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Augmented Reality for Patient Monitoring

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ABSTRACT

This paper presents an overview of basic aspects of Augmented Reality(AR) and the main concepts of this technology. It describes the medical fields in which AR is applied nowadays. This system could measure the patient's progress in real time providing continuous feedback. Some characteristics of Augmented Reality systems will be discussed and this paper will provide an overview of them.

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I. INTRODUCTION

Augmented reality is the integration of digital information with the user's environment in real time. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it. AR is closer to the real-world objects. Basically, AR generates user selected images, videos, 3D objects and information into the real environment which can be viewed through the camera of the devices. The best-known example includes Snapchat and Pokemon Go. This project is proposed for Patient Monitoring system to help us enhance patient care and improve clinical performance. AR is very useful tool for patient education, both for treatment and disease prevention. AR in healthcare can play a key role in the future of medicine.AR can help doctors access the latest and most relevant information about their patients. The patient node is the most important entity in the hardware system. The patient node can sense, sample, and process one or more biometric signals. For this research, the initial hardware system includes prototype sensors to sense body temperature (BT) and heart rate (HR). These two variables are initialized manually by the nurse. It reduces time of nurses and doctors and any danger will be detected and reduces the death.

II. LITERATURE REVIEW

The rapid development of wireless communication protocols has enabled the development of wireless medical devices. Wireless capability refers to the transmission of biomedical information obtained from sensors or embedded systems through a wireless communication channel to a remote medical station or mobile device. In the literature, many efforts have been made to advance this capability. For example, Misra *et al.[1]* introduce a multi-tier telemedicine system to perform real-time analysis of sensor data. Several intelligent devices are integrated into a wireless body area network (WBAN) to create a system for health monitoring. The system performs real-time analysis of sensor data. In addition, it uses cloud storage so that data can be retrieved at any time anywhere.

Fensli [4] present a new concept for wireless electrocardiogram (ECG) monitoring, specially designed for arrhythmia diagnostics, based on a smart electrode with wireless transmission capability. The system acts as a continuous event recorder that can be used to monitor patients with arrhythmia.

He *et al [6]*. have developed a wireless technique to transmit information between biometric sensors and a monitoring center to increase the free space surrounding the patient. Additionally, the system, which is based on ZigBee technology, aims to improve the management of hospital services. The monitoring terminal can detect the patient's body temperature, heart rate and other physiological information in real time and transmit this information to the control center.

III. PROPOSED SYSTEM

Many biomedical devices (patient monitoring system) inform doctors and nurses about the patient's physiological signals. However, this device (patient monitoring system) does not have a remote monitoring capability, which is necessitates constant onsite attendance by support personnel (doctors and nurses).

Thus, we have developed a Remote Wireless Patient Monitoring System using some biomedical sensors and controller, which is a portable patient monitoring. This device (Remote Wireless Patient Monitoring System) monitors the biomedical signals of patients in real time and sends them to remote stations (doctors and nurse's android Smartphone and web) for display and with alerts when necessary.

Block Diagram:-

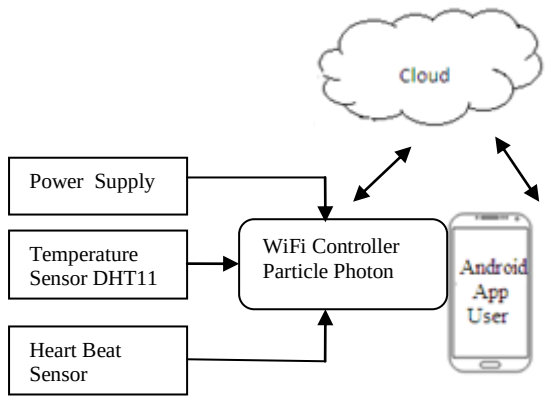

Figure 1. System Architecture

IV. OBJECTIVE

- The main objective of this paper is study the AR technique.
- This project develops an efficient system that can replace traditional system.
- Collected the data from patient and send on cloud through particle photon.
- Developed the systems for getting data on IOT and AR, VR functions.
- System should be able to access the data at receiver end.
- In emergency conditions signal should be changed.

V. FUTURE SCOPE

Current research has been focusing on virtual retinal displays and contact lenses that might contain the elements for display embedded into the lens including LEDs, integrated circuitry, and an antenna to provide wireless communication. With the advent of such complementary technologies as tactile networks, artificial intelligence, cybernetics, and (non-invasive) brain-computer interfaces, AR might soon pave the way for ubiquitous (any time anywhere) computing of a more natural kind.

VI. CONCLUSION

In this paper we have shown how both users and providers can use AR to interact with IoT devices and services. AR can be used to quickly debug devices as well as providing an easy way to interact with services in a local environment.

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