitors and responds according to the user's physiological state. It is responsible for transferring data between the components of CSU: Connection Manager, Data Analyzer, Visualization Module and Data logger. The Visualization Module gets the data from database and stores the audio, video and physiological parameters. This software also conveys the physiological state of the operators to the supervisor.

The System Core imperative are single-producer-multi-consumer thread protected queues. Any variety of buyers can register to get hold of the statistics furnished through a producer. Every single customer can register at any variety of producers, receiving consequently distinctive sorts of data. Naturally, each and every customer may additionally be a producer for different consumers. This strategy permits excessive machine scalability – new facts processing modules (i.e. filters, facts analyzers and loggers) can be without problems brought by means of definitely registering as a costumer.

3.4 Hardware

This section discusses about some of the intelligent devices and approaches[1][2], used in Blue Eyes System.

3.4.1 Emotion Mouse, an input device, which identifies the user's emotion at the time when he/she touches it. It can sense six types of emotions like anger, sadness, fear, disgust, surprise and joy, by analyzing heart beat, pressure and temperature. It includes the following components, Heart beat sensor, Temperature Sensor, Pressure Sensor and Galvanic Skin Response (GSR) digital multimeter.

3.4.2 MAGIC Pointing- Gaze monitoring has lengthy been viewed as an alternative or probably most advantageous pointing approach for computer input. We trust that many imperative limitations exist with ordinary gaze pointing. In particular, it is unnatural to overload a perceptual channel such as imaginative and prescient with a motor manage challenge. An alternative approach MAGIC (Manual and Gaze Input Cascaded) pointing is recommended. With such an approach, pointing seems to the consumer to be a guide task, used for exceptional manipulation and selection. However, a massive component of the cursor motion is eradicated via warping the cursor to the eye gaze area, which encompasses the target. Two unique MAGIC pointing techniques, one conservative and one liberal, have been designed, analyzed, and carried out with an eye tracker we developed. They have been then examined in a pilot study. This early stage exploration confirmed that the MAGIC pointing methods would possibly provide many advantages, which includes reduced bodily effort and fatigue as in contrast to common guide pointing, higher accuracy and naturalness than regular gaze pointing, and perchance quicker pace than guide pointing. The professionals and cons of the two strategies are mentioned in mild of each overall performance facts and subjective reviews

3.4.3 Expression Glass – A wearable system which permits any viewer to visualize the confusion and pastime stages of the wearer. Other recent developments in associated technological know-how are the strive to research the needs of the person simply by using following the interplay between the user and the pc in order to comprehend what he/she is interested in at any given moment. For example, by remembering the kind of web sites that the consumer hyperlinks to according to the temper and time of the day, the laptop could search on associated web sites and advises the consequences the person.

3.4.4 Artificial Intelligent Speech Recognition, uses microphone to get the input voice, matches with the internally stored words and performs the required operation.

3.4.5 Simple User Interest Tracker (SUITOR), an approach which helps the operators to get information about the topic of interest. It provides the required information, just by noticing the eye focus of the user on the computer screen (webpage).

IV. APPLICATIONS OF BLUE EYES TECHNOLOGY

Blue Eyes Technology can be used in the fields like Entertainment, Medicinal services, Security systems etc. In near future, Blue Eyes-enabled Computers and Blue Eyes-enabled Televisions may come in market, which could be operated with the user's eye contact [6].

Human emotions can also be controlled with this technology [7], E.g. Emotion Sensory World of Blue eyes technology, senses human emotions like sad, happy, or surprised, using image processing techniques by extracting eye portion from the captured image which is then compared with stored images of data base. After analyzing the sensed parameters, the human mood is identified, and then the songs will be played to make human emotion level normal.

The field, where constant human supervision is required [8], can use this technology to improve the quality of service, whereas humans may be distracted for various reasons which lead to unwanted happenings. The functionality of Security systems can be improved with applying these technologies in Smart cameras, Lie detectors and emotional speech processing help of Blue Eyes technology. In the field of education it can be used to know the emotional feedback from the learners to enhance the teaching style in electronic tutoring, E-Learning and text to speech applications. In medical applications the blue eyes technology can be introduced to detect the emotions of the patient to improve their treatments by measuring the effects of medicines and to help the people with mental illness. In military applications the blue eyes technology can be used to develop devices with emotional intelligence to train and simulate an equipment or an environment. It can also be consumed in domestic applications to measure emotional intelligence through games and toys. It can also be used to avoid road accidents by assisting drivers with Blue Eyes tech [9].

V. CONCLUSION

Blue Eyes Technology, makes the computerized machine to understand the human emotion and interact according to their emotional state. It uses the reliable wireless Bluetooth connectivity for communication and Eyes movement for getting information about the human mood variations. In future, Blue Eyes-enabled Household gadgets may be commercially introduced, so we can make TV, Washing machine, AC, Fan, Stove etc to operate simply with by giving commands or through eye contact.

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