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Smart Wearable Device for Women Saftey

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ABSTRACT
It is becoming imperative to ensure that the public is sensitized regarding the safety of women, as the risk of women becoming victims of crimes is increasing as well as the evolving decline in the concept of security in working women. The proposed research paper will present a quick action feedback whereby women will be able to request help in the case of harassment. One depressible button, on the activation, grants the user with an increased level of security: the controller, which is ATMEGA328P, connects with a push button, GPS module, Wifi modem, and LCD Display (16 x 2). When there is a switch press, the controller reads the current location coordinates of the user and sends it to a centralized database through the Wifi modem thus, creating an alert on the server to include the longitude or the latitude value.
Keywords: Arduino, a wifi module, GPS, a heartbeat sensor, an LM35 sensor, and health monitoring.

INTRODUCTION

In the context of the recent empirical facts, the world climate and environment has worsened such that women today are confronted with rising levels of insecurity in various spheres. Incidences of crime against women have witnessed a disturbing rate and, especially, female employees are said to have experienced increased anxiety in the public places. It is because the current discussion leads to the creation of an immediate-response intervention that is aimed at the protection of women in distress. The mechanism proposed will also give the victims the ability to send live data on their whereabouts to a specified server and this will make it easier to be assisted by the relevant authorities. The intervention uses an Arduino micro-controller apparatus that functions with a push-button system an external Global Positioning System function, wireless modems as well as 2 microwire by 16 LCD presentations. When the switch is activated the controller extracts GPS coordinates and passes it over the modem to the server where the coordinates are exposed with high accuracy.

2. LITERATURE SURVEY

[1] As Binu P. K., Akhil V., and Vinay Mohan state, when presenting the article named Smart and Secure IoT-Based Child Behaviour and Health Monitoring System Using Hadoop (16 September 2017, IEEE), the suggested system involves using hadoop and C4.5 algorithm, which would be supposed to predict the disorders based on the gathered information. The system will also track the health and psychological state of child in real time and give feedback at once. Regarding future prospects and conclusion, the authors indicate that the inclusion of other parameters pertaining to health would increase the accuracy of the health monitoring, and it would represent interventions in case of abnormalities earlier.
[2] In the article published in the International Journal of Research in Engineering and Environmental Science (IJRIEE), Sagar S Bachhav and Dr.Nilkanth B Chopade present the so-called IoT Based HealthyBaby Cradle System in 2018. The writers explore a possibility of integrating IoT, Amazon Web service, and smart baby cradle in the ability to deliver a cohesive means of monitoring and comforting the child to a parent.

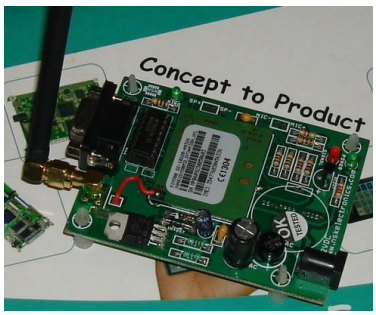
Their results indicate that cradle system does not need a human mature to take care of the baby; music choice and talk to the baby achieves the calming effect. The authors observe that such practice minimizes the effort of the caregivers- particularly a working mother with the entire system being portable and hence easily movable. They end up with the conclusion that IoT may reduce parental stress and enhance responsive care.

[3] Chinlun Lai, Lunjyh Jiang, 2018, is the article: An Intelligent Baby Care System based on IoT and Deep Learning Techniques, international scholarly & scientific research & innovation.
In the work, the design and development of a Baby care system have been reported where the Internet of Things and deep learning techniques have been integrated. The system is supposed to help caretakers by monitoring constant posture, temperature and position of an infant. The empirical evidence showed that the use of deep-learning-based inference allowed predicting these parameters successfully. Based on the study, it can be concluded that the suggested system can identify adverse events related to infant safety, thus avoiding damage or death.

PROPOSED METHOD:
The Mobile Hub has some prominent attractions such as being cheaper, portable, location aware, has an inbuilt touch-screen interface and is of smaller form factor. These features make the device different in comparison to the usual home-hub devices. However, these are subject to the limitations such as CPU muscle, memory hold and connectivity of peripherals all being limited. Therefore, Mobile Hub does not fit the conventional home-hub model mainly because it has poorer computing power, smaller screen size, and rarely a physical input as well as output port. The trade off is increased usability by an increased level of mobility, location awareness at a lower level, and size. The prototype system gathers information about a variety of biological variables in the human body, uses mobile communication (namely WIFI) to send alerts and consolidate data on a Web server, and enables triggering of an alarm signal automatically or manually (by the user him/herself) after using an accelerometer. The central dispatcher can also get immediate location information when an alarm event takes place.

BLOCK DIAGRAM
ARDUINO UNO

The product itself, Arduino Uno R3, is a microcontroller board, where the basis is an 8-bit ATmega328 microprocessor (ATmega328 datasheet). The board combines 14 multifunction digital input/output pins (6 of which can generate pulse-width modulation), 6 analog-to-digital converter (ADC) inputs and a 16-MHz ceramic resonator. Other features are USB connection, power jack, in-circuit programming (ICSP) header and a reset switch. Like any Arduino environment, the device can be operated with full support when a personal computer and USB connection; however, a DC power supply source or battery can also be used.
Uniquely, the R3 variant swaps the FTDI FT232RL or FT232H USB-to-serial driver chip that has been typical of earlier Arduino boards. In its place, the Uno R3 uses the ATmega16U2 (ATmega8U2 in earlier varieties of Uno R2) pre-programmed as a USB-to-serial converter.
Global Systems for Mobile Communication (GSM):



The Global System of Mobile communication (GSM) represents a widespread framework of the digital mobile telephony system that is implemented in 190 countries all over the world and emphasizes the European markets above all. GSM makes use of Time Division Multiple Access (TDMA) to relay digitized and compressed voice and data streams over dedicated channels where three different streams can be relayed simultaneously in different time slots. The system can operate on either the 900 MHz or 1,800 MHz frequency bands and has more than one billion users, enables global roaming interoperability through roaming agreements between network operators. When a mobile subscriber enters a new area of location, a Visitor Location Register (VLR) is used to update location information to the Home Location Register (HLR) as Signaling System 7 (SS7) messages.

GPS MODULE

Global Positioning System (GPS) is an instrument which is based on satellites that relay their position coordinates and time data. It is open and free to use to any user with a GPS receiver with un-obstructed visibility to enough GPS satellite signals that transmit tracking and reliability signals. Receiver finds its location by synchronizing extremely accurately signals that are aired by the satellites. GPS has achieved a massive implementation in modern society to where it is a necessary constituent of smartphones.

What is simple is the GTPA010 module specially designed. It features both an RS232 and USB interface, works on a supply voltage range of 3.2-5 V and consequently can be directly interfaced with 3.3- and 5-V microcontrollers. Navigational data is produced by the module in the NMEA0183 format: messages are delimited by a dollar sign and a message identifier, parameters within a message, by single commas; this makes parsing convenient.

WIFI MODULE ESP8266

The ESP8266 WiFi Module is a ready-to-use system-on-chip (SOC) solution with TCP/IP protocol stack, which allows any microcontroller to be connect to WiFi network. The ESP8266 may be used as a standalone application or may support all Wi-Fi networking tasks offloading an otherwise separate application processor. Every module is sold with a set of AT command firmware, and thus can be hooked up to an Arduino board and gain similar WiFi capabilities as a WiFi shield, without having to do any compilation or firmware uploading. ESP8266 is a vastly affordable solution with a massive and still growing number of enthusiasts.

Flash memory and on-board processing capabilities enable low overhead integration with virtually any number of sensors and other application-specific devices via the general-purpose input/output (GPIO) pins, limited up front development effort, minimal total overhead, and allowing simple point-to-point interfacing, allowing simple integration with any number of sensors and other application-specific devices. The chip uses a high level of on-chip integration which decreases external requirements both schematically and physically: the front-end module takes up a very small area of printed-circuit-board (PCB) space. The ESP8266 is compatible with advanced power-saving (APSD) mechanisms to voice-over-IP (VoIP) and has co-existence Bluetooth interfaces. The module also has self-calibration of the radio frequency (RF) section, so ensuring uniform performance in all operating conditions is independent of external RF components.

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LCD

The system being studied is a system that uses liquid crystal display (LCD) unit of the type 16x2 characters. This LCD will be connected to a micro-controller where its major functions will be to relay the messages generated by a system to a LCD. The LCD will act as a user-friendly interface in this design, where it is possible to monitor the current state of the system. The module has a successful working range of supply voltage of +5 VDC volts.

BUZZER

A buzzer is a small, but very efficient way of implementing an audio program into electronic models. It is a 2-pin device that makes it easy to integrate in the breadboard, perf board, and printed circuit boards assembly thus making it unreplaceable in a wide range of technologies.

Buzzers are of two types; the former makes an uninterrupted beep when charged, as shown in the above image; the latter, a readymade buzzer, tends to be larger and make a repeating Beep. Beep. Beep sound due to an embedded oscillating circuit. This is so since the former can easily be changed using extra circuitry to meet exacts of a set project and hence it is the most used alternative.

RESULT

The presence of the findigs of experimental tests which were performed to estimate each functional part of the proposed wearable device using various deployments of SMS texts will be explained in the next section. The GPS location sensor will always produce updated latitude and longitude coordinates being displayed on its incorporated circuitry to the cell phone where the user will then be redirected through a related Google Maps URL. By clicking on this link, the user will open the Google Maps application on the smartphone and to the location of the device on the map interface.

CONCLUSION AND FUTURE WORK

There was a systematic onsite evaluation and the peer testing of proposed architectural model consisting of four interrelated components namely; people, information processing and digital technology. The findings denote the model concept is simple and hence promotes an economical extension and adjustment to befit the needs of the various stakeholders. Although it is understandable that the application of integrative digital technology components, which include the Salesforce cloud, a mobile app, and GPS, could easily facilitate the search of a lost child in a distressed situation.

Thus, the current study will serve as the first step toward development of a practical Smart Child Tracker software application. Another customization such as the use of a tracking pin which can be clipped on a child clothing can be done and it can be investigated in future research as to define alternative tracking mechanisms and architecture design paradigms utilising low cost RFIDs or iBeacons besides the existing GPS. Particularly, RFID tags can be considered an attractive option in terms of active monitoring.

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