



FINAL YEAR PROJECT REPORT

MEDICTRON AUTO-DOC

In fulfillment of the requirement
For degree of
BEE (Electronics)

By

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Medictron Auto-Doc

Abstract

Developing countries around the world experience a low ratio of doctors to patients, which has an adverse effect on people from rural areas and communities where medical equipment is not in abundance to deal with a high casualty incident. Thus some of the traditional methods of monitoring chronic as well as common diseases have become ineffective due to the significant cost of visiting hospitals. The technological advancements both in the bio-medical as well as the wireless sensor network have provided us with the opportunity to innovate in a portable health monitoring system. This device has been designed to be available for patients of all abilities and ages. The Medictron Auto-Doc has been designed to monitor the patient's pulse, airflow, oxygen in blood saturation, body temperature and the alcohol saturation in the blood. The Medictron Auto-Doc would also measure the environmental parameters which include the room temperature and the light intensity in the room. In this system these vital parameters along with the environmental parameters will be displayed on the monitor and they will be sent to a computer via Xbee (an IEEE 802.15.4 for high-level communication protocols). This would allow the physician or doctor to access the patient's vital and environmental parameters from a remote location.

Convenience is provided through an 11 inch LCD display with a GUI (graphical user interface) with bold and clear text easy to use appropriate for all ages and technological knowledge. All sensors are easy to wear and easy to use with the airflow sensor equipped with a simple oxygen mask that is comfortable to wear. The Pulse and Oxygen Saturation sensor has an easy to wear clip attached onto the index finger. The pulse sensor also plots a simple, easy to read graph to determine the instantaneous pulse level of the patient.

This project is implemented by the use of several software for the configuration and design of the wireless sensor network. The XCTU software is used to configure the Xbee Radio frequency module on the computer. The Minicom software is used to configure the Xbee radio frequency module on the Raspberry Pi operating system

Raspbian. Microsoft Visual Studios 2010 was used to create a user friendly Graphical user Interface on the Windows 8.1 PC. The software QT Creator was used to create a user friendly Graphical User interface on the patient's side and the environmental monitoring system side. Arduino IDE (Integrated Development Environment) and the Processing 2.2.1 IDE was used to program the sensors and obtain a graphical plotting of the pulse rate.

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