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DOCTORS ASSITIVE SYSTEM USING AUGMENTATED REALITY FOR CRITICAL ANALYSIS

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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 for the doctors are displayed on semi-transparent glasses included in an AR-headset and therefore are mixed with the real-world view*

***Key Words*: PIC microcontroller, Power supply, ZigBee transceiver, Pressure sensor, Heartbeat sensor, Temperature sensor**

1. INTRODUCTION

In "Visualizing Toronto City Data with HoloLens", Longyu Zhang, Sifen Chen, Haiwei Dong, and Abdulmotaleb El Saddik illustrate a method for visualizing a three-dimensional (3-D) model of Toronto and various types of city data using a holographic device. The authors provide details about the creation of the 3-D model, geographical data processing, extraction of city information, and the design of the user interaction. Evangelos Niforatos, Anton Fedosov, Marc Langheinrich, and Ivan Elhart then offer the article "Augmenting Humans on the Slope," in which they present a system for enhancing the experience of skiers and snowboarders. Augmented reality here allows users to improve downhill safety and their overall experience in winter sports. The researchers developed two prototypes: 1) the s-Helmet attempts to augment a skier's perception of other enthusiast's movements on the slopes via sensors and warning LEDs mounted on the back and front of a ski helmet and 2) the SKIAR facilitates coordination and communication of groups via the augmentation of panoramic ski resort maps with additional personalized information. In "Can a Green Thumb Make a Difference? Using a Nature Metaphor to Communicate the Sensor Information of a Coffee Machine," Carla Barreiros, Eduardo Veas and Viktoria Pammer propose a system in which augmented reality is based on a nature metaphor. The team installed sensors in a coffee machine, and information concerning its behavior is streamed to an ad hoc application. The nature metaphor is exploited to represent the status of the coffee machine through a 3-D virtual tree.

In Part I and Part II of this special issue, a total of eight articles were published. The rest will appear in future issues as feature articles as the page budget permits. The richness and diversity of the articles submitted for this special issue confirm the continued interest in the identification of new fields of application for virtual and augmented reality technology and open the door to new consumer electronics business opportunities in the coming years. Our hope is that the reported experiences will inspire more researchers who are actively working in these fields and will contribute to ever-new advancements. We thank both the authors and the reviewers for their outstanding contributions. We also wish to thank IEEE Consumer Electronics Magazine Editor-in-Chief Saraju P.Mohanty for providing us with the opportunity Stop guest-edit this special issue and for the help he offered throughout the entire publication process.

2. OBJECTIVES

The medical data's can be monetarized by the augmented reality technology**.** It can easily to see the patient data in augmented reality technology**.** It is also used for user friendly portable. It can be easily monitarize the wearable glass**.**It is also used to reduced time**.** The secure operations will be done on this technology

3. EXISTING SYSTEM

In Previous year, the patient medical data's can be monetarized on excel sheet, note pad. Critical situation it can be searching the note pad. Data can be monetarized mobile. The main disadvantage of this project is the patients data are stored in excel or note pad. The time also increases. The patients data can only be got manually.

4. PROPOSED SYSTEM

The medical data's can be monetarized by the augmented reality technology**.** It can easily to see the patient data in augmented reality technology**.** It is also used for user friendly portable. It can be easily monitarize the wearable

glass.It is also used to reduced time. The secure operations will be done on this technology.

5. BLOCK DIAGRAM

5.1 TRANSMITTING SECTION

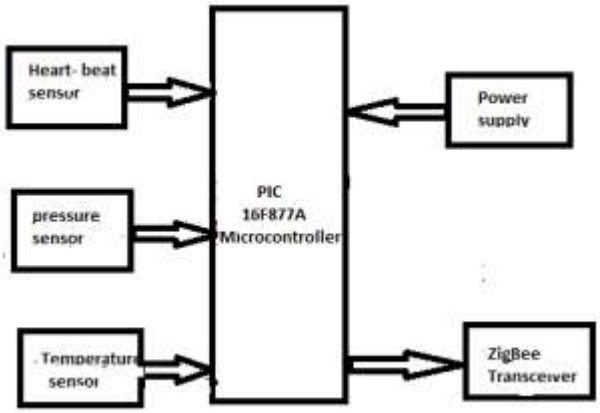

Fig 5.1

5.2 RECEVING SECTION

Fig 5.2

6. SYSTEM DESIGN

6.1. PIC MICROCONTROLLER

The term PIC, or Peripheral Interface Controller, is the name given by Microchip Technologies to its single – chip microcontrollers. These devices have been phenomenally successful in the market for many reasons, the most significant ones are mentioned below. PIC micros have grown in steadily in popularity over the last decade, ever since their inception into the market in the early 1990s. PIC micros have grown to become the most widely used microcontrollers in the 8- bit microcontroller segment. The PIC16F877 is 40 pin IC. There are six ports in microcontroller. Namely PORT A, PORT B, PORT C, PORT D and PORT E. Among these ports PORT B, PORT C and PORT D contains 8-pins, where PORTA contains 6-pins and PORT E contains 3-pins.Each pin in the ports can be used as either input or output pins. Before using the port pins as input or output, directions should be given in TRIS register. For example setting all the bits in TRIS D register indicates all the pins in PORT D are used input pins.

6.2 TEMPERATURE SENSOR

Temperature is the most often-measured environmental quantity. This might be expected since most physical, electronic, chemical, mechanical, and biological systems are affected by temperature. Certain chemical reactions, biological processes, and even electronic circuits perform best within limited temperature ranges. Temperature is one of the most commonly measured variables and it is therefore not surprising that there are many ways of sensing it. Temperature sensing can be done either through direct contact with the heating source, or remotely, without direct contact with the source using radiated energy instead. There are a wide variety of temperature sensors on the market today, including Thermocouples, Resistance Temperature Detectors (RTDs), Thermistors, Infrared, and Semiconductor Sensors.

6.3 PRESSURE SENSOR

A pressure sensor measures pressure, typically of gases or liquids. Pressure is an expression of the force required to stop a fluid from expanding, and is usually stated in terms of force per unit area. A pressure sensor usually acts as a transducer; it generates a signal as a function of the pressure imposed. For the purposes of this article, such a signal is electrical Pressure sensors are used for control and monitoring in thousands of everyday applications. Pressure sensors can also be used to indirectly measure other variables.

6.4 HEARTBEAT SENSOR

The heartbeat sensor is based on the principle of photo plethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (a vascular region). In case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important. The flow of blood volume is decided by the rate of heart pulses and since light is absorbed by blood, the signal pulses are equivalent to the heart beat pulses.

6.5 ZIGBEE TRANSCEIVER

ZigBee is a wireless technology developed as an open global standard to address the unique needs of low-cost, low-power wireless M2M networks. The ZigBee standard operates on the IEEE 802.15.4 physical radio specification and operates in unlicensed bands including 2.4 GHz, 900 MHz and 860MHz. The 802.15.4 specification upon which the ZigBee stack operates gained ratification by the Institute of Electrical and Electronics Engineers (IEEE) in 2003. The specification is a packet-based radio protocol intended for low-cost, battery-operated devices. The protocol allows devices to communicate in a variety of network topologies and can have battery life lasting several years.

7. METHODOLOGY

7.1 TRANSMITTING SECTION

The real time data of the monitered patient's converts with the help of sensors. They are heartbeat sensor, temperature sensor and pressure sensor. The sensors are interfaced with PIC microcontroller. These data are process with the help of the PIC microcontroller. We use PIC microcontroller because it has flash memory. Power supply is provided with the help of the stepdown transformer and its coverts 230V to 5V.All these real time data transmitted with the help of ZigBee transmitter.

7.2 RECEVING SECTION

It consists of 9V battery which provides power supply for the receiver side. Mirror adjusting in focal length is provided in order to adjust the position of the mirror till a well-defined image is formed at the side. Transmitted data is received with the help of ZigBee receiver. The output is displayed on the wearable glass.

8. PROPOSED HARDWARE MODULE

Here the proposed model consists of hardware that was described above the system design hardware description.

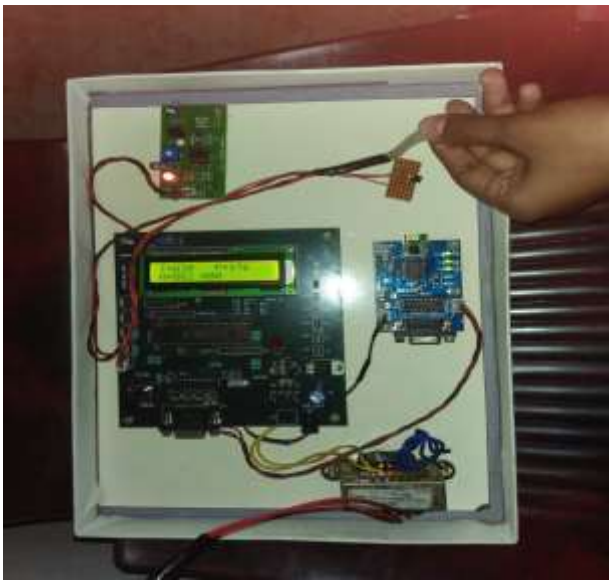

Fig 8.1

Fig 8.2

9. CONCLUSION

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 patient's current health condition.

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