



## IMPLEMENTATION OF REMOTE MEDICAL NURSING MONITORING SYSTEM USING ARDUINO

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### ABSTRACT

*It is necessary to monitor the patient time to time by giving them proper attention. But it is missing in some hospitals. Hence in this paper we proposed an effective remote medical nursing monitoring system. If any patient of a particular bed need any medical assistance, the patient press that key which is present near the bed, then the key will be activated and the camera will be positioned towards the patient bed automatically if patient needs doctor's assistance, by pressing another key the message will be sent to the doctor through Bluetooth, after visiting the patient doctor has to press a special key, which means he visited the patient and it will be visible on LCD display. Finally, the project we designed for particularly taking care of general ward patients.*

**KEYWORDS:** *Arduino, Blue-tooth, LCD, Motor, H-bridge.*

### 1. INTRODUCTION

The Subject of mechatronics which means a united frame work is constructed with mechanical part, Arduino, video monitoring, camera included in this project which is positioned towards the calling patient. LCD is to display the messages which are visible to patients, what key there have pressed. The current

technology, which involves the subject of mechatronics can restrict the motion of camera, it will be positioned at the middle of the two beds. For this purpose magnetic switches and limit switches are used and they are supposed to be installed near the beds. The video camera is arranged over the sliding channel mechanism and it will be moved horizontally within a specific span of time. In this paper we propose to arrange two mini beds near that beds three keys there are doctor calling, medicine, food and two keys are arranged for doctor and that key is pressed after visiting the patient.

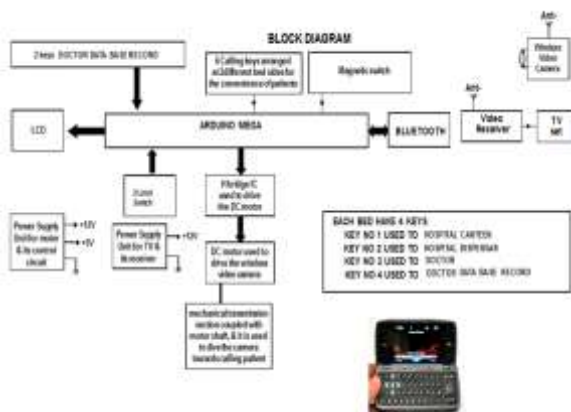
If patient press any particular assistance key then the message will be send to that persons and the message will be displayed in LCD, by pressing key, camera will be moved from home position to particular patient bed and wireless video monitoring will be appear at the receptionist section. Finally, this project is designed for especially taking care of general ward patients in government hospitals; medical assistants

will not pay much attention to the poor patients.

Hence the purpose of this project work is to have a continuous vigilance over the staff of hospitals, i.e., whether they are serving the patients in proper manner or not, can be monitored by the concern higher official through wireless video monitoring system. The wireless video camera used in this project work can able telecast the live video to the monitoring station. The monitoring station is equipped with a synchronized video receiver and its output is fed to the small television set.

**2. Block diagram**

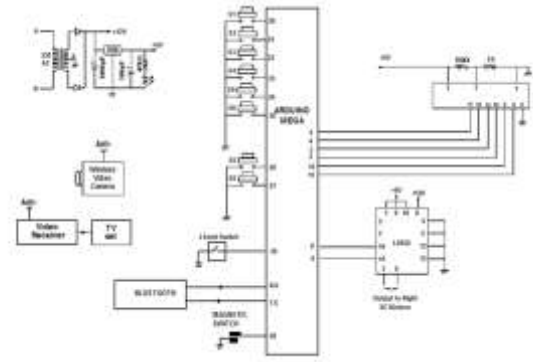
The entire system can be explained using the block diagram given below. It consists of Arduino Mega, Blue Tooth, LCD display, DC motor, H-Bridge and power supply. The patients are assumed to be arranged on 2 mini beds. The camera initially is in home position. Whenever the patient presses the key for calling the doctor, that information will be sent to the doctor via blue tooth. The Arduino will enable the H-bridge and DC motor which will focus the camera. It also stores programming instructions and displays the message on LCD.



**Fig.1 Block diagram of Remote Medical Nursing monitoring system**

**3. Circuit diagram**

The circuit diagram shows the Arduino along with the power supply, the video camera, H-bridge and LCD display and the connectivity between them.



**Fig.2. Circuit diagram of Remote medical nursing monitoring system**

**4. Description about various components used**

**4.1 Arduino Mega**

Arduino Mega 2560 is a Microcontroller board based on Atmega2560. It comes with more memory space and I/O pins as compared to other boards available in the market. There are 54 digital I/O pins and 16 analog pins incorporated on the board that make this device unique and stand out from others. Out of 54 digital I/O, 15 are used for PWM (pulse width modulation). A crystal oscillator of 16MHz frequency is added on the board. This board comes with USB cable port that is used to connect and transfer code from computer to the board.



**Fig.3 Arduino Mega 2560  
Microcontroller**

#### 4.2 Bluetooth Module

The HC-06 Bluetooth module designed for transparent wireless serial communication. Once it is paired to a master Bluetooth device such as PC, smart phones and tablet, its operation becomes transparent to the user. All data received through the serial input is immediately transmitted over the air. When the module receives wireless data, it is sent out through the serial interface exactly at it is received. No user code specific to the Bluetooth module is needed at all in the user microcontroller program.

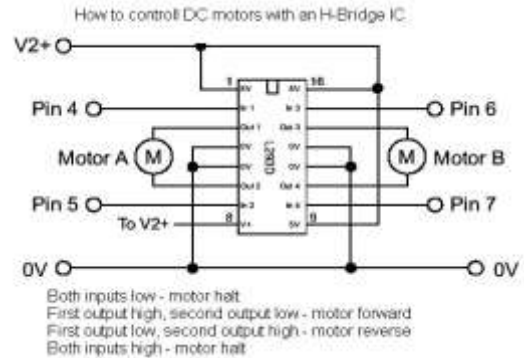


**Fig.4. Blue Tooth module**

#### 4.3L293D “H” Bridge IC

The motor driver package L293D is interfaced with ATMEGA 2560 microcontroller through IN1 to IN4 of H Bridge (L293D). Both the enable pins (EN1 and EN2) of motor driver L293D is combined together and fed to controller to access the command signals. Depending up on the command signals issued by the controller, the enable pins are activated to control all the four internal drivers of L293D respectively to drive the geared DC motor to which a wireless video camera is connected. Here H-Bridge is required, because the microcontroller output is not sufficient to drive the DC motor, so

current drivers are required for motor rotation.



**Fig.5. H-Bridge IC**

#### 4.4 Video Telecasting System

In television, light signals from the object are converted in to electrical signals by a video camera and transmitted through radio carrier waves. The television receiver separates the television signals from carrier waves and converts them in to light signals which form a picture of the televised object on the screen of the picture tube. However, in the television system sound signals are also to be transmitted along with the video signals. Separate carrier waves are used for the transmission of picture signals and sound signals, and are radiated by the same transmitting antenna. At the receiving end with the help of single receiving antenna both the carrier waves are received and later both the signals are separated. For the proper display of picture and reproduction of sound, several controlling signals also must be transmitted. Here, the wireless video camera arranged over a moving mechanism can broad cast both video and signals through a small antenna.

### 5. CONCLUSION

Various fields of technologies like wireless Video network, embedded

system, android platform, motor driving technology through H bridge device, display section etc. are included in this paper. Here a simple moving mechanism is constructed to position the video camera towards calling patient. The system equipped with wireless video camera can telecast the live video to the monitoring authority room. The main intention of this project work is to keep a continuous vigilance over the medical assistants for better service provided to the poor patients.

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