

HEALTH MONITORING AND CONTROL SYSTEM USING WIRELESS SENSOR NETWORKS

KALAMANI.N¹, Aravind Prakash.D², Bala Surya.M³, Deepika.A⁴, Gopala Krishnan.K⁵
Professor¹, Students^{2,3,4,5}

Department of Electronics and Communication Engineering

COIMBATORE INSTITUTE OF ENGINEERING AND TECHNOLOGY

COIMBATORE-641109

Abstract— We present a WI-FI based smart transmission technique to achieve remote health monitoring applications. To achieve real time implementation, a smart sensor unit and ATmega328 microcontroller is proposed. The main goal of this system is to monitor and control abnormalities of the patient. The sensor unit acquire some parameters like human body temperature, heart beat, blood pressure, glucose from patient. In this paper data acquisition and data transmission process is also considered. Data transmission subsidize to a substantial amount of power disbursed by the transmitter and increase in the network traffic. Continuous transmission of data is used to reduce amount of power disbursed by the transmitter

Keywords— Atmega328 microcontroller, Sensor unit Data acquisition Data transmission

I. INTRODUCTION

Health care is an important part of everyday life for all human beings on the planet. Each of us requires a periodic monitoring of imperative parameters and right treatments based on this data. These processes become even more crucial when people attain a certain age and are not able to follow their health condition properly without a special medical recruits or sophisticated equipment to perform the monitoring.

The older person gets, the wider spectrum of possible diseases and unexpected emergency situation might occur. In order to avoid this, he/she needs to be related to the hospital observed by the medical staff and provide with immediate help if some of the parameters are abnormal.

In isolated health monitoring the proactive diagnosis is mainly constrained due to the unavailability of the patient under ubiquitous monitoring.

Many architectures for remote health monitoring procedures were developed in the recent years, the isolated health monitoring system is based on the smart phone for enabling the real time monitoring and complete Internet Protocol(IP) connectivity has been used. The problems that occur due to the inappropriate data association collected from

the patients. The architecture anticipation consists of a central gateway which gathers the data from all the users and transfers it to the central server occasionally where clinicians can organize the user's health status

One of the major issues in these isolated health monitoring system is the continuous data transmission, which leads to the overexcited connectivity, smart indoor positioning algorithm that fuses the Pedestrian Dead Reckoning(PDR) system and a Received Signal Strength(RSS) located Wi-Fi positioning system is discussed. The application of Wireless Body Area Networks (WBAN) like intra-space suit radio propagation channel in various frequency bands including 2.4GHz. In isolated health care monitoring application we cannot make use of the available bandwidth effectively.

If we use the conventional mode of transmitting the data continuously. It reduces the node life time, even leads to the data losses due to the delay and buffer overloading, which is not acceptable particularly in the health care applications.

In this paper, we present a Wi-Fi based smart transmission technique to achieve remote health monitoring applications. At first Wi-Fi is engaged in place of only the 2.4GHz IEEE 802.11b communication standard. WLAN invention based on one of the 802.11 communication standards, including 802.11a, 802.11b, twin-band and so on. There is no wired connection between sender and a receiver.

The paper describes the following details. Section 2 discuss the system hardware architecture and the internal functional units. In section 3 discuss the software requirement. Section 4 includes simulation result of system architecture. Section 5 concludes paper by discussing the future scale of the work. These are the sections included in the health monitoring and control system using wireless sensor networks.

E. Atmega 328 Microcontroller

The ATMEGA328 is a single chip miniature size controller produced by Atmel and belongs to the mega AVR series. The controller voltage range 1.8-5.5 V. The controller achieves throughputs approaching 1 MIPS per MHz; A common option to the ATmega328 is the " Pico Power " ATmega328P. The ATmega32 provides the following features: 32Kbytes of In-System Programmable Flash memory with Read-while Write facilities, 1024bytes EEPROM, 2Kbyte SRAM, 32 general purpose I/O line32 general purpose working registers.

F. LCD Display

A liquid-crystal display is an electronic display, even panel display, or video display. Liquid crystals don't turn out light directly. Liquid crystal displays are accessible to display random images (as in a general-use computer display) or fixed images which can be showed or hidden, such as preset words, digits and seven-segment displays as in a digital clock. LCD displays are used for many more applications including computer monitors, instrument panels, aircraft cockpit displays, televisions and signage. They are proverbial to end user devices such as DVD players, clocks, watches, calculators, gaming devices and telephones.

G. Arduino

Arduino is a type of computer software and hardware company that offers open-source environment for user project and user community that intends and fabricates microcontroller based inventions for construction digital devices and interactive objects that can sense and manage the physical world. For programming the microcontrollers, the Arduino proposal provides an software application or IDE based on the Processing project, which includes C, C++ and Java programming software. It also support for embedded C, C++ and Java programming software.

III. SOFTWARE REQUIREMENTS

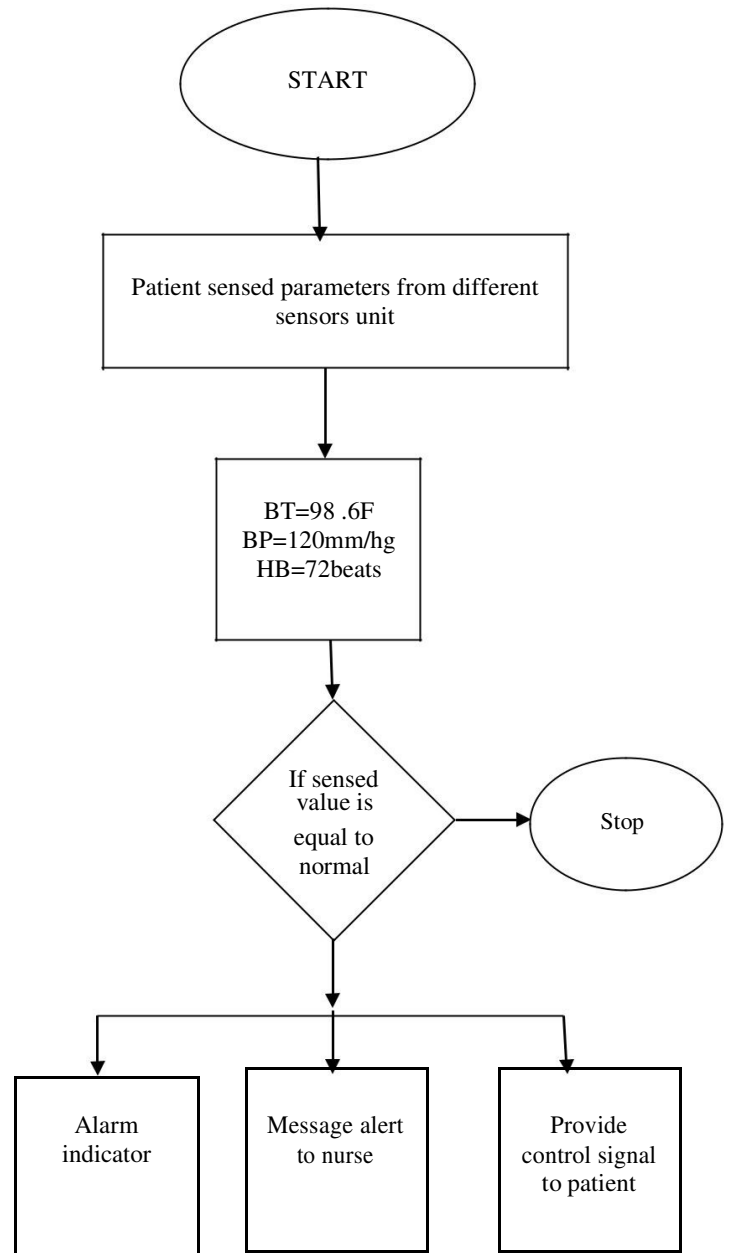
A. Proteus Isis 7 Simulator

Proteus is a design software urbanized by lab center electronics for electronic circuit simulation, schematic capture and PCB design. It's plainness and user friendly design made it popular among electronics hobbyists. Proteus is commonly useful for digital simulations such as microcontrollers and microprocessors. It can simulate LED,LDR and USB communication etc

B. Simulation Results

Proteus Isis7 simulator is used for simulation purpose. For program computing process Arduino IDE tool is used.

C. Flow Chart



IV. CONCLUSION

In this paper, we proposed a Wi-Fi based remote health monitoring and control system using atmega328 microcontroller, which is capable to continuously monitor the

patient's heartbeat, blood pressure and other critical parameters in hospital. We also proposed a continuous monitoring and control mechanism to monitor the patient condition and store the patient statistics in server. For the performance valuation, simulation results are taken by using proteus 7 simulation tool.

Our future work is to explore the hardware multiplexing between the two radios and achieve a significant area reduction in the development of multiple radios based communication devices like an IoT chip set. Envisaged IoT chip set will have futures like adaptive rule engine based smart transmission technique to achieve low power and seamless handoff controller(SHC) integrated for seamless hand off between multiple on chip radios to enable ubiquitous connectivity.

V. REFERENCES

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