HUMAN HEALTH MONITORING WITH ANDROID APPLICATION BY USING NANOSENSOR

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Abstract— In recent year's automatic health care monitoring system is increased for the elderly people patients. In the existing system the patients in the home need a constant monitoring of their health by the helper's. There is no automatic alerting system is implemented so far. Now days the technology has improved to monitor the patient without helpers. In the Proposed system, Patient with Nano sensor is connected to the Android phone through GSM Communication. In this device used to monitor and measure the ASTHMA, CANCER, and BLOODPRESURE, ECG from the human breathing and body temperature. In this device alert the patient and display what is the body condition, causes, how to overcome this problems without need proper physician guides' and save the money. Five are more patient combined to make one wireless network with any one of the hospital management. The hospital management continuously monitor the patient health condition if any variations occurs in below or above to the normal range immediately making call to the patient home and also call the ambulance. The location of the person detected by using the GPRS tracking system. In case of emergency automatically Mobile GPS is triggered sent to the Server. Server will calculate the shortest path to reach the Ambulance and also alert SMS along with a call to the hospital.

Index Terms: Bluetooth, GSM, Microcontroller, Nanosensor (Chemical sensor, light sensor), and Radio transceiver.

I. INTRODUCTION

In previous research work they have used different wearable sensor. Each sensor has different types of parameters which detects the disease. As wearable sensor has many disadvantage this project had different defects. The big disadvantage of wearable displace is that they are still a relatively immature technology when compared to other equipment that first responder regularly use, because of this the size& environmental capabilities do not yet meet the requirements of the emergency services. The main markets for wearable displays are based in the military technologies are developed to perform in extreme environmental.

Conditions however the impact of this that they are generally quite large and bulky and are relatively very expensive.

As wearable sensor has lots of disadvantage in the next research they have used a single nano sensor to detect the disease present the human body. With this nano sensor each disease could be detected easily in a low cost from their home itself. If it was an emergency case an alert message was forwarded to the hospital management but it had a disadvantage where there are lots of possibilities of missing the message.

In this project we are using the same nano sensor with an android application to intimate the disease rate. If it is an emergency case an emergency call is forwarded to the hospital management. And the location of the patient is tracked by GPS where an ambulance reaches the patient who is in the emergency situation.
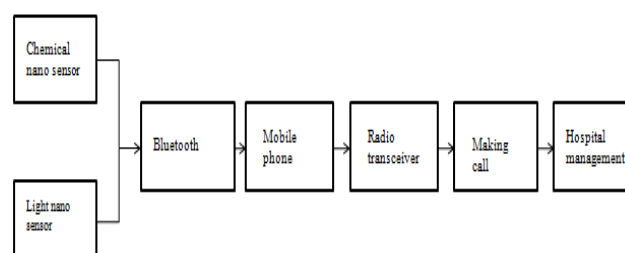

Fig 1:Block diagram

II. LITERATURE SURVEY

In 2013 published paper they have used different wearable sensors to detect the disease present in the human body. But there wasn't any intimation for emergency situation to hospital management. Because of this condition people spend lots of money and also need to go the hospital to check what disease they have in their body.

In 2014 published paper they used a single sensor that is nano sensor to detect the disease present in the human body. They have also used intimation to the hospital management through text message. So people don't need to go to the hospital to check the disease. This project made people to check from their home itself in a low cost. With simple hardware this project is done so it is easy to make and the hardware used for this are commonly used by people like android mobile phone along with Bluetooth and a system for monitoring the patient's condition.
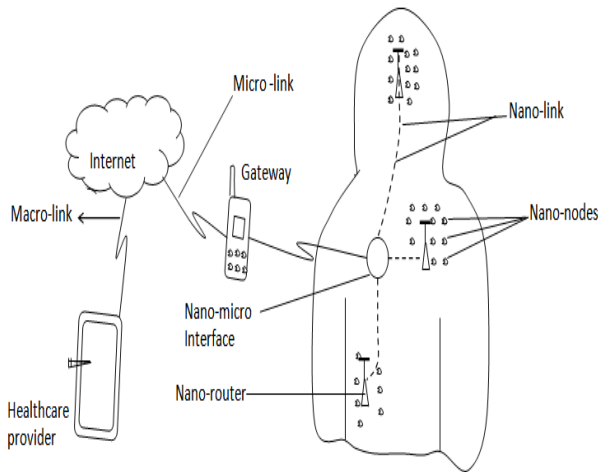
Fig 2: Architecture diagram

III. PROPOSED SYSTEM

In proposed, the data of the disease occurred to the patient is detected by chemical nano sensor. Light nano sensor is then connected to mobile phone through Bluetooth the disease rate is transmitted to the mobile phone by android application through GSM communication. In case of emergency automatically mobile GPS is trigged sent to the server. Server will calculate the shortest path to reach the ambulance and also alert SMS with an emergency call to the hospital.
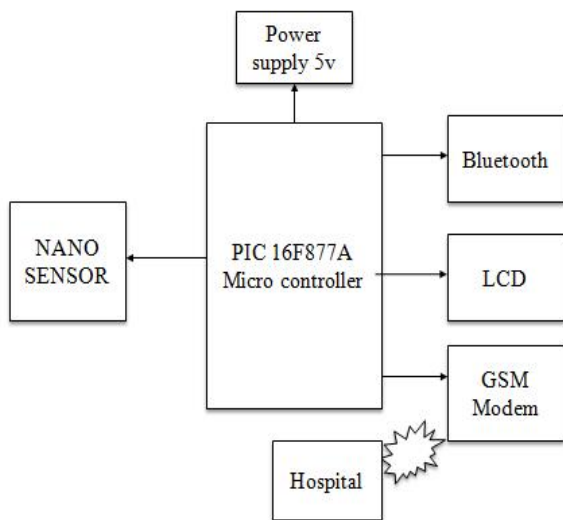
IV. BLOCK DIAGRAM

Fig 3: Block diagram

A.DESCRIPTION

In this paper two nanosensors used one sensor placed in human body like microphone and another sensor placed in the mobile phone like keypad. In this two sensors are making the one wireless connection [WIFI, BLUETOOTH] to transfer the health care data's and also self-power generating device without the need of external power source. The initial stage consists of nanosensor and PIC 16F877A microcontroller. The PIC 16F877A 16 bit ultra-low power RISC microcontroller. It has low power consumption, 8k*14words flash memory, 368*8bytes RAM, integrated with the high performance analogue and digital peripherals. Nano sensing mobile phone typically

includes sensing chip to sense health care parameter and also done the data compression. The radio transceiver is used to send and receive the health care data from mobile phone to hospital management. This wireless network is used to automatically send and receive the healthcare data can avoid the frequently doctor's visit and manual healthcare details collections. The nanosensor is used to capture the serious medical conditions at that time. Many serious conditions was occur at various timing without known the patient like heart attack etc., so in this device is used to monitoring before the problem was created. In the patient easy to known the diseases from the mobile phone alert messages, call and also monitors the patient information to the physicians. The given alert used to taking the proper treatment to the patient.
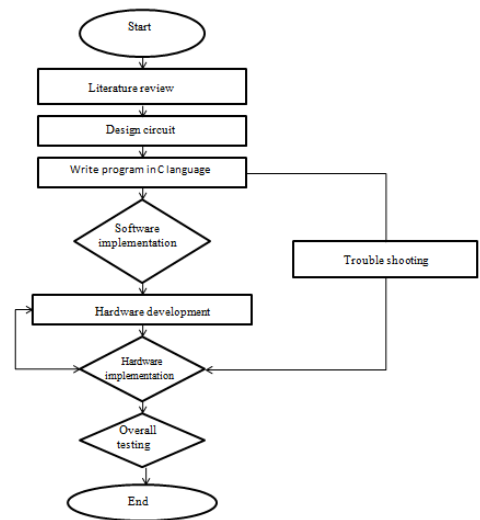
V. WORKING OF PROPOSED SYSTEM

Fig 4: Flow chart

VI. NANO SENSOR

Nano sensors are any biological, chemical or surgical sensory points used to convey information about nano particles to the macroscopic world. Nano sensor is used to identify the specific cells and different range of chemical present in the human body like NITRIC OXIDE, BENZENE, ACTONE, and AMMONIA. They are mainly used to include various medicinal purposes and as gateways to building other nanoproducts, such as computer chips that work at the nanoscale and nanorobots. Each chemical having the different characteristic to create disease in the human body. Each chemical ranges is increased above the normal level to create some disease. So that the nano sensor used to check continuously the chemical ranges through the breathing and body temperature. Presently, there are several ways proposed to make nano sensor, including top down lithography, bottom up assembly and molecular cell assembly .nanosensor works with their special sensation ability which can detect information and data. Their arrangements are like ordinary sensors but the major difference between sensor and nanosensor is that nanosensor is developed at nanoscale which makes them distinguished

from ordinary ones. Nano sensors can accurately identify specific cells or the parts of the body having any deficiency. They work by calculating and measuring ups downs and changes, displacement, dislocation, concentration, volume, acceleration, external forces pressure or temperature of each cell in the living body. Many nanosensors are designed to differentiate between normal and cells such as sensors for detecting cancer in living body, molecular controllers to deliver medicines in the human body. They are also enabling to detect macroscopic changes that appear from the external interactions' and communication these variations to the other nano components working along. Circuit integration is also performed with the help of nano sensor. At present the most popular nano sensor in the field of medical science and chemistry are the mass produce functioning nano sensor which has the ability to detect and react according to the smell in the environment such as fire sensor which can detect an communicate immediately the presence of smoke in any particular place. Some kinds of nanosensor also exist which can report the sun light. There exist some natural nanosensors which are present in the living bodies such as large fish like whales, dolphins and sharks uses their built nanosensor to hear the vibration in the water which assures them the presence of somebody around them.

A. NANO SENSOR APPLICATION

Nanosensor can be chemical sensors or mechanical sensors. Amongst other applications they can be used. To detect various chemicals in gases for pollution monitoring. For medical diagnostic purposes either as blood borne sensors or in lab-on-a-chip type devices. To monitor physical parameters such as temperature, displacement and flow. As accelerometers in MEMS devices like airbag sensors.

B.CHEMICAL NANO SENSOR

Chemical sensors, too, have been built using nano tubes to detect various properties of gaseous molecules. Carbon nano tubes can be used to sense ionization of gaseous molecules while nano tubes made out of titanium have been employed to detect atmospheric concentration of hydrogen at the molecular level. Many of these involve a system by which nano sensors are built to have a specific pocket of another molecule. When that particular molecule, and only that specific molecule fits into the nano sensor, and light is shone upon the nano sensor, it will reflect different wave length of light and, thus, be a different color. Chemical sensor can also detect the speed, wavelength and level of molecules in strong light. The most famous example of chemical nanosensor which includes use of fluorescence characteristics of cadmium selenide quantum dots to discover tumor in the body. These small dots are injected in the infected area of the human body, so doctor could determine the exact stage of cancer. Chemical Nonosensors are also used in DNA test to recognize the similar properties of two blood cells.

C.HOW CHEMICAL NANO SENSOR WORKS?

Typically nano sensor works by monitoring electrical changes in the sensor materials. Carbon nano tube based sensor work in this way. For instance when a molecule of nitrogen dioxide is present it will strip an electron from the nano tube, which in turns causes the nano tube to be less conductive. If ammonia is present it reacts with water vapor and donates an electron to the carbon nano tube, making it more conductive. By treating the nano tubes with various coating materials, they can be made sensitive to certain molecules and immune to others.

D.PREDICTED APPLICATION

Medicinal uses of nano sensor mainly revolved around the potential of nano sensors to accurately identify particular cells or places in the body in need. By measuring changes in volume, concentration, displacement and velocity, gravitational, electrical and magnetic forces, pressure, or temperature of cells in the body, nano sensors may be able to distinguish between and recognize certain cells, most notably those of cancer, at the molecular level in order to delivery medicine development to specific places in the body. In addition, they may be able to detect macroscopic variations from outside the body and communicate these changes to other nano products working within the body.

E.LIGHT NANO SENSOR

When pressure is applied to the device through hand writing or other source of pressure, nano wires are compressed along their axial directions, creating a negative piezo-potential; uncompressed nano wires have no potential. The researchers have pressed letters into the top of the device, which produces a corresponding light output from the bottom of the device. This output which can all be read at the same time can be processed and transmitted. Their ability to see all of the emitters simultaneously allows the device to provide a quick response." the response time is fast, and you can read a million pixels in micro second". Their ability to see all of the emitters simultaneously allows the device to provide a quick response." the response time is fast, and you can read a million pixels in micro second". A new type of sensor can identify substances as small as a molecule by examining the light they reflect, potentially leading to sensors for a wide range of substances, from explosives to cancer

F. RADIO TRANSCEIVER

A radio transceiver is a combination of transmitter / receiver in a single package. That term applies to the wireless communication devices such as cellular telephones, cordless telephones sets, and hand held two way radius and mobile two way radios. Occasionally the term is used in reference of transmitter/receiver device in cable or optical fiber system. In a radio transceiver, the receiver is silenced while transmitting. An electronic switch allows the transmitter and receiver to be connected to the same antenna, and prevents the transmitter output from damaging the receiver. With a transceiver of this kind, it is impossible to receive signals while transmitting. This mode is called half duplex. Transmission and reception often, but not always, are done

on the same frequency. There are several key functions that are critical to the value of a transceiver: signal strength, part quality, warranty and ease of use. These units typically cost more than a dedicated signal transmitter or receiver since they offer the convenient of multiple functions in one device. It is important to ensure that full value of this purchase is received.
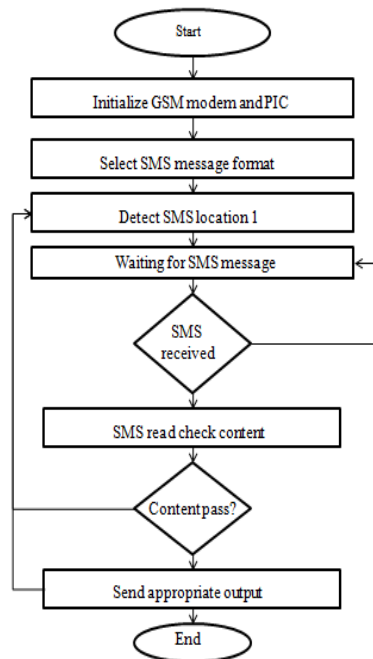
VII. FLOW CHART FOR SMS

Fig 5: Flow chart

A. DESCRIPTION FOR FLOW CHART OF SMS

A GSM modem is connect to a PIC microcontroller. The GSM initializes the format of the SMS. Then it detects the location where the message to be sent. So it waits for the location tracking. Once the location is detected the message is sent and received. In the received segment it checks the content if the content is correct or pass message is sent in an appropriate output.
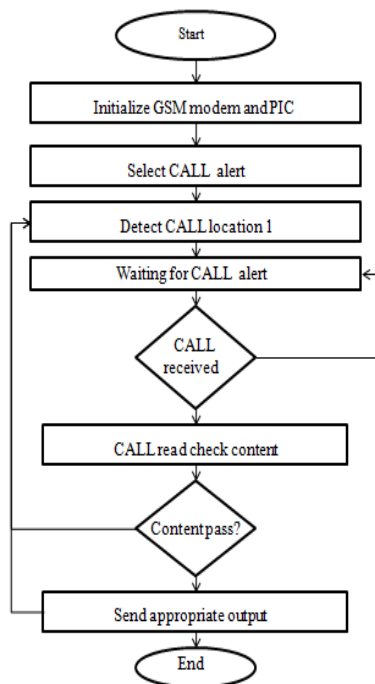
VIII. FLOW CHART FOR CALL

Fig 6: Flow chart

A. DESCRIPTION FOR FLOW CHART OF CALL

A GSM modem is connect to a PIC microcontroller. The GSM initializes the format of the CALL. Then it detects the location where the CALL to be connected. So it waits for the location tracking. Once the location is detected the CALL is forwarded and received. In the received segment it checks the content if the content is correct or pass CALL is sent in an appropriate output.

IX. RESULT

This paper is used to analyses the condition of the human body without doctor's advice. It is fully concerned on the nano sensor which detects each and every parameter of the cell and displays the data of disease. It is fully based on the future development where people can check from the home itself. We have implemented using an automatic emergency call to the hospital management in case of emergency to the patient. An android application is used to track location of patient in emergency case. This sensor is used to monitor the disease rate in our human body. If the range of chemical is changed from normal condition the server will send emergency call to the hospital management through GSM modem.
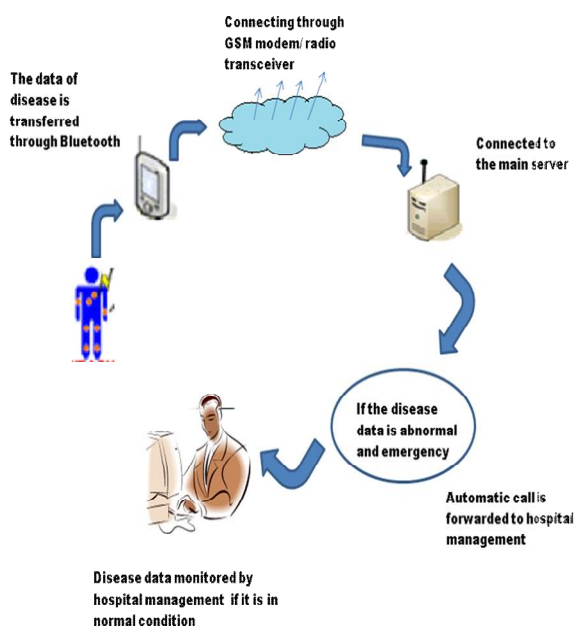
Fig 7: Architecture diagram

X. CONCLUSION

This project is fully based on future development of modern technology. Instead of going to the hospital and spend lots of money and wasting the time, by using this project one could find the disease present in him/ her by using nanosensor. Just by placing the nanosensor in the body the disease is detected and the data of the disease is transmitted to a mobile phone. This mobile phone then displays the rate and condition along with the name of the disease. If the person feels for consulting the doctor he/she could connect to a hospital management. If the situation of the person is critical or in emergency situation an automatic call is forwarded to the hospital management. Then further possibilities would be done for the patient.

REFERENCES

[1].Abhishek Joshi, sourabhRavindran and Austin miller"EKG-Based Heart-Rate Monitor Implementation on the Launch Pad Value Line Development Kit using the MSP430G2452 MCU"SLAA486A-march 2011.

[2].M.Philips,"Detection of Volatile Organic Compounds in Breath"indisease Markers Exhaled Breath, N.Marczin, S.S.Kharitonov, M.H.YacoubandP.J.Barnes New York: Marcel Decker, 2002.

[3]."Wireless Health and the smart phone conundrum"JonathanWoodbridge, AniNahapetian, HydukeNoshadietc...Computer Science Department, University of California, Los Angeles.

[4]"Application –Oriented Programming Model for Sensor Networks Embedded in the Human Body" Talles M.G.de A.Barbosa, IwensG.SeneJr, AdsonF.da Rocha etc...EMBS Annual International Conference New York City, USA, Aug 30-sept3, 2006.

[5]."Nanowire nanosensor"FernandoPatolsky and Charles M.Lieber., Department of chemistry and Chemical Biology, HarvardUniversity.April 2005.

[6]." Wireless portable sensor for athletic monitoring" Rossetto, l.t,;muller,i.;v.fabrics,10.1109/I2MTC.2012.6 229683.publication year: 2012.

[7]."Monitoring and measuring instrument design of rf electromagnetic fields human physical and mental health"chihyuanchuang; jiun-hunglin; shih-tsang tang etc...ICBPE 2006, publication year: 2006.

[8]."Sens-u: remote human in loop health –monitoring system at home"Anyuan;liuyan;macaiwen,10.1109/PACCIIA.2008.212,Publication year:2008. [12]."Human health monitoring system of systems bynon contactedsensors"Hata, y; kobashi, s; yamaguchi, H; Ishikawa, o; etc...SOSE 2009, publication year: 2009.