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RESEARCH ARTICLE

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AMARINO TECHNOLOGY FOR TRACKING MONITORING AND ALERTING

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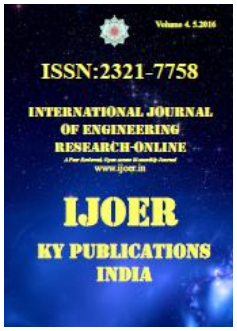

ABSTRACT

The world is changing and running very fast. Everywhere there is a feel of insecurity. Nowadays both the parents are working and they do not have time to look after their family members. To solve this problem, the tracking and alerting system using arduino is discussed. In this project amarino technology is used .This project can do two works ,the first one is to track the location using GPS and the second work is to alert the parent by sending SMS to smart phones. This project consists of lilypadarduino which can be sewn into fabrics. It consists of power supplies, sensors, actuators, conducting threads. In this system Parents don't want to monitor their children continuously, if their child is facing any danger or when the child is away from a particular surrounding, message will be sent to the Parent mobile. It is possible through geo-fencing. With the help of sensors alerting message is sent. .Depending upon the purposes the number of sensors is increased with the circuit which can be sewn in the fabrics.

KEYWORDS: GPS, geo-fencing, tracking system,Lilypadarduino, GSM, Amarino

AMARINO

Amarino is a toolkit basically consisting of an android application and an Arduino library which will help to interface with the smart phone in a new dimension. This demonstrates how to use amarino-embedded to communicate with arduino application APK on a smart phone.

I. INTRODUCTION

The tracking system is necessarily required for the adults who are at job because the crimes like kidnapping, women-harassment, organ theft against the children, women, and old people are increased. Geo-fencing is defined as a virtual barrier. When a child or women crosses this border, automatically an alert message is sent to Parent's mobile. With the help of GPS tracking it is made possible. This project will help the parent to monitor their children while seating in their office. In tracking location and sending alert messages GPS and GSMmodule is used which is mounted on the lilypadarduino. In alerting side there will be sensors and actuators which is used to send message. This project aids in tracking and alerting,when a child is abused, type of danger faced can be identified by using sensors.

II. EXISTING TRACKING SYSTEMS

There are many types of tracking systems. These systems failed due to several reasons. Some of the systems are,

A. CROSSBOW MOTESTECHNOLOGY

This system consists of microprocessor, radio receiver and interfaces to connect sensors. It is small and compact. It covers only a finite distance and it is affected by walls, tress .This system is expensive and

hence this system fails to tract.

Figure 1: Crossbow Motes

B. GOTCHA SYSTEM

In this system there are two units namely parenting module and child unit. When the child is lost, the button present in the parent module is pressed by parentand a beep sound will be heard from the child unit .Gotcha is an invisible electronic leash between parent and their kids.The module at the child will be turned on by the parent.The child module will be triggered if it is accidently removed or it is turned to off. The main disadvantage of this system is that the type of danger thechild facing is not shown .The final product of gotcha system is shown.

Figure 2: Final model of Gotcha system

III. PROPOSED SYSTEM

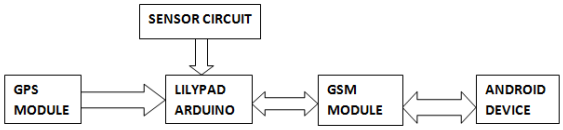

Figure 3:Block diagram of the proposed system

The Amarino child tracking and alerting system consist of GPS module GSM module Lilypadarduino Sensor unit and Android device.Parent module will be the android device with internet connectivity.Geo-fencing will be performed with the help of GPS module and Lilypadarduino.whenever the child crosses the particular location or area and whenever the child faces danger the alerting message will be sent to the parent module with the help of GSM module.the type of danger the child facing will be sensed by the Sensor unit.Through the message the parent will get alerted and protect the child from danger.

IV. HARDWARE SYSTEM DESIGN

A. GPS TRACKING SYSTEM

GPS is a multiple satellite based radio positioning system in which GPS satellite transmit data that allows user to measure the distance from the selected satellite to the antenna and accuracy with low power consumption. In the proposed system, the main use of GPS is to track the location of the child in terms of latitude and longitude.

B. GSM MODULE

This module accepts any GSM network operator SIM card and acts just like a mobile phone with its own unique phone number. It has improved battery life, advanced features such as short messaging. In the proposed system the GSM sends the message from child module to parent module so that the parent will be able to locate the child's position.

C. LILYPAD AS TRACKER

The basic operation of the system is tracking and alerting. It is done by using auduinolilypad which is the heart of the project. As said earlier it is sewed in the garments with the help of conducting threads. All the sensors also sewed in the same manner.

Figure 4: Arduinolilypad

Lilypad is a set of sew able electronic pieces designed to help in building a interactive textiles. A set of sew able electronic modules including a small programmable computer called a lilypadarduino can be stitched together with conductive threads. The operating clock frequency is 8 MHzThisarduino is switched in the clothes of children or any people

.For this system a smart phone with the parent is sufficient.

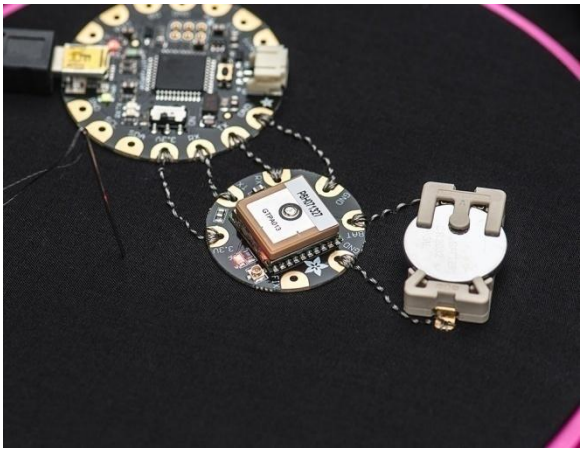

Figure 5: Lily pad as alerter

D. LILYPAD ARDUINO CONNECTED WITH MICRO AND MINI GPS

In lilypadarduino the GPS and GSM module is mounted together as a single unit so that the module looks small in size and hence it can be sewed anywhere.

Number of sensors can be used in the lilypad depending upon the requirements.

E. SENSOR UNIT

- LIGHT SENSOR: These sensors are fixed to identify the type of danger that the child is facing. When the child is in any dark situation the light sensors detects and triggers the lilypadarduino. Immediately parents will receive message .This acts like a light dependent diode.
- TEMPERATURE SENSOR: This sensor can be used to detect the temperature. It detects the body temperature. If the person has abnormal body temperature immediately alerting message is sent to the connected android device.
- WATER SENSOR: This sensor detects the presence of water bodies so that the lilypadarduino triggers and the message will be sent appropriately.
- PULSE DETECTING SENSOR: This sensor is mostly used for heart patients. Monitoring patients in hospitals by connecting medical devices to the patient to be in contact with their doctor.Monitoring adults, peoples and elderly family members. Monitoring and locating animals and people who need special supervision.

F. MONITORING SYSTEM

This system can also use for security purposes like monitoring the house if anything goes wrong it will alert people. For example if there is leakage of gas it will detect. So accidents can be avoided. Likewise this can be used in hospitals to monitor patients under intensive care unit.

V. ADVANTAGES OF THE SYSTEM

- The arduino is sewable.
- Lilypadarduino is round which dismisses the idea that electronics are sharp, grey and cold.

VI. DRAWBACKS

- It is not cheap.
- The signals from networks may affect the children.

VII. CONCLUSION AND FUTURE WORK

In conclusion, this project helps to find out the lost children. The architecture of this project is based on components such as GSM, lilypadarduino and GPS. Finally, like any product or design, there are still ways for enhancement. Features can be added to the system. This system also focuses on women, which is important nowadays. The enhancement can be implemented like sensing the temperature, using sensors for detection of water bodies in that certain location. The proposed system can be implemented, continued, reviewed and could be improved in later works.

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