

# Instigating Modernistic Technology for the Patients Security in Hospitals

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**Abstract**—The world has got completely changed by the far eventuation of new tremendous technologies. Our dire life seems to be simpler due to the technology development yet lags in safety of an ICU patient in hospitals. This paper uses of embedded eye detector sensor and speech to text converter. The NIOS II embedded processor is used to design the speech to text converter. This eye detector sensor is hardware based system which has no CPU, no addressable frame buffers. They are implemented with the help of simple logic gates. The speech to text converter helps to create the EMR of the patients. This confidential EMR can be accessed through the embedded eye detector sensor. This design High-up the mass production and lowers the total cost. This modernistic technology also insists the responsibility of the doctors and reduces the criminal rates in the hospitals by providing more security with less effort to the patient.

**Index Terms** – Embedded Eye detector sensor, Speech to Text converter using NIOS II embedded processor, Pressure sensor.

## I. INTRODUCTION

Ours being a developing country we have to keep improving the technology in hospitals for the patients safety.

In hospitals they use of Face detection, Face recognition, Photo ID system for the authentication. These lags security since all the staffs are not expected to wear their ID all time and the face recognition cannot be consider as the best in developing technology. The use of the embedded eye detector sensor is the process of detecting human eye and locating in images [1-2]. The entire faculty in hospitals requires their eye detection to do their authentication works. This detection also carries a secure network which transmits the data of the person who accessed it to do their regular checking process.

The ICU patients report has to be kept updating his or her progress of each day. The report must consist of the list of medicines prescribed by doctors to the patient for the better progress. The speech to text converter helps for the easy updating patients Electrical Medical Report (EMR) using NIOS II embedded processor [3-4]. The NIOS II processor is the development board with rich features and customization. It's an easy programming environment. Speech to Text converter is implemented by the NIOS II hardware application layout.

A pressure sensor usually acts as a transducer; it generates a signal as a function of the pressure imposed. When pressure is applied to a pressure sensor, the sensor acts to complete or break an electrical circuit. This will trigger the alarm [6-7].

## II. LITERATURE REVIEW

In this paper a literature review is carried out related to the death of the ICU patients due to lack in proper treatment and the immorality of the hospitals. In this six months study period, 86 hospitals in patients were admitted on 98 occasions to the ICU, 31 of who received suboptimal care pre-ICU admission due to inappropriate treatment or non-recognition of problem. Lack of early recognition and correction of abnormality may leads to the unexpected death of the patients in the hospitals. In United States 20% of the people die after admission in ICU or under treatment in intensive care unit. These deaths are due to the lack of proper treatment and medical care in the hospitals [8]. The patients who gets discharged from the hospitals has poor health due to the improper medical care. The palliative care in ICU can be improved by MEDLINE database [9].

The fake doctor's treatment makes the medical backfire. These doctors cannot be easily differentiated from the original doctors. Since it fall short in the evidence to prove them. Because of these doctors, the patients get sick instead getting better health. Eg..Sarafinaguling

The retrospective study of 117 ICU patients was conducted. Diagnosing the history of the patient's death, the data of the patient was recorded. Yet they cannot analyses the case is either suicidal or accidental [10].

Another retrospective study was made on the ICU patients between October 2005 and September 2011. The hospital administrative disclosures the record for the academic purpose. The confidentiality of the patient was maintained without mentioning their name, DOB, the details of the doctor who treat them.

Various attempts have made to insists the ICU patient security in hospitals. Though the death of the patient is unpredictable. The litigation on the doctors or on the hospitals cannot be taken for the cause of death of the patient.

## III. EXISTING SYSTEM ISSUES

The existing system in the hospitals insists on the doctors security yet it lack on insisting the doctors responsibility and fails in authentication system in accessing the patients confidential reports.

The litigations against the hospital immorality act gets failed due to the insufficient records this increase the carelessness of the hospitals. Consequently increases the death rate as per the survey.

The following components are used in the hospitals for the security of the patients.

*a) cctv camera:*

Siemen introduced the CCTV camera for security purpose in the hospital. For the last 20 years such design wasn't existing. This innovative idea was more helpful insisting the security purposes. The miss happening of the process in the hospital can be easily rectified. People had a consciousness in their duty as they felt someone inspecting our service to the patients.

The most obvious benefit is that the unit is no subject to the failure of any type of wiring, because CCTV cameras use wireless technology in order to accomplish their task. The absence of wiring which may fail or be cut means that there's virtually no chance of failure of the system, and even a clever criminal won't be able to circumvent the camera by severing the connection.

Except ripping the entire unit out of place, there's nothing else that would slow the unit down.

Finally, CCTV cameras are in most cases less expensive than people would think. Actually, today you can buy wireless units cheaper than many of the wired counterparts on the market. Taking into account that wireless cameras require much easier installation, it comes as no surprise that more and more people today are choosing wireless security cameras. [11] Yet as of the improved technology the CCTV camera can be hacked. Privacy also gets disturbed.

*b) photo id system:*

In most of the hospitals still continue to use old hospitals identification cards. Which do not display the employee photo. A few are still using the plastic name tag with just the employee's name displayed on the tag.

Hospitals that fail to require all employees and staffs to display a photo identification badge are still happening in the hospitals. Each and every employee and staff member, including doctors should be required to wear a tamper proof photo identification badge, facing forward displaying the person's first and last name, title and the hospitals name and logo.

More issues created by using photo id system are, if you need the ID card, it sucks to lose it or ruin it, then you're screwed. Then it may be stolen the identity. Further the most issue is the total personal info all in one place(full name,address,height,hair/eye color)and if someone theft the card it will create a big issue in hospitals.

*c)locks&alarm:*

A security alarm is a system designed to detect intrusion unauthorized entry into a building or area.

The drawback of wireless is reliability and these are subject to various types of interference which can causes our sensor to fail to respond or to respond unpredictably. The interference can come from many other devices including baby monitors, remote control,

Each hospitals alarm systems must be customized to the specific area's.Theissues include in private patients rooms with the doors closed [11]

This has the disadvantage since the alarm gets triggered due to unauthorized person entry like for the maid to clean the rooms.

*d) Eye tracking system*

Eye-gaze tracking system are very expensive. It has resulted in limited use of eye-tracking technology on commercial systems. In this paper we examine and step forward in reducing the cost or the introduce of the new technology. Ultimately reduction in the low cost system eill results in more widespread use of the technology[12].

*e) security guard:*

Organizational and structural security are expertise in hospitals.The main objectives for hospitals security is for more security of patients.They should have the specific mix of skills and attributes that an individual must posses in order to be successful in each unique position within our portpolio sites.All the security cannot expect to posses such skills.

The most security guard now we are using paladin security is using in Canada. Paladin is a highly professional security organization that provides complete turn key security solutions .but these system having more issues are professional security officers available when full time and dedicated site presence is required. Mobile security patrols available when a full time security officers is impractical or cost prohibitive. Emergency response services are available required when a timely response is require at our facility[13].

## IV.PROPOSED SYSTEM

We propose an idea for the safety of the patients and authentication way of accessing the confidential documents. This modernistic technology is a proactive approach in protecting the patients, their reports and on their health system assests.The security management helps in reducing the occurrence and severity of security incidents.

Proactive safety management is the only way to end up the death of the patients due to the insecurity in the hospitals. This can be accomplished by the adequate staff, access control, maintaining the confidential reports secured.

The proactive approach we instigate is the use of pressure sensor, embedded eye detector sensor and speech to text converter using Nios II embedded processor.

The Arduino microcontroller is an easy to use yet powerful single board computer that has gained considerable traction in the professional market. The Arduino is open-source, which means hardware is reasonably priced and development software is free.ThisArduino Uno board, a good choice for students and educators. With the Arduino board, you can write programs and create interface circuits to read switches and other sensors.

The arduino board here interfaces the both the pressure sensor and the buzzer. The pressure sensor is fixed on the patient's hand. These sensors are commonly manufactured out of piezoelectric materials such as quartz. When pressure is applied to a pressure sensor, the sensor acts to complete or break an electrical circuit. These types of sensors are also known as a switch. The

pressure changes whenever there is a touch (pressure changes) on the patient’s hand.

Due to the change in the pressure it triggers the buzzer which is interfaced to the arduino board. The supply voltage to the buzzer is 12v. The microcontroller is connected to the personnel computer through the port.

The PC displays the details of the doctor who accessed the embedded eye detector sensor. The other part of the PC is connected to the NIOS II embedded processor. The speech to text is converted using FPGA . The input to the FPGA is through the microphone which is interfaced with the ADC.

The speech recognition and the preprocessing are done using NIOS II processor. This Technology helps in creating the Electrical medical Report (EMR).

The embedded eye detector sensor is used to access the confidential reports of the patients. Accessing through the eye detector sensor the doctor is allowed to give medical care to ICU patient. The buzzer and pressure sensor is not deactivated when an person is not authorized by the sensor.

Thus the modernistic technology makes the patients secured by fixing the pressure sensor on his hand. The pressure changes whenever an external force is applied to the hand( The touch of the unauthorized person in the hospitals). This triggers the alarm. To deactivate the pressure sensor device and the buzzer is only by accessing through the eye detector sensor The authorized person gets detected by sensor will terminate the buzzer and the pressure sensor.

As the process of the recognition of the authorized person, it stores the details of the accessed person. This is done through the secure network, data transmission of the doctors details. The file opens consequently to update the EMR

The secure network has the complete details of the doctors and the time of accessing the sensors. This helps easy litigation against the hospitals or the doctors on the death of the ICU patient due to the improper medical care.

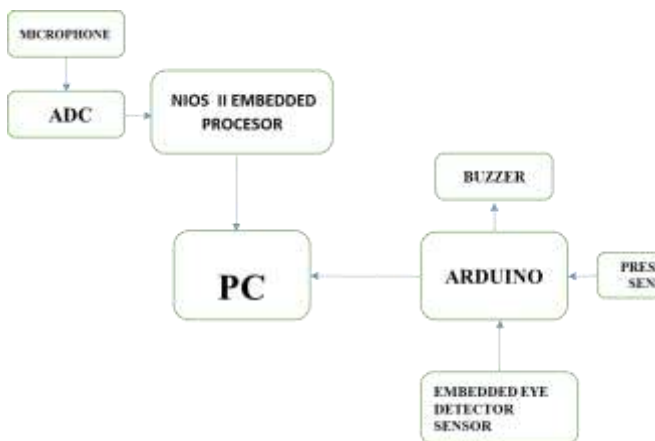


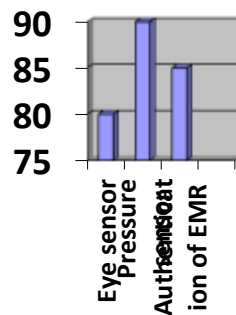
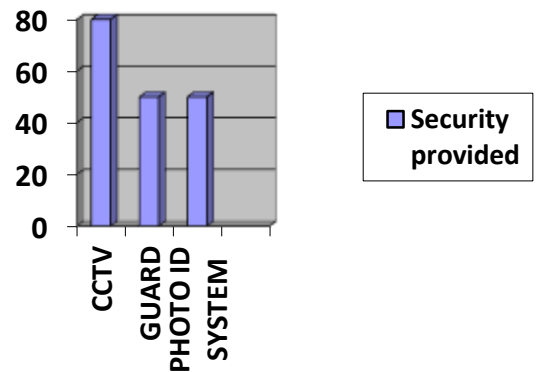
Fig. 1. Block diagram of the proposed system

Thus the proposed system is considered for the more security purpose in the hospitals. This also makes the work easy for the doctors in updating patients EMR.

This insists the responsibility of the doctor to serve the patient. And the litigation can be made against the immorality of the hospitals.

IV. CONCLUSION

This modernistic technology helps to keep up the patient more secured with less effort. The use of the embedded eye detector sensor insists the responsibility of the doctor to examine the patient on the schedule time periods. The confidential EMR is kept secured and can be viewed only after the authentication process. The patient EMR can easily be updated with the help of speech to text converter using a developed board, NIOS II processor. The graph shows the security system of the existing and modernistic technology.



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