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DOCTORS ASSISTIVE SYSTEM USING AUGUMENTED REALITY FOR CRITICAL ANALYSIS

Ananthi.K, Renuga.S, Sathyamoorthy M, Sugenthiran.P, Dr.K.Geetha
Department of Electronics and Communication Engineering
Rathinam Technical Campus, Coimbatore.

***Abstract*—**Surgeons are regularly on the lookout for technologies that will enhance their operating environment. They are often the early adopters of technologies that allow their field to offer a better surgical and patient experience. The continuing enhancement of the surgical environment in the digital age has led to a number of innovations being highlighted as potential disruptive technologies in the surgical workplace. Augmented reality (AR) are rapidly becoming increasingly available, accessible and importantly affordable, hence their application into healthcare to enhance the medical use of data is certain. Whether it relates to anatomy, intraoperative surgery, or post-operative rehabilitation, applications are already being investigated for their role in the surgeons. AR is the addition of artificial information to one or more of the senses that allows the user to perform tasks more efficiently. We propose a system in which important information forthe doctors are displayed on semi-transparent glasses includedin an AR-headset and therefore are mixed with the real-worldview. In this project, the real time data of patients in hospital collected by the sensors attached to patients once the sensor measured the values then it is processed and send to doctors augmented reality glass through wireless and alert if abnormal condition occurs . The doctor can take appropriate action based on the patients current health condition.

I. INTRODUCTION

The impressive development of medical imaging technology during the last decades provided physicians with an increasing amount of patient specific anatomical and functional data. In addition, the increasing use of non-ionizing real-time imaging, in particular ultrasound and optical imaging, during surgical procedures created the need for design and development of new visualization and display technology allowing physicians to take full advantage of rich sources of heterogeneous preoperative and intra operative data. During 90's, medical augmented reality was proposed as a paradigm bringing new visualization and interaction solutions into perspective. This paper not only reviews the related literature but also establishes the relationship between subsets of this body of work in medical augmented reality. It finally discusses the remaining challenges for this young and active multidisciplinary research community.

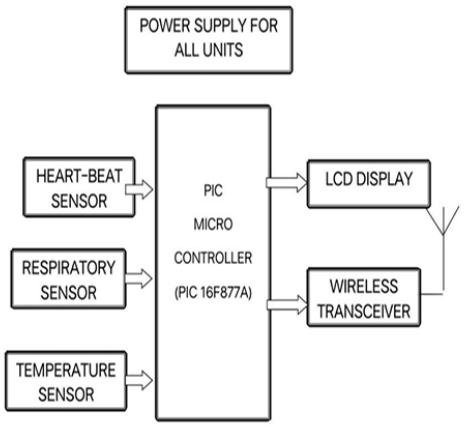
II. EXISTING SYSTEM

In this existing paper, a novel wireless sensing system to monitor and analyze cardiac condition i s proposed, which sends the information to the care giver as well as a medical practitioner with an application of the Internet of Things (IoT). An integrated system for heart sound acquisition, storage, asynchronous analysis as been developed, from scratch to information uploading through IoT and signal analysis.Cardiac a uscultation

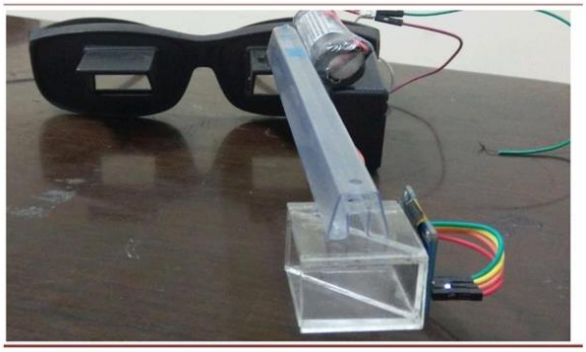
Sensing unit has been designed to monitor cardio vascular health of an individual. Bluetooth protocol is used to offer power efficiency and mode rate data transmission rate.

III. PROPOSED SYSTEM

TRANSMITTER SESSION:

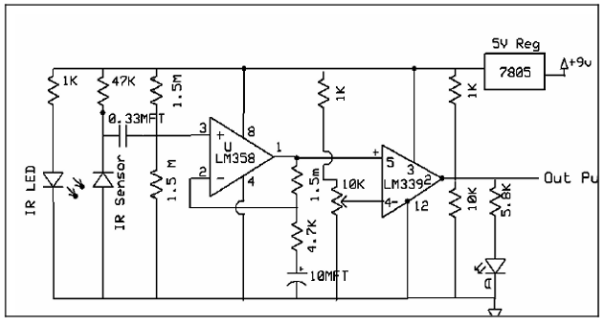


IV. RECEIVER SESSION



V. HEART BEAT SENSOR

Here we are using IR sensor for detecting the HEART BEAT. IR has less noise and ambient light than at normal optical wavelengths. The light is produced only when current passes through in the forward direction and block current in the reverse direction. Plethysmograph is an infrared photoelectric sensor used to record changes in pulsatile blood flow from the finger. The Plethysmograph operates by recording changes in blood volume as the arterial pulse expands and contracts the microvasculature.



This is a non-invasive measurement for changes in finger blood flow during wakefulness and sleep. Pulse wave amplitude (PWA) is the most frequently used parameter obtained by finger plethysmography. PWA is directly and positively correlated to finger blood flow. The hypothesis of this study was that finger plethysmography detects pharmacologically induced changes in finger blood flow, in particular changes induced by stimulation and blockade of vascular a-receptors. Due to the anatomic structure of the finger we expected that alterations of vascular tone following sympathetic activation or inhibition might be reflected by changes of PWA. A change in finger blood flow, reflected by PWA is derived from the finger plethysmography. PWA derived from finger plethysmography allows continuous, non invasive measurement of changes in finger blood flow during wakefulness and sleep. Finally, to demonstrate the ability of finger plethysmography to continuously monitor vascular tone, PWA responses to obstructive breathing and concomitant arousal events in patients with obstructive sleep apnea were recorded and analysed.

VI. PRODUCT DESCRIPTION

First Sensor develops and manufactures highly reliable sensors and customized sensor systems as a strategic partner to medical product manufacturers in the area of breathing and respiration. The first step in this process is breathing in air, or inhaling. The taking in of air rich in oxygen into the body is called inhalation and giving out of air rich in carbon dioxide from the body is called exhalation. The second step is gas exchange in the lungs where oxygen is diffused into the blood and the carbon dioxide diffuses out of the blood. The third process is cellular respiration, which produces the chemical energy that the cells in the body need, and carbon dioxide. Finally, the carbon dioxide from cellular respiration is breathed out of body from the lungs.

VII. FEATURES

• Input voltage: 5v

• Output voltage: 5v

• Output: Analog

• Range: 30% – 65%

• Size (Approx.):132cm (52" Long)

VIII. APPLICATIONS

• Medical purpose

• Environmental Control System

• Emergency response System

IX. CONCLUSION

AR systems are becoming comparable to traditional navigation techniques, with precision and safety sufficient for routine clinical practice. Most problems faced presently will be solved by further medical and technological research. Augmented reality appears to be a powerful tool possibly capable of revolutionising the field of surgery through a rational use. In the future, AR will likely serve as an advanced human-computer interface, working in symbiosis with surgeons, allowing them to achieve even better results. Nevertheless, further advancement is much needed to achieve maximum potential and cost-effectiveness of augmented reality. Currently used eye-mounted displays usually weigh several hundred grams and produce plenty of heat; therefore, long-term wear comfort is an issue. These need to be addressed in future to better fit the ergonomics and allow continuous usage for a long period. Augmented reality introduces many new possibilities and adds new dimensions to surgical science. Surgeons can use additional data for decision making and improving safety and efficacy. Advances in technology allow AR devices to display information with increasing accuracy and lower latency.

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