

# A Survey On Blue Eyes Technology

Reshma P , Rincy M Rafi

**Abstract** — The “BLUE EYES” technology aims at creating computational machines that have perceptual and sensory ability like those of human beings. The basic idea behind this technology is to give the computer the human power. We all have some perceptual abilities. That is we can understand each other’s feelings. For example we can understand ones emotional state by analyzing his facial expression. Adding these perceptual abilities of human to computers would enable computers to work together with human beings as intimate partners.

**Key words**—Bluetooth, speech recognition, DAU, CSI.

## I. INTRODUCTION

Imagine yourself in a world where humans interact with computers. You are sitting in front of your personal computer that can listen, talk, or even scream aloud. It has the ability to gather information about you and interact with you through special techniques like facial recognition, speech recognition, etc. It can even understand your emotions at the touch of the mouse. It verifies your identity, feels your presents, and starts interacting with you .You asks the computer to dial to your friend at his office. It realizes the urgency of the situation through the mouse, dials your friend at his office, and establishes a connection. Human cognition depends primarily on the ability to perceive, interpret, and integrate audio-visuals and sensing information. Adding extraordinary perceptual abilities to computers would enable computers to work together with human beings as intimate partners. Researchers are attempting to add more capabilities to computers that will allow them to interact like humans, recognize human presents, talk, listen, or even guess their feelings. The BLUE EYES technology aims at creating computational machines that have perceptual and sensory ability like those of human beings. It uses non-obtrusive sensing method, employing most modern video cameras and microphones to identify the user’s actions through the use of imparted sensory abilities. The machine can understand what a user wants, where he is looking at, and even realize his physical or emotional states.

Is it possible to create a computer, which can interact with us as we interact each other? For example imagine in a fine morning you walk on to your computer room and switch on your computer, and then it tells you —Hey friend, good morning you seem to be a bad mood today. And then it opens

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your mail box and shows you some of the mails and tries to cheer you. It seems to be a fiction, but it will be the life lead by —BLUE EYES in the very near future. The basic idea behind this technology is to give the computer the human power. We all have some perceptual abilities. That is we can understand each other’s feelings. For example we can understand ones emotional state by analyzing his facial expression. If we add these perceptual abilities of human to computers would enable computers to work together with human beings as intimate partners. The —BLUE EYES technology aims at creating computational machines that have perceptual and sensory ability like those of human beings.



Fig .1:Blue Eyes Technology

The *Blue Eyes* research project currently being implemented by the center’s user systems ergonomic research group (User). *Blue Eyes* seeks attentive computation by integrating perceptual abilities to computers wherein non-obtrusive sensing technology, such as video cameras and microphones, are used to identify and observe your actions. As you walk by the computer screen, for example, the camera would immediately "sense" your presence and automatically turn on room lights, the television, or radio while popping up your favorite Internet website on the display. The *Blue Eyes* technology aims at creating computational machines that have perceptual and sensory ability like those of human beings. It uses non-obtrusive sensing method, employing most modern video cameras and microphones to identify the users’ actions through the use of imparted sensory abilities. The machine can understand what a user wants, where he is looking at, and even realize his physical or emotional states. There are three key aspects that is important in representing the ‘emotions’ that a computer is believed to posses: automatic signals, facial expressions and behavioral manifestations. When observing human communication, studies have shown that apart from facial expressions, gestures, touch and other signs of the body language play a vita role in the communication of feelings and emotion. However one failing

of the desktop PC is its inability to simulate the effect of touch. Humans are experts at interpreting facial expressions and tones of voice and making accurate inferences about others' internal states from these clues.

Attributing human characteristic to machines often means setting unrealistic and unfulfillable expectations about the machine's capabilities. Sensors, tactile or otherwise, are an integral part of an effective computing system because they provide information about the wearer's physical state or behavior. They can gather data in a continuous way without having to interrupt the user. The emphasis here is on describing physiological sensors; however, there are many kinds of new sensors currently under development that might be useful in recognizing affective cues. (Tactile) Sensors to receive human feeling as input have been progressively developing over the last few decades. Since the human brain functions communicate its emotions as electrical signals, sensitive equipment and apparatus are able to pick up these weak signals. Here, we provide a concise list of the current technology available that could be further developed as input devices for obtaining user emotional information.

Blue eyes system monitors the status of the operator's visual attention through measurement of saccadic activity. The system checks parameters like heart beat rate and blood oxygenation against abnormal and triggers user defined alarms. BlueEyes system consists of a mobile measuring device and a central analytical system. The mobile device is integrated with Bluetooth module providing wireless interface between sensors worn by the operator and the central unit. ID cards assigned to each of the operators and adequate user profiles on the central unit side provide necessary data personalization so the system consists of

- Mobile measuring device (DAU)
- Central System Unit (CSU)

### System overview

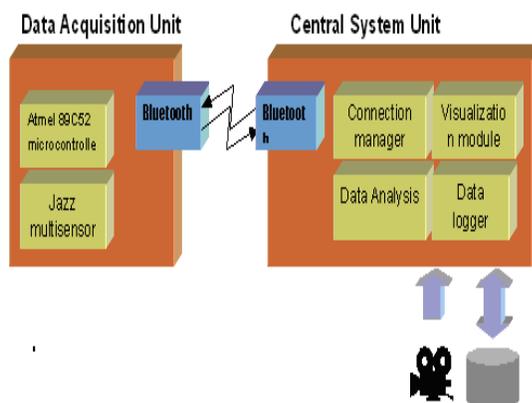


Fig.2: Blue Eyes System

Blue Eyes consists of a mobile measuring device and a central analytical system. The mobile device is integrated with Bluetooth module providing wireless interface between

sensors worn by the operator and the central unit. ID cards assigned to each of the operators and adequate user profiles on the central unit side provide necessary data personalization so different people can use a single mobile device (called hereafter DAU – Data Acquisition Unit). The overall system diagram is shown in Figure. The tasks of the mobile Data Acquisition Unit are to maintain Bluetooth connections, to get information from the sensor and sending it over the wireless connection, to deliver the alarm messages sent from the Central System Unit to the operator and handle personalized ID cards.

Central System Unit maintains the other side of the Bluetooth connection, buffers incoming sensor data, performs on-line data analysis, records the conclusions for further exploration and provides visualization interface.

The portable nature of the mobile unit results in a number of performance requirements. As the device is intended to run on batteries, low power consumption is the most important constraint. Moreover, it is necessary to assure proper timing while receiving and transmitting sensor signals. To make the operation comfortable the device should be lightweight and electrically safe. Finally the use of standard and inexpensive IC's will keep the price of the device at relatively low level.

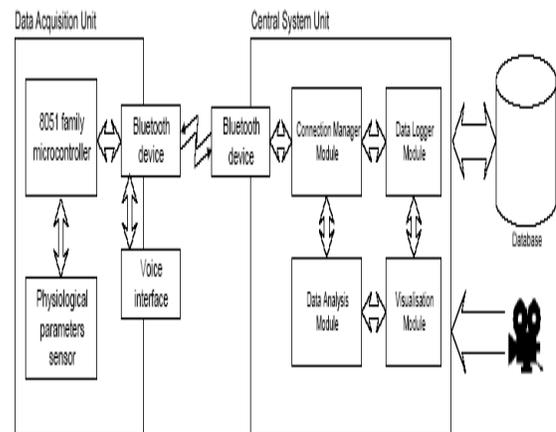


Fig.3: Overall System Diagram

The task of the mobile Data Acquisition Unit are to maintain Bluetooth connection, to get information from the sensor and sending it over the wireless connection ,to deliver the alarm messages sent from the Central System Unit to the operator and handle personalized ID cards. Central System Unit maintains the other side of the Bluetooth connection, buffers incoming sensor data, performs on-line data analysis, records the conclusion for further exploration and provides visualization interface.

The priority of the central unit is to provide real-time buffering and incoming sensor signals and semi-real-time processing of the data, which requires speed-optimizes filtering and reasoning algorithms. Moreover, the design should assure the possibility of distributing the processing among two or more central unit nodes (e.g. to offload the database system related tasks to a dedicated server).

II. RELATED WORKS

SL NO	TITLE	DESCRIPTION
1	Blue Eyes Sensing Intelligences Technology Using Emotion Sensor	This paper is about the important modules, techniques, methodizes and relevance updating technologies in the "blue eye".
2	Blue Eyes the Future Technology	This paper studies about blue eyes technology which aims at creating computational machines that have perceptual and sensory ability like those of human beings.
3	Blue Eye Technology	This paper implements a new technique known as Emotion Sensory World of Blue eyes technology which identifies human emotions such as sad, happy, excited or surprised
4	Overview of Blue Eyes Technology	This work presents an overview of blue eyes technology.
5	Blue Eyes Technology	This paper includes a study on BLUE EYES technology which ensures a convenient way of simplifying the life by providing more delicate and user friendly facilities in computing devices.
6	Blue Eyes - Human - Operator Monitoring System	This paper is about blue eyes technology which uses non-obtrusive sensing method, employing most modern video cameras and microphones to identify the users actions through the use of imparted sensory abilities.
7	Vision System of Blue Eyes	This paper aims at specifying the viewing system of blue eyes and the applications of the blue eyes technology.

III. APPLICATIONS

The following are the applications of the Blue Eyes System.

1. At power point control rooms.
2. At Captain Bridges
3. At Flight Control Centers
4. Professional Drivers

IV. CONCLUSION

The Blue Eyes system is developed because of the need for a real-time monitoring system for a human operator. The approach is innovative since it helps supervise the operator not the process, as it is in presently available solutions. We hope the system in its commercial release will help avoid potential threats resulting from human errors, such as weariness, oversight, tiredness or temporal indisposition. The use of a miniature CMOS camera integrated into the eye movement sensor will enable the system to calculate the point of gaze and observe what the operator is actually looking at. Introducing voice recognition algorithm will facilitate the communication between the operator and the central system and simplify authorization process. Blue Eyes emphasizes the foundations of the project – Bluetooth technology and the movements of the eyes.

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