

Ideation Phase

Literature Survey & Information Gathering

Date	17 November 2022
Team ID	PNT2022TMID36809
Project Name	IoT Based Safety Gadget For Child safety Monitoring & Notification
Maximum Marks	4 Marks

1. Smart IoT Device for Child Safety and Tracking.

Published Year: June 2019

Author Name: M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari.

The system is developed using Link-It ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency.

Merits: The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same.

Demerits: To implement the IoT device which ensures the complete solution for child safety problems.

2. Child safety wearable device.

Published Year: April 2017

Author Name: Akash Moodbidri, Hamid Shahnasser

The purpose of this device is to help the parents to locate their children with ease. At the moment there are many wearable's in the market which helps to track the daily activity of children and also helps to find the child using Wi-Fi and Bluetooth services present on the device.

Merits: This wearable over other wearable is that it can be used in any phone and it is not necessary that an expensive smartphone is required and doesn't want to be very tech savvy individual to operate.

Demerits: As, this device's battery gives short life-time. High power efficient model will have to be used which can be capable of giving the battery life for a longer time.

3. Child Safety & Tracking Management System by using GPS.

Published Year: August 2016

Author Name: Aditi Gupta, Vibhor Harit.

This 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.

Merits: The advantages of smart phones which offers rich features like Google maps, GPS, SMS etc.

Demerits: This system is unable to sense human behavior of child.

4. Children Location Monitoring on Google Maps Using GPS and GSM.

Published Year: August 2016

Author Name: Dheeraj Sunehera, Pottabhatini Laxmi Priya.

This paper provides an Android based solution for the parents to track their children in real time. Different devices are connected with a single device through channels of internet. The concerned device is connected to server via internet. The device can be used by parents to track their children in real time or for women safety. The proposed solution takes the location services provided by GSM module. It allows the parents to get their child's current-location via SMS.

Merits: A child tracking system using android terminal and hoc networks.

Demerits: This device cannot be used in rural areas.

5. RFID-based System for School Children Transportation Safety Enhancement

Published Year: 16 March 2015

Author Name: Anwaar Al-Lawati, Shaikha Al-Jahdhami, Asma Al-Belushi, Dalal Al-Adawi, Medhat Awadalla and Dawood Al-Abri

This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school. The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards

or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilitates its management and provides useful information about the children to authorized personnel. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

Merits: The system is promising for daily transportation safety.

Demerits: The module may not be convenient for children and wide-scale deployment is expensive and this type of is that they work only in a limited range.

6. Design and Development of an IOT based wearable device for the Safety and Security of women and girl children

Published Year: January 2017

Author Name: AnandJatti, MadhviKannan , Alisha RM, Vijayalakshmi P, ShresthaSinha

The aim of this work is to develop a wearable device for the safety and protection of women and girls. This objective is achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analyzed are galvanic skin resistance and body temperature. Body position is determined by acquiring raw accelerometer data from a triple axis accelerometer. Acquisition of raw data is then followed by activity recognition which is a process of employing a specialized machine learning algorithm. Real-time

monitoring of data is achieved by wirelessly sending sensor data to an open source Cloud Platform. Analysis of the data is done on MATLAB simultaneously. This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself. It does so by detecting the change in the monitored signals, following which appropriate action is taken by means of sending notifications/alerts to designated individuals.

Merits: The device is in use both skin resistance and body temperature along with the body temperature at that instance is used to ascertain the existence of a dangerous situation.

Demerits: Incorporate the advancements made in the field of wearable electronics to develop a more compact device that could possibly be integrated into clothing. Tackle the concern that arises because of the requirement of internet at all points.

7. Smart Intelligent System for Women and Child Security

Published Year: November 2018

Author Name: Prof. Sunil K Punjabi, Prof. Suvarna Chaure, Prof. Ujwala Ravale, Prof. Deepti Reddy

A portable device which will have a pressure switch. As soon as an assailant is about to attack the person or when the person senses any insecurity from a stranger, he/she can then put pressure on the device by squeezing or compressing it. Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's location will be sent to their parents/guardian cell phone numbers stored in the device while purchasing it, followed by a call. If the call is unanswered for a prolonged

time, a call will be redirected to the police and the same message will be sent. Additionally, if the person crosses some area which is usually not accessed by the person then a message with the real-time location is sent to the parent/guardian's phone via conventional SMS.

Merits: Less response time will be required for helping the victim. Parents/guardians will be notified when they leave safe zone set by them. Call will be redirected to police, if parents are unable to pick the call. Parents/Guardians can get the location of victim whenever needed.

Demerits: Includes the real time implementation of the proposed system in tiny size with the additional components heartbeat sensor for monitoring the heartbeat of women and children in every second by measuring variation in blood volume in tissues and analysis of various parameters related to heart beat for individual women and children.

8. Child Safety Monitoring System Based on IoT

Published Year: 2019

Author Name: N. Senthamilarasi, N.Divya Bharathi, D.Ezhilarasi, R.B.Sangavi

Basically, children cannot complain about abusements which they face in their daily life to their parents. They can't even realize what actually happens to them at their age. It is also difficult for parents to identify their children are being abused. Since to prevent children before being attacked, an autonomous real-time monitoring system is necessary for every child out there. In this system, the collected values from every sensor like temperature sensor, pulse rate detection sensor, metal detection sensor, and the location value from GPS are used to detect the

status of the child and alerts the respective guardians using GSM accordingly. In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.

Merits: It makes parents to easily monitor their children in real time.

Demerits: It is difficult to monitor when there occurs any hindrance to satellite communication or any network issue. There also occurs time delay in video streaming through the server.

9. Smart Wearable Device for Child Safety Using IOT

Published Year: 2020

Author Name: HM Sabaa fathima, V. Senthil murugan

The focus of this project is to have an SMS text enabled communication medium between the child's wearable and the parent as the environment for GSM mobile communication. The parent can send a text as SMS with specific keywords such as "LOCATION", "TEMPERATURE", "SOS", "BUZZ", etc., to the wearable device. The device will replay back with a text containing the real time accurate location of the child and will also provide the surrounding temperature, so that the parents can keep track if the temperature not suitable for the child. The secondary measure implemented was using a bright SOS Light and distress alarm buzzer present on the wearable device which can be activated by the parents via SMS text to display the SOS signal brightly and sound an alarm which a bystander can instantly react for the child's safety till the parents arrive or they could contact the parents and help

locate them. Hence this project aims at providing parents with a sense of security for their child in today's time.

Merits: This has fewer chances of failing when compared to Wi-Fi and Bluetooth.

Demerits: A more power efficient model will have to be created which will be capable of holding the battery for a longer time.

10. Bluetooth: technology for short-range wireless apps

Published Year: May/Jun 2001

Author Name: P. Bhagwat

An obvious solution is to get rid of the cables and use short-range wireless links to facilitate on-demand connectivity among devices. An ideal solution would also be inexpensive, enabling of compelling applications, and universally adopted by device vendors. Bluetooth, a technology named after a 10th-century king who brought warring Viking tribes under a common rule. The Bluetooth specifications,^{1,2} currently in version 1.1, define a radio frequency(RF) wireless communication interface and the associated set of communication protocols and usage profiles.

Merits: The link speed, communication range, and transmit power level for Bluetooth were chosen to support low-cost, power-efficient, single-chip implementations of the current technology.

Demerits: Security is also an open issue—as it is in almost all Internet applications. Unless the initial adoption of Bluetooth is high, it will be difficult to meet the low-cost objective.