



Wireless Wound Care System

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ABSTRACT

Aim of the project is fast diagnosis of wound stages and bacterial infection for instant treatment using non-invasive technique. there are three functional hardware components and Zigbee module used in this system. RGB sensor detect the colour changes in the wound region and predict the stages of it. Gas sensor identify the volatile substances released by bacteria. Thus, the parameters are sensed and transmitted to monitoring system through Zigbee module. In FIR radiation therapy long wavelength (15micrometer to 1mm) and low energy infrared light is used which promotes reinnervation, remove pain in the injured section. Digital prescription depends on the wound status.

Keywords : RGB sensor, gas sensor, wound stages, volatile substances, bacterial infection, far infrared therapy.

I. INTRODUCTION

There are 496,762 accidents per year in India. Major traffic collisions cause injuries which leads to septicemia. In India more than 62 million peoples are affected by diabetes. Most of the fatal cases of diabetes occur due to septicemia. 35% of the septicemia is fatal. The fast diagnosis and treatment are the best solution to this problem. Sepsis is the threatening complication of infection which spread bacterial toxic substance in the bloodstream if it is not treated earlier. The conventional technique for wound stages and bacterial infection instant diagnosis slow and time taken. we use RGB sensor to detect wound stages and gas sensor to identify bacterial infection by absorbing the volatile substances released by bacteria in wound region. The people in remote village can diagnosis quickly using this system and it is easy to handle. The doctor and nursing personnel can manage more

patient at time by transmitting live parameters through Zigbee module

II. Block Diagram

In these we have two separate kit transmitter and receiver. Transmitter-240V power supply is regulated to 5V which is supplied to Nano-microcontroller by using step down transformer. The RGB sensor pass white light on the wound and absorbs the reflected light from the target and depends on colour absorbed it sends signal to the LCD display and gas sensor change voltage according to concentration of gas in the targeted region the Zigbee module is used to transmit the parameter.

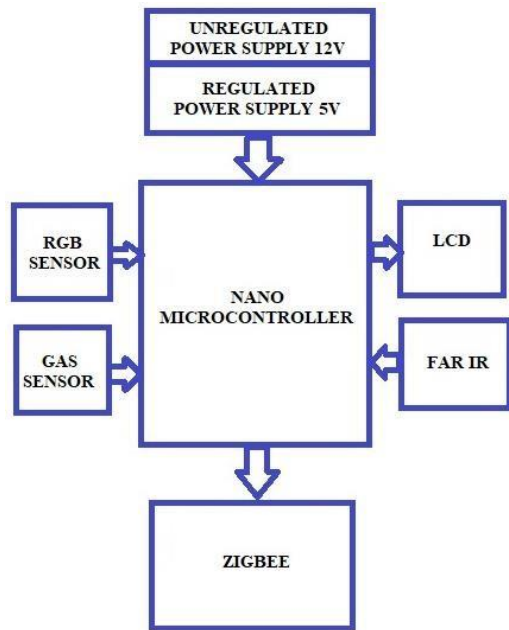


Fig.1 Transmitter Block Diagram

Receiver-transmitted parameters were received through zigbee module and monitored by interface with USB connection using driver terminal software. CP210XUSB Driver is used to drive the kit in the specified operating system of a personal computer

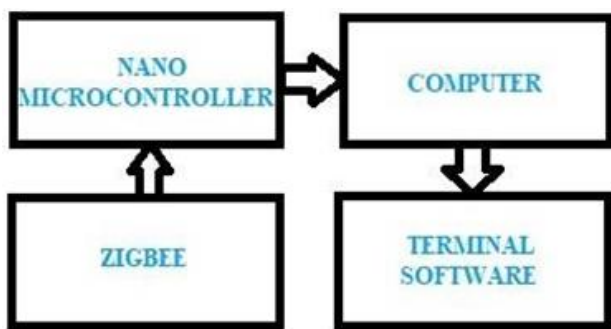
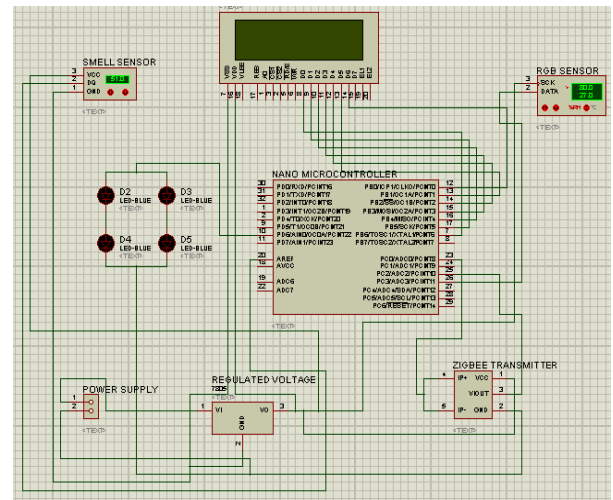


Fig.2 Receiver Block Diagram

III. Circuit Diagram

The two terminals from the power supply are connected to regulated voltage to step down input voltage. From there lined up with LCD display, Gas sensor, RGB sensor, Nano Microcontroller, Indicators and Zigbee transmitter. Microcontroller input pins are connected to RGB sensor, Gas sensor, and

indicators. output pins are connected to LCD display and zigbee transmitter.



IV. Components Used

Nano-Microcontroller has twenty-two i/p and o/p pins out of that 14 digital pins and 8 analogue pins. It has inbuilt USB port and reset switch. RGB sensor sends white light on the target and absorbs the reflected light. based on the wavelength of absorbed light it produces signal. Gas sensor has strontium oxide semiconductor sensing material. It detects gas concentration in the environment based on it generates potential difference by varying the resistance of sensing component. Far IR light is generated by LED operated in Far IR spectrum. We can detect different light and volatile substance released by bacteria through setting specific threshold value. Zigbee is a twoway communication tool for transmitting and receiving the live parameters. Interference with pc we can store the live stream data. LCD for temporary monitoring.



Fig.4 Arduino Nano



Fig.5 Gas Sensor MQ135



Fig.6 RGB Sensor

V. Result

We fabricated the main idea into a prototype kit which consist of RGB sensor, Gas sensor, Far IR LED and Zigbee. When switching the circuit RGB sensor pass white light on the wound region. If the reflected light has threshold score beyond 20 then it provides prescription. Gas sensor detect gas concentration on

the wound if it exceeds threshold score of 500 then it indicates bacterial infection and provide prescription for it. The live parameters were monitored using computer through Zigbee.



Fig. 7 Wireless Wound Care System

VI. Conclusion

As the fragment of our project we had prospered in preparing a basic protocol for the Wireless wound care system will be more helpful for the doctor to manage more patient at a time. The digital prescription feature is beneficial to patient in remote area. Instant detection helps in immediate procedure.

VII.Future Scope

With some advancement and combine with telecommunication link nursing personnel can do all the treatment and medication even though the doctor at long distance, live parameters are transmitting from one medical center to another for better analysis and treatment advice for severe/critical cases

VIII. REFERENCES

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