

SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

LITERATURE SURVEY:

Internet of Things (IoT) plays a major role in every day to day life. The major difference between IoT and embedded system is that a dedicated protocol/software is embedded in the chip in case of embedded system, whereas, IoT devices are smart devices, which are able to take decisions by sensing the environment around the device. The development of sensors technology, availability of internet connected devices. Data analysis algorithms make IoT devices to act smart in emergency situations without human interventions. So, IoT devices are applied in different fields such as agriculture, medical, industrial, security and communication applications[1]. IoT systems are useful within a system to do deeper automation, analysis, and integration. IoT contributes to technology by advances in software, hardware and modern tools. It even uses existing and upcoming technology in the fields of sensing, networking and robotics. IoT brings global changes by its advanced elements in the social, economic, and political impact of the users. Child and women safety is a challenging problem nowadays due to antisocial elements in the society. The crime rate is day by day increasing. Schools and working places need high surveillance for ensuring the safety among children and women. Smart phones are playing major role for ensuring the safety, where some mobile based applications provide alert systems. During the emergency, mobile apps alert the control room of nearby police station or caretakers of children. The literature shows that location tracking devices are available in the market but it does not provide the complete solution to the problem. The solution to this problem is to design an IoT device, which senses the child's location and environment and during emergency, it should send the alert to the parents automatically.

The review of literature for child safety and location tracking devices are discussed below. In [2], the parent can send a message to the GSM module, according to the message information the GSM module reply back with particular details of the children. The location can be seen on the Google map. When a particular child is facing an emergency situation, device button should be pressed so that the device captures the image along with the user information to the enrolled mobile numbers. The life of the child can be saved within no time. In [3], for the children point of view GPS, GPRS and GSM are used to monitor the speed and location tracking purpose. The system is fixed on the bus

or car or in any vehicle so that the vehicle is going on routine route or not can be identified by the GPS tracker, the speed of the bus can also be extracted. Now-a-days the digital technology plays a major role for connecting persons via internet. For tracking the children, the android based solution is provided to parents. Internet is the one that will connects different components through a single device and is connected to server. Parents track their children in real time of the location tracker by GSM and [4] the microcontroller is used. In day to day scenario, missing child cases are increasing gradually. Child caring is a major issue. Different types of methods are introduced to find good solutions. There have been many Methods and systems implemented to solve it. In [5], to solve child caring problem global positionsystem (GPS) based solution with two nodes was proposed. In these two nodes, one node is child node which contains a Bluetooth module and a GPS receiver. The parent node consists of a mobile that supports Bluetooth. The location of the child can be tracked by the GPS technology and can be displayed on the designed map in the mobile device, through the Bluetooth connection the distance between the child and parent can be calculated. Children below six years can not explain in words directly to their parents about the problems, hence a wearable device is developed in [6]. This device procures information such as heart rate, physical body movements and send it to the parents in real time. In [7], a wearable sensor badge is constructed from (hard) electronic components, which can sense perambulatory activities for context awareness. A wearable sensor jacket is used with latest techniques to form (soft) fabric. Stretch sensors are placed to measure upper limb and body movement. Worn as clothing, the sensors give the required information.[7].

The IOT is applicable in many areas some of them are listed below, [2]

- Smart creatures
- Smart connected buildings
- Connected factory
- Connected roadways
- Smart phones

In our project IOT plays a major role which sense the child's and women's every activity and alert to guardians. IOT sensor detects the child or women

crying, heartbeat, temperature and alerts the guardians through SMS, mail and buzzer for the surrounding people. The camera captures the child and women's activities when in danger or panic situations. The components and internet of things is controlled by micro controller. We are using PIC 16F877A micro controller to control over all system and IOT. RPI3(Raspberry Pi 3) is used to connect to internet of things, sounds, buzzer, mail, SMS, emergency switch, mode switch. All these things are connected to battery to supply the power. RPI is credit card sized computer that plugins into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like python, C. IOT is used for smart city and smart home to benefit the people. Smart automation method is implemented in this project to get alerts of women and child's activities and for the purpose of security through IOT developed.

An IoT based wearable smart band for children is proposed in this research for child security purposes. The smart band is waterproof, chargeable and equipped with sensors. Heart rate sensor measures pulse rate and BPM. Sleep quality sensor obtains children's sleep quality, cycle and positions. Altimeter detects changes in height and sense whether children are going down a slope or climbing stairs, thereby measuring calorie count. On the other hand, pedometer is used for counting steps. The motion sensor is applied to determines whether children are jogging or running. Blood pressure sensor used to measure blood pressure. In addition, the respiratory rate sensor detects breathing patterns and respiratory rate. Furthermore, the temperature sensor is used to detect body temperature. Besides, by using the emotion detector the emotional state, pressure and anxiety levels can be gained. Apart from that, this smart band contains GPS for tracking, identifying children's location and setting geofences. Via the smart band, children can also contact parents. Emergency button, a feature in which will automatically record video and automatically call 4 emergency contacts when it is pressed. An alert message along with the video clip is sent to parents' devices. The alarm and SOS light will be activated by parents through their devices. As the diagram shows, sensors are connected through the internet. They detect and capture different kinds of data. These collections of data will then be sent to the cloud over the internet for securely process, analyze, monitor, store, access and retrieve data remotely. After that, the information indicating children's status, along with reference values will be sent to parents' devices with the app installed.

The size of components used in the project can be decreased by a process called micro fabrication, so that it can be transformed into a wristwatch.

- Emergency calling feature can be incorporated wherein women or child under panic circumstances can contact police for assistance.
- SMS can be sent to more than one individual.

To save time and reduce crimes happening we are developing smart child and adult security system which is wearable. This helps guardians to locate their children and women faster and precisely using internet of things. The present work reduces the human effort and particularly mother's stresses in working times about child. The device affords above scope for modifications for further improvements and operational efficiency, which should make it commercially available and attractive.

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