

Advanced Coma Patient Monitoring System

Naveen Kansal, Hardeep Singh Dhillon

Abstract- Embedded system is becoming an integral part of Engineering design process for efficient analysis and effective operation. From data analysis to hardware work, everywhere embedded products are the main interest because of its reliability and time bound perfection. There is not much time with anyone now a day to give enough in all aspects, so demand of embedded products which serve as we want is high on demand. Further it describes the design of an embedded system for the control of Temperature & Light intensity with continuous monitoring in a single system using sensors, microcontroller and LCD. It describes the controlling action incorporated in the hardware to control any device connected when specific conditions are met. Further set up is made such that data can be stored for future offline analysis. The hardware developed namely "Advanced Coma Patient Monitoring System" is very advanced product related to physical changes in body movement of the patient and gives Warning in form of alarm and display on the LCD in less than one second time. It also passes a sms to a person sitting at the distant place if there exists any movement in any body part of the patient.

Index Terms— Coma, Patient Monitoring, Advanced Coma Monitoring, Coma Patient, Non intrusive system, image processing based system, Future coma product.

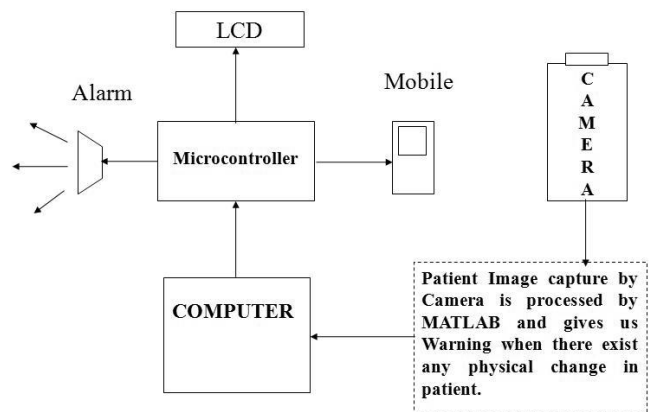
1 INTRODUCTION

A coma, sometimes also called persistent vegetative state, is a profound or deep state of unconsciousness.

Persistent vegetative state is not brain-death. An individual in a state of coma is alive but unable to move or respond to his or her environment. Coma may occur as a complication of an underlying illness, or as a result of injuries, such as head trauma. Individuals in such a state have lost their thinking abilities and awareness of their surroundings, but retain non-cognitive function and normal sleep patterns. Even though those in a persistent vegetative state lose their higher brain functions, other key functions such as breathing and circulation remain relatively intact. Spontaneous movements may occur, and the eyes may open in response to external stimuli. Individuals may even occasionally grimace, cry, or laugh. Although individuals in a persistent vegetative state may appear somewhat normal, they do not speak and they are unable to respond to commands. So due to very rare change in physical movement of the coma patient we have to monitor him regularly. But now with the help of this system we can monitor the patient regularly and if there exist any physical change in body of the coma patient then it will alarm the signal and send a sms through a CDMA mobile to a person at a distant place.

2 BLOCK DIAGRAM OF THE SYSTEM

Fig. 1 Block diagram of Advanced coma patient monitoring



system.

3 IMAGE PROCESSING

AS The Pattern recognition and pattern rejection algorithms use MATLAB for use in geographic information system images and map. Methods of algorithm selection in this research will be based on critical review literature on image preprocessing, pattern recognition using geometric algo-

rithm, line detection, extraction of curve lines, semantic retrieval by spatial relationships, and structural object recognition using shape-form shading. The results of this research will give a user a complete knowledge of which pattern recognition algorithm will best fit in analyzing geometric and structural pattern from a given image. The conclusion of the research will show which among the pattern recognition and rejection algorithms using MATLAB will produce the best result when looking for a specific pattern.

4 INPUT AND OUTPUT UNITS

This system will consist of an input unit i.e Digital camera to study the movement in any part of the body of patient.

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For indication of warning we will use three approaches i.e. one by blowing alarm, by displaying message on the LCD and third by sending sms through the CDMA mobile to a distant person. Moreover the warning will be deactivated manually rather than automatically. So for this purpose a deactivation switch will be used to deactivate warning.

6 CIRCUIT DIAGRAM

5 SOFTWARE RESULTS

5.1 This window shows Original Image and changes in Original Image

Note new toolbar buttons: [data brushing](#) & [linked plots](#) [Play video](#) X

Patient monitoring system - original image- motion detected above threshold sms s



Fig. 2 This window is used for noting the changes in the original image of the patient and after noting it a sms will be automatically passed to a person.

5.2 This window shows the physical changes in the body of the patient

Note new toolbar buttons: [data brushing](#) & [linked plots](#) [Play video](#) X

Patient monitoring system - original image



Fig. 3 This window is used to show physical changes in body.

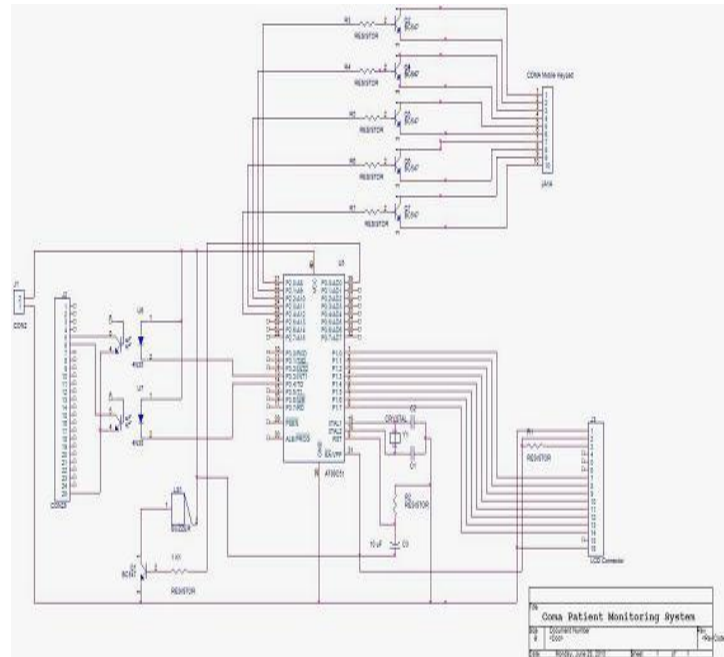


Fig. 4 Circuit diagram of Advanced coma patient monitoring system.

7 HARDWARE DEVELOPED

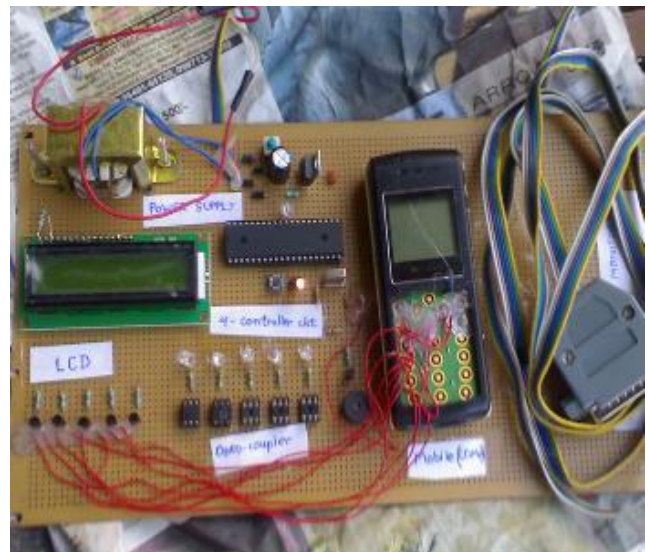


Fig. 5 Complete hardware of Advanced coma patient

monitoring system.

8 CONCLUSION

With the help of this system we can monitor the whole body of a coma patient and if there exists a change in any part of the body of a patient then with the help of image processing using MATLAB software, it will automatically generates an alarm or send a sms via CDMA mobile to a person sitting at a distant place.

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BIOGRAPHIES



Hardeep Singh Dhillon S/O Late. S. Jaspal Singh Dhillon was born in Village Sundran, P.O Mubarikpur, Tehsil Dera Bassi (Punjab) in India, on April 6, 1986. He graduated from Sri Sukhmani Institute of Engg and Tech, Dera Bassi, India, and completed his Masters of Engg (batch 2008-10), E&EC Deptt, from **P.E.C University of Technology** (formally

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