MONITORING AND TRACKING THE OFFSPRING USING RFID WITH GSM MODULE

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Abstract *- As the threat against the children increase rapidly everywhere, our study aims to overcome the problem faced by the existing system. We proposed the security system for the children in the school using RFID. The major advantage of this system is that it can be used in any kind of mobile phones and it is not necessary be smart phones. This device helps the parents to locate their child with ease. At the moment there are many wearables to find the location of the children, but there are many disadvantages in the existing system. This paper focus to have an SMS text and also the call alert as the communication medium between the child's wearable and the parent using GSM module. Hence this paper oriented to provide more information about the child's health and safety by using temperature sensor, alcohol/smoke sensor and MIC sensor.*

Keywords*: Child safety, RFID, GSM, SMS, Call, Temperature sensor, Alcohol/smoke sensor, MIC.*

I. INTRODUCTION

Every children need to be moved from home to school and vice versa every day. For parents and guardian, obtaining health information about their children in the school is a crucial issue. This paper aims to provide safety and security for the children about their health. Additionally and not negligibly, these new devices should also ease the burden of the parents in their daily routines.

In this paper, the system is attached with the child and it is capable to inform their presence using RF frequency. RFID reader will be placed in the school and tag will be placed in the device. Body temperature of the child will be sensed by using temperature sensor, if the child is attempting to consume any drugs or alcohol then it is sensed by alcohol/smoke sensor.

Weeping of the child at high level can be detected by using MIC. These information can be informed to the parents through GSM modem. The location of the child along with their latitude and longitude are send using inbuilt GPS. The system will alert the parent about the child whenever the child's location varies according to the time location schedule that is predefined according to the regular activities of the child. Hence this paper aims to provide high level information about the child health to the parents.

II. Objective

- To propose the system that help the parents to locate their children with ease.
- The focus is to have an SMS text and also the call alert as the enabled communication medium between the child's wearable and the parent using RFID.

- The parent can track the child's location and can also know the child's body temperature even they are in the school.
- To inform the parents about the abnormalities of their child such as fever, consumption of drug.

III. Existing system

Every parents always concerned of the safety of children. Now a days there are more number of child is missing and pointed to the wrong direction. The existing paper proposed a model for child safety through smart phones that provides the option to track the location of their children as well as in case of emergency children is able to send a quick message and its current location via Short Message services. This proposed system is validated by testing on the Android platform. This system uses application in the android mobiles. GPS is useful for tracking child and also provides the information where the child is currently located as well as it also informs the parents how long his child is far away from his parents. SMS services used when smart phones do not support internet connectivity in this case child is able to send a text message or exact location in the parents. This system is going to help the parents to track the location of their children without informing them because their movement is displayed on the parent device through Google maps as well as they received calculated distance of their child from themselves. This application is also helpful for girls mostly studying or doing a job from far away from their home. In case of any emergency on just one click or shake their mobile they are able to send their current location via SMS to their parents. In this application parents are able to create a Geo-reference boundary according to their choice called Geo-fencing, at a single time multiple Geo-fences can be created. This application uses Google maps API to show location on map.

There are many drawbacks in the existing system, they are:

1. School children are not allowed to carry cell phones to school.
2. Not feasible for the school authorities to call each parent.
3. For working parents another situation of concern is whether their children have reached home in time after the school or not.
4. Both parents and Child should have smart phones and able to operate it.
5. Performance will be poor during low cellular connectivity.

IV. Proposed system

Apart from the studies, parents are more concerned with their offspring safety. The proposed system aims to provide the child safety system using RFID, GSM. Here the system is attached to the child which is capable of detecting the location of the child by detecting the RF frequency from the RFID card placed in the school. The system will inform the parents through GSM Modem. The location will be given as latitude and longitude using GPS which is inbuilt in the GSM modem. The system will alert the parents about the child whenever the child's location varies according to the time location schedule, that is predefined according to the regular activities of the child. This system also monitoring the children health(Body

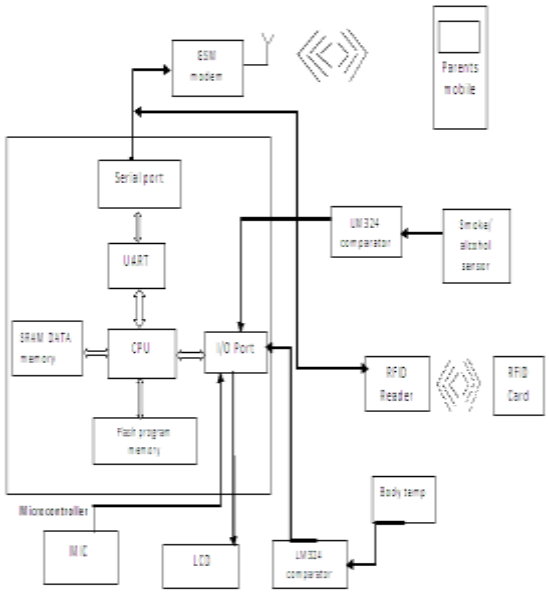
Temperature) and if it detects any abnormal condition automatically it will send an SMS to the parents. Alcohol /Smoke sensor is used in this system to monitor the children surrounding environment and inform to the parents if it detects any drug or alcohol is within the coverage area. MIC is used to detect the weeping of the children.

There are many advantages in the proposed system, they are:

1. RFID is a way to identify individual item/persons.
2. Parents are able to know the abnormalities of the child inside the school such as body temperature, child's crying.
3. Without sending the keywords by the parent, the information can be send.
4. Any consumption of alcohol is made by child, this system detects and send information.

V. Block diagram of proposed system

The architecture of safety device of the child uses its main component as AT89S52 which interfaces all other components in it.



VI. Components description

The main components used in the project are :

- AT89S52 microcontroller
- RFID
- GSM module
- Temperature sensor
- Alcohol/smoke sensor
- MIC sensor
- LCD

1. AT89S52 microcontroller:

The AT89S52 is a microcontroller compatible with the large family of Intel MCS-51s . AT89S52 is created by Atmel, indicated by the initials "AT". This microcontroller has low power consumption, but the 8-bit CMOS gives it high performance with 8K Bytes internal flash memory. The Flash chip allows the memory to be internally reprogrammed or programmed by a non-volatile memory. By combining an 8-bit UCP with programmable Flash memory on the monolithic core, the Atmel AT89S52 is a very powerful

microcontroller that has high flexibility and is thus the perfect solution for many embedded applications.

The features of the microcontroller are:

- 8 bit microcontroller
- 40 pin structure
- ROM 8 kB
- RAM 256 Bytes
- Flash Memory: 8K Bytes
- 32 general input / output programming lines

2. RFID System:

An advanced automatic identification system known as Radio Frequency Identification technology (RFID). It is used to identify objects by using invisible radio waves. The purpose of an RFID system is to enable data to be transmitted by a mobile device, called a tag, which is read by an RFID reader and processed according to the needs of a particular application. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged, such as price, colour, date of purchase, etc.

In a typical RFID system, individual objects are equipped with a small, inexpensive tag. It works on the principle of inductive coupling. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal. The reader decodes the data encoded in the tag's integrated circuit (silicon chip) and the data is passed to the host system.

3. GSM Module:

GSM stands for Global Service for Mobile communication. The GSM network can be divided into three broad parts. The Mobile Station is carried by the subscriber. The Base Station Subsystem controls the radio link with the Mobile Station. The Network Subsystem, the main part of which is the Mobile services Switching Center (MSC), performs the switching of calls between the mobile users, and between mobile and fixed network users.

4. Temperature sensor:

LM35 is a precision temperature sensor with its output proportional to the temperature (in ºC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes.. It also possess low self heating and does not cause more than 0.1 ºC temperature rise in still air.

The operating temperature range is from -55°C to 150°C. The output voltage varies every ºC rise/fall in body temperature of the child.

5. Alcohol/smoke sensor:

A smoke sensor **MQ5** is a device which detects the presence of gas in an area. This sensor interacts with a gas to measure its concentration. Sensor identifies gases by measuring voltages. The concentration of the gas can be determined by measuring the current discharge in the device. The MQ5 gas sensor detects the presence of various gases such as hydrogen, carbon monoxide, methane and LPG. If it detect any smoke/ alcohol it sends information to the microcontroller. It ranges from 100ppm to 3,000ppm.

When a gas interacts with this sensor, it is first ionized into its constituents and is then adsorbed by the sensing element. This sensing element is subjected to current through connecting leads. This current is known as heating current through it, the gases coming close to the sensing element

get ionized and are absorbed by the sensing element. This changes the resistance of the sensing element which alters the value of the current going out of it.

6. MIC sensor:

The MIC Sensor is an analog input sensor. It is able to detect noise levels based on air vibrations. If the child is tends to weep at the high level, this sensor detect the noise of the child compare with its noise level table and send information to the microcontroller. The MIC Sensor is used as an analog input pin.

General Pin Out	Sensor Pin Out
PIN1 (GND)	GND
PIN2 (VCC)	VCC
PIN3 (SIGNAL-A)	Analog Input
PIN4 (SIGNAL-B)	Not Connected

7. LCD:

LCD stands for Liquid Crystal Display. It is used to display the commands given to the user by programming it, which has interface microchip and its associated components to use LCD with other controller devices. It is programmed in C language to send appropriate commands to the LCD through GPIO and displays the needed commands on its screen.

VII. Conclusion and Future scope:

We developed a monitoring and tracking system for offspring in collaboration with RFID, GSM, temperature, alcohol/smoke, MIC sensors. Whenever child fell into trouble or abnormalities, the device itself can detect and send information to the parents through SMS and call alert. We believe that we laid a promising foundation in utilizing social contribution in handling emergency situation.

The proposed system can further implemented by adding separate GPS, camera in the device to capture the video surrounding the child during the abnormality situation. It can be placed in public places to safeguard the child.

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