ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

Human Tracking System with Portable Bag-Pack

[1]M.Hymavathi, [2]Chillakuri Akshay Kumar, [3]Mamilla Bhavani, [4]Alishetty Ramu, [5]Bathula Aravind

[1] Assistant Professor, Dept. of ECE, Lords Institute of Engineering and Technology, Hyderabad, Telangana, India

[2,3,4,5]UG Students, Department of ECE, Lords Institute of Engineering and Technology, Hyderabad, Telangana, India

ABSTRACT: Thispaper is an attempt to design and implementation of Human Tracking System with portable bag-pack to locate the location of the person, avoid deaths, health monitoring of human and reduce worries among parents. However the existing system are not powerful enough to give information about the accidents such as unintentional injuries, location of accidents and emergency numbers of that area and also does not provide concentration on sensing the body temperature of the person and intimating the same to its zone area and parents. The information about human such as location of the person and information about that zone area, body temperature will be recorded, RFID tag and RFID READER is used to know the details of that person and that zone area and the GPS/GSM system automatically sends information (SMS / Phone Call) to theirparents.

KEYWORDS:- Accident detection, Temperature sensor, GPS &GSM modules, Micro Controller.

I. INTRODUCTION

The number of accidents is on rise for the past few years. Although, individuals try to avoid every accident that they could, they are often met with unforeseen circumstances that it is beyond their control to escape the tragedy /accidents. Severity of the accidents differ from situation to situation and from person to person. Some of the accidents end up with few bruises / injuries. In majority of the cases, persons who met with accidents die as they were not given immediate attention or treatment. Thus, the need to attend the persons, who met with accidents, is critical importance. Tracing the accident areas is of utmost importance for anyone to provide them treatment. Similarly, migrants often face communication problems and gets lost when they move from location to location. It becomes all the more difficult, when in the hilly areas and unknown locations. The lack of telecommunications makes them all the way more difficult to communicate between each other. Another example is the workers, who are employed in mines. Temperature in the mines is often below the room temperature. At times, workers as they go deeper will have breathing problems and faints in the workplace. This makes more difficult for the co-workers to locate the fellow worker. As a result, first aid gets delayed leading to severe causalities and often leading to death. In day to day situations, parents often find difficulties in tracking their children – be it in the residential apartments or schools. This underscores the importance of tracking and communication amongst the individuals be it accidents, migrants or children SMS.

II. RELATEDWORK

Studies conducted by Cyber Travel Tips [3], showed that in Malaysia, missing children are basically classified into two categories. The firstcategory is disappearance, which includes running away from home. Children tracking system is also developed onmobile ad hoc networks. System developed in [4] says that in GPS system and tag based system, each parent cannotobtain group information on the vicinity of the child. A self-configurable new generationchildren

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

tracking system. Hiroshima City Children Tracking System is a safetysupport system for children based on ad hoc network technologies. Field experiments have been conducted incooperation with an elementary school in Hiroshima. In this paper, propose a new generation children tracking systemwhich is based on experiences and findings of the field experiments for Hiroshima children tracking system [5].Existing technologies, however, are not powerful to prevent crimes against children and helpful parent‘s since it isdifficult to take information of children as a group.

III. SYSTEMARCHITECTURE

The circuit is mainly consisting of ATmega2560, ATmega328, RFID Reader & Tag, GSM & GPS module, LCD display, vibration sensor, temperature sensor and voice play-back. This section describes the conceptual design and implementation of human tracking system is shown in (Fig.1). Human module is fixed to each and every human. It is kept in bag-pack of every human. The temperature and vibration sensors are attached to the human module when there is drastic change in the body temperature of the human or any occurrence of accidents to the human, the information will be sent to the microcontroller then it search’s for the location of that person. The position of the human is continuously tracked using GPS and simultaneous information is send to the microcontroller. The GPS is connected to the microcontroller through serial port UART1 of ATmega 2560 which contain latitude and longitudinal information about the human and that information will be send to the microcontroller through this port. That information will be send to their parents accordingly with the help of GPS which is connected serial port and as well as displayed on the LCD which is connected to the digital pins of ATmega 2560. The personal data and parents contact numbers of the person is stored in the RFID tags. The RFID is connected to the microcontroller through another serial port UART2 of ATmega 2560.

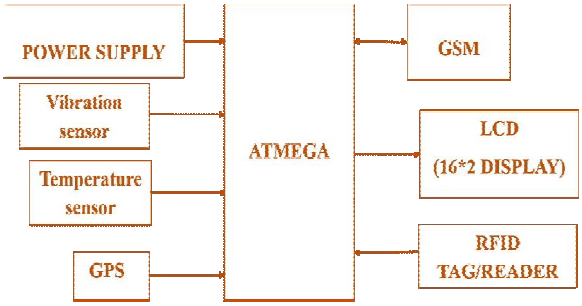

Fig: 1 Human Module

When the person enters in to a zone area shown in (Fig.2). The RFID tag is swiped and the information of the person is send to the zone area and the zone area information is send to the human module. Every zone area will have an RFID tag which contains the information and important numbers of the area. The RFID tag in the zone area is connected to the microcontroller through serial port UART1 of ATmega 328. The voice play back is used to speak out the information of that area when the person enters in to that zone. It is connected to the digital pins of ATmega328.

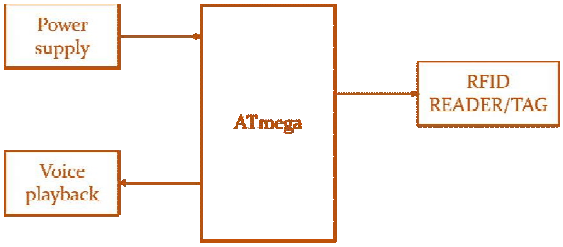

Fig: 2 Zone Area Module

When the persons condition is bad in that zone area that information will be send to the concerned parents via GSM.

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

A. MICROCONTROLLER (ATMEGA2560)

The high-performance, low-power Atmel 8-bit AVR RISC-based microcontroller combines 256KB ISP flash memory, 8KB SRAM, 4KB EEPROM, 86 general purpose I/O lines, 32 general purpose working registers, real time counter, six flexible timer/counters with compare modes, PWM, 4 USARTs, byte oriented 2-wire serial interface, 16-channel 10-bit A/D converter, and a JTAG interface for on-chip debugging. The device achieves a throughput of 16 MIPS at 16 MHz and operates between 4.5-5.5 volts. By executing powerful instructions in a single clock cycle, the device achieves a throughput approaching 1 MIPS per MHz, balancing power consumption and processing speed.

Fig.3 Microcontroller Atmega 2560

SKETCH

- The code written in the form of embedded c which is easy for beginners tostudy
- It is open sourcesoftware.

B. MICROCONTROLLER (ATMEGA328)

The high-performance Atmel 8-bit AVR RISC-based microcontroller combines 32KB ISP flash memory with read-while-write capabilities, 1KB EEPROM, 2KB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts.

C. LCDDISPLAY

A liquid crystal display (LCD) is a flat panel display, electronic visual display, based on Liquid Crystal Technology. In this system, LCD display device (LM016L) is interfaced with the microcontroller unit. The data pins (DB0-DB7) of LM016L are connected toATmega328. Here LCD is used to display the values of GPS and show the acknowledgement of GSM.

D. RFIDREADER

An RFID reader is a device that is used to interrogate an RFID tag. The reader has an antenna that emits radio waves; the tag responds by sending back its data. An RFID tag is a microchip combined with an antenna in a compact package; the packaging is structured to allow the RFID tag to be attached to an object to be tracked. "RFID" stands for Radio Frequency Identification. The tag's antenna picks up signals from an RFID reader or scanner and then returns the signal, usually with some additional data (like a unique serial number or other customized information).The RX and TX pins of RFID reader connected to Tx and Rx pins of ATmega Microcontroller respectively. Then the reader senses the data from the Tag and transmits the sensed data to microcontroller via serialport.

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

E. GSM MODULE

Global system for mobile communication (GSM) is aglobally accepted standard for digital cellular communication. A GSM modem is a wireless modem thatworks with a GSM wireless network. The Techniques GSMSMS is handled main role in this system. GSM SMSmessaging can handle large number of transaction in a very short time. This one GSM connection is enough to handle hundredsoftransaction.

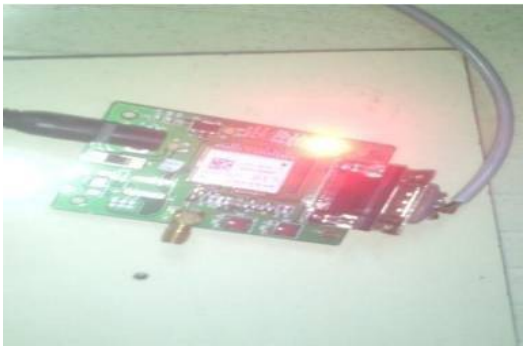

Fig.4. GSM Modem

F. GPSMODULE

GPS is a multiple- satellite based radio positioning system which each GPS satellite transmits data that allows to precisely measuring the distance from the selected satellite. The Global Positioning System (GPS) is a space-basedsatellite navigation system that provides location and time information in all weather conditions, anywhere o or nearthe earth.

Fig.5. GPS module

G. TEMPERATURESENSOR

The temperature sensing is performed by using a LM35 IC. .Human body needs special type of sensors for reliable Readings which led to the choice of using the LM35Temperature Sensors in our prototype. It operates at 3 to 5 V and can measure temperature in the range of -50 C to +150 C which is sufficient for the targeted body temperature range. The sensor's output is an analog DC voltage signal which is read by the microcontroller using an analog pin linked to an ADC. The ADC used has a resolution of 10-bits, 1024 levels, with a sample rate of 9 600 Hz input voltage range depending on the ground andV_{cc}.

H. VIBRATIONSENSOR

SW-420 is a single-roller type full induction trigger switch. When no vibration or tilt, the product is ON conduction state, and in the steady state, when a vibration or tilt, the switch will be rendered instantly disconnect the conductive resistance increases, generating a current pulse signal, thereby triggering circuit. These specification products are completely sealed package, waterproof, dustproof.

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

I. VOICE RECORDERMODULE

The ISD1820 voice module board may be a good answer for an additional single sound effect to a project. These boards can record a single audio sample of up to 10 seconds using a built-in microphone and will play back the sample on demand with good fidelity. There are two playback modes. The first is edge triggered; a positive pulse to the Playback-E pin triggers the module to play the entire message once. The second method, level triggered, will play the recording while it is high, and stop playing when it is low. This module use is very easy which you could direct control by push button on board or by microcontroller such as Arduino.

Specifications

- On-board ISD1820 chip
- On-board microphone, can directly recordingvoice
- Can play a recording up to 10seconds
- High-quality, natural voice restore, can be used as a propagandamodule
- With a loop playback, jog play, single-pass playbackmode
- The pins are leaded out, can control operating bymicrocontroller
- Working voltage: 3V-5VDC
- Size: 54mm x38mm

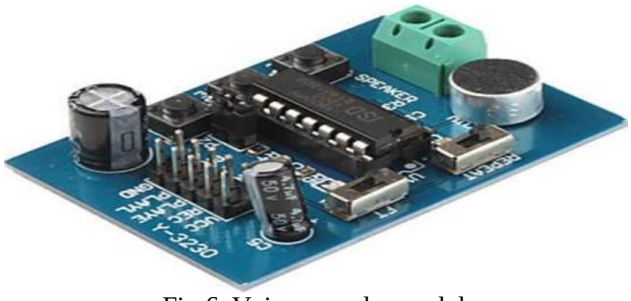

Fig.6 .Voice recorder module

V. CONCLUSION

The project entitled “Human Tracking System with Portable Bag-Pack” helps to protect the human for accidents and monitors the health condition. It goes on checks the temperature and vibration of the person and sends the information to the microcontroller and if exists, it communicates the receiver and find out the range of temperature. If the condition exceeds the defined value of the normal threshold value, it sends the information through GSM to the predefined person. This project primarily focuses on tracking the location and monitoring health condition of the person. This project also focuses on tracking the accidentzone.

REFERENCES

1] Rajeshwari Madli, Santosh Hebbar, Praveenraj Pattar, and Varaprasad Golla “Automatic Detectionand Notification of Potholes and Humps on Roads to Aid Drivers” IEEE sensors journal, vol. 15, no. 8, august2015

[2] Montaser N. Ramadan, Mohammad A. Al-Khedher, Senior Member, IACSIT, and Sharaf A. AlKheder “Intelligent Anti-Theft and Tracking System for Automobiles” International Journal of Machine Learning and Computing, Vol. 2, No. 1, February 2012

[3] Cyber Travel Tips, ―Statistics of Missing Child in Malaysiaavailable at:http://www.thecavellgroup.com/downloads/KidnappingTheGlobalEpidemic.pdf

[4] V.Ramya, P.Vijaya Kumar, B.Palaniappan, A Novel Design ofTomoyuki Ohta, Shinji Inoue, Yoshiaki Kakuda, and Kenji Ishida, 88―An adaptive multihop clustering scheme for ad hoc networks withhigh mobility, IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences (Special Issue onMultidimensional Mobile Information Networks), vol.E86-A, no.7,pp.1689-1697, 2003.

[5] Reshma M. and Amruta K.M.―Survey on Different Technologies ofChild Tracking System Proposed in 2010 International journal ofcomputer technology.

[6] J. E. Marca, C. R. Rindt, M. Mcnally, and S. T. Doherty, “A GPS enhanced in-vehicle extensible datacollection unit,” Inst. Transp. Studies, Univ.California, Irvine, CA, Uci-Its- As-Wp-00-9, 2000.

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijareeie.com

Vol. 6, Issue 2, February 2017

[7] A. (Angela) Canny, Anne E. Green and Malcolm J. Maguire, "Keeping Track", Published 2001,The Policy Press.
[8] ATmega 2560 data sheethttp://www.atmel.com/Images/Atmel-2549-8-bit-AVR-Microcontroller-ATmega640-1280-1281-2560-2561_datasheet.pdfh
[9] ATmega 328 data sheethttp://www.atmel.com/Images/Atmel-42735-8-bit-AVR-Microcontroller-ATmega328-328P_Datasheet.pdf4
[10] LS-40EB GPS receiver Datasheet

BIOGRAPHY

M.Hymavathihaving four years of teaching Experience. Field of interest is VLSI System Design, wireless communication, Signal Processing. Presently working as Assistant Professor in Department of Electronics and Communication Engineering, LORDS Institute of Engineering and Technology, Hyderabad.

Chillakuri AkshayKumar Studying B.Tech fourth year ECE branch in lords institute of Engineering and technology, Hyderabad, Telangana,India.

Mamilla Bhavani Studying B.Tech fourth year ECE branch in lords institute of Engineering and technology, Hyderabad, Telangana, India.

Alishetty Ramu Studying B.Tech fourth year ECE branch in lords institute of Engineering and technology, Hyderabad, Telangana, India

Bathula Aravind Studying B.Tech fourth year ECE branch in lords institute of Engineering and technology, Hyderabad, Telangana,India