SAFETY DEVICE FOR CHILDREN IN DANGER USING IOT

Karthiga M[1], Hemanth Kumar R[2], Vigneshwaran G[3], Vikash Kumar S[4]

[1] *Assistant Professor, CSE, Bannari Amman Institute of Technology, Tamilnadu, India*
[2] *Student, CSE, Bannari Amman Institute of Technology, Tamilnadu, India*
[3] *Student, CSE, Bannari Amman Institute of Technology, Tamilnadu, India*
[4] *Student, CSE, Bannari Amman Institute of Technology, Tamilnadu, India*

ABSTRACT

Considering the current circumstance of the metro urban communities and other large urban communities, Children security has risen as one of the most significant prerequisites in our nation. Right now, cutting edge innovation and brilliant hardware is required to have a basic and financially savvy wellbeing contraption that helps the exploited people during unanticipated threats. This paper covers elucidating insights electronically by designing a wearable sensor model that could fulfil the expectations in the forthcoming years. This discovery and informing framework are made out of a GPS collector, Arduino Uno, GSM module and unique finger impression sensor. GPS Receiver gets the area data from satellites as scope and longitude. The area data is processed by the Arduino Uno controller and the respective result is forwarded as SMS through GSM module to the authenticated number. When an approved fingerprint is registered, the complete process of tracking the location to sending signal to the authenticated number is taken place within a fraction of seconds to save the life of the victim instantly. The proposed model is designed in the aim of the kids who are unaware of using the mobile devices. At the point when a child is at serious risk and needs self-preservation then the concern could impress their finger prints in the unique finger impression sensor which is a type of device provided to them. By doing this, the whole framework will be actuated, at that point promptly a SMS and programmed call will be sent to concern individual with area by utilizing GSM and GPS. The results obtained by the proposed work is illustrated by an OLED display.

Keyword: - *Internet of Things, Arduino Uno, GSM module, security and safety, OLED*

1. INTRODUCTION

Security is the condition guaranteed against danger or hardship. In the overall sense, security is a thought like prosperity. The nuance between the two is an extra highlight on being protected from hazards that start from outside. Individuals or exercises that encroach upon the condition of confirmation are responsible for the break of safety.

"Security" all things considered use is inseparable from "prosperity," anyway as a specific term "security" infers that something not solely is secure yet that it has been ensured about. This Project presents a woman's security acknowledgment structure using GPS and GSM modems. The structure can be interconnected with the alert system and caution the neighbors. This area and advising structure are made out of a GPS beneficiary, Microcontroller and a GSM Modem. GPS Receiver gets the territory information from satellites as extension and longitude.

The GSM modem sends a SMS to the predefined compact number. Right when a child is in danger and requiring self-assurance then she can press the special imprint sensor which is alloted to her. By pressing the one-of-a-kind

imprint sensor, the entire system will be incited then expeditiously a SMS will be shipped off concern individual with territory using GSM and GPS.

2. LITERATURE REVIEW

In [1] the idea of flash a warning by sending the instant location of the distressed victim to the police is explained so that the incident could be prevented. In [2] GSM based module is proposed which explains about the method of one touch alarm system for women's safety using GSM. Due to safety issues for women, people are finding up many ideas to find the solution to defend. And finally introduce this device which ensures the protection of women. This helps to identify protect and call on resources to help the one out of dangerous situations. If anyone is in danger, all you had to do, is hold on the button of the device. The device consists of a PIC microcontroller, GSM module, GPS modules. The system looks like a normal watch which when activated, tracks the place of the women using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to sos contacts and the police control room.

GPS facility enabled device is proposed in [3] that is used to track the location of the victim when attacked. A smart belt-based system is proposed in [4]. This system is designed with a portable device. which looks like a normal belt. The system has Arduino Board, screaming alarm and pressure sensors. When the threshold of the pressure sensor crosses, the device will be activated automatically. The screaming alarm unit will be activated and send sirens sound. In [5] ATM security-based algorithm is proposed. This paper gives the itemized approach towards ATM security. Here, the ATM security framework is made with the assistance of implanted frameworks. In this proposed framework RFID card is utilized as ATM card, unique finger impression module is utilized for distinguishing proof measure. In the event that there is false finger impression validation, SMS will be sent off two principal stations alongside to the approved client of that RFID card. Additionally, utilizing GPS area, the area of the cashbox is tracked if it is stolen. In [6], [7] and [8], various machine learning approaches are utilized to determine the breast cancer and Alzheimer's disease and the techniques are studies to create a safety device model. In [9] methodologies to determine the phishing URLs is demonstrated and the same is studied to create a authenticated model of the proposed work.

Manisha Mohan an Indian Scientist in [10] developed a wearable sensor which resembles a sticker that can identify sexual attack progressively and rapidly alert of high sound buzzer as well as the victim's closed ones and family members to seek help at the time of incident. She built up a sensor which can be connected to any piece of dress. The sensor which is made could be prepared in such a way that it very well may have the option to distinguish an individual disrobing themselves or an individual is uncovered strongly. This sensor-based undertaking permits recognizing the indications of attack regardless of whether the casualty is oblivious or not in the situation to guard or battle against the assaulter, for example, if there should be an occurrence of hospitalized or impaired patients. This wearable sensor is incorporated to a cell phone through Bluetooth. The cell phone can trigger a noisy commotion which will make the close by individuals aware of look for help just as communicate something specific with the area of the casualty to pre-characterized telephone quantities of relatives or community workers, for example, police. The sensor works in two modes viz. detached mode and dynamic mode. At whatever point a client experiences any danger drawing closer towards them, the alert is set off uproarious by its own furthermore, button is squeezed. This can be executed in detached mode. While in dynamic mode, the sensor will attempt to identify signals or aggravation from the outside climate. On the off chance that somebody is attempting to take off clothing from the casualty's body, the sensor will distinguish the disturbance and send to smartphone to confirm whether the act was done with consent. Casualty has a season of 30 seconds to react to the message in any case the phone will discharge a loud noise to alert the user and nearby people. The client needs to stop the caution inside the following 20 seconds utilizing a secret key saved first otherwise the smart phone application will send will convey trouble messages alongside the area of location to concerned people such as family or friends.

A group of students from SRM University of Chennai in India in [11] has ran over with the possibility of SHE – Society Saddling Equipment. This hardware is appended with articles of clothing. It is implanted with sensor and electric stun circuit, which can produce 3800kV which can help the casualty to get away. If there should arise an occurrence of numerous assaults it can send around 80 electric stuns.

3. PROPOSED METHODOLOGY

The working of Children safety device consists of three phases. They are,

- Authentication process
- Fetching coordinates from satellite
- Sending alert call and SMS to users.

ARDUINO is the software used for processing the device.

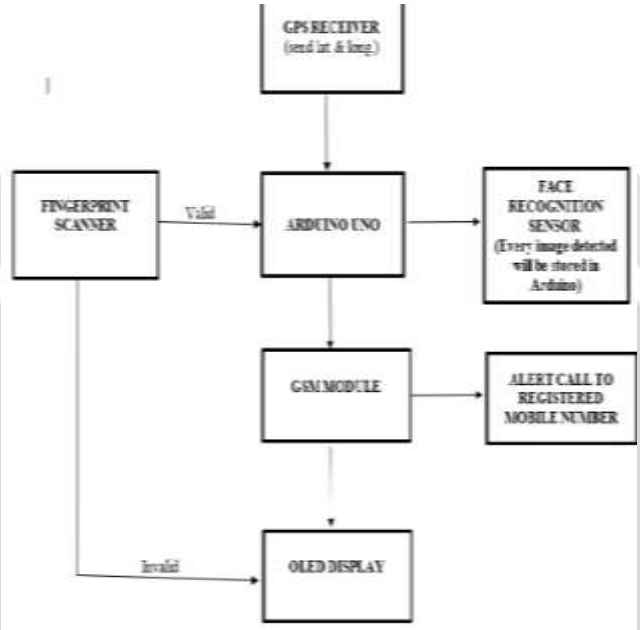

Fig -1: Proposed Model Workflow

3.1 Software Description

Arduino is the world's driving open-source equipment and programming biological system. The Company offers a scope of programming devices, equipment stages and documentation empowering nearly anyone to be imaginative with innovation. Arduino is a mainstream instrument for IoT item advancement just as one of the best apparatuses for STEM/STEAM instruction. Countless planners, engineers, understudies, designers and creators around the globe are utilizing Arduino to develop in music, games, toys, savvy homes, cultivating, self-sufficient vehicles, and then some. Initially began as an examination venture by Massimo Banzi, David Cuartielles, Tom Igoe, Gianluca Martino, and David Mellis at the Interaction Design Institute of Ivrea in the mid-2000s, it expands upon the Processing venture, a language for figuring out how to code inside the setting of the visual expressions.

3.2 Software Description

Arduino Uno

The Arduino UNO is an open-source hardware which is a part of the computer. It was developed by Arduino.CC on the basis of Atmega32 bP which is a microcontroller board. The expert's method is to give large outputs with a smaller number of inputs. Integrated Development Environment (IDE) is the software used for Arduino. This device is easy to handle even for those in non-technical background and is easy for them to acquire knowledge but microcontroller requires some skills. It allows users to sense and control with the external electric devices.

*Liquid Crystal Display (16*2)*

LCD (Liquid Crystal Display) which is a combination of solid and liquid matters where liquid matters are used for primary operation. LCD consists of a flat display where the output is being displayed. It provides thinner displays and consumes less power when compared to LED. Red, green and blue (RGB) which are the subpixels of a pixel which constitutes the quality of the display. LCD is made up of either active or passive matrix. The active-matrix LCD is used commonly.

GPS Module

A GPS gadget can recover from the GPS framework area and time data in every climate condition, anyplace on or approach them Earth. A GPS gatheringrequires an unhindered view to at least forum GPS satellites, and is dependent upon poor satellite sign conditions In uncommonly poor sign conditions, for instance in urban regions, satellite signs may display multipath proliferation where signs skip off structures or are debilitated by meteorological conditions. Impeded views may emerge from a tree overhang or inside a structure.

GSM Module

When the SIM card is stacked into the telephone and the telephone is controlled on, it will scan for the closest cell phone pole (additionally called a Base Transceiver Station/BTS) with the most grounded signal in the administrator's recurrence band. On the off chance that a pole can be effectively reached, at that point there is said to be inclusion in the region. The telephone at that point distinguishes itself to the system through the control station. When this is effectively finished, the telephone is said to be connected to the system. The key element of a cell phone is the capacity to get and make brings in any zone where inclusion is accessible. This is by and large called meandering from a client point of view, yet additionally called visiting while depicting the hidden specialized procedure.

Fingerprint sensor

The module performs arrangement of capacities like unique mark enlistment, picture preparing, unique mark coordinating, looking and layout storage. There is a powerful DSP chip in them module that does the picture rendering, figuring, highlight finding and searching. This module can be associated with any microcontroller or framework with TTL sequential and send parcels of information to take photographs, distinguish prints, hash and search. This module can be utilized to select new fingers straight forwardly and up to 127 fingerprints can be put away in the on-board FLASH memory. There is a red or green LED in the focal point that lights up just during a checking procedure.

4. MATERIALS AND METHODS

The gadget comprises of neo 6m GPS module, sim 800 a GSM module, unique mark sensor, and Arduino Uno and interfacing wires. GPS module, GSM module and different gadgets are associated with Arduino utilizing jumper wires. GPS speaks with satellite and sends scope and longitude every single second, and it is put away in Arduino. GSM brings scope and longitude from Arduino and sends it as a SMS and an alarm call to the enlisted portable number. Furthermore, it is additionally shown in the OLED show. The above usefulness is constrained by the unique mark scanner. In the previously existing gadgets, there is no validation, so there is an opportunity of abusing. To conquer the above imperfection, we have interfaced the unique mark sensor with the framework. In the event that the yield of the unique mark sensor turns out to be valid, the entire framework will be actuated and an alarm call and SMS will be sent to enrolled portable number and furthermore showed in the OLED show. During the acquisition of the device, client's unique mark will be recorded in the gadget and furthermore portable number will be enlisted. Utilizing the recorded unique mark, we can get to the device and ready call and SMS will be sent to the enlisted versatile number. The Fig 1 represents the working of the whole process.

4.1 Modification in the Design

Already existing gadgets can be gotten to by anybody and anyplace. But in our gadget, we have incorporated the idea of confirmation for security purposes. If someone lost the current gadgets, it has the chance of abuse, this issue is overcome in our gadget. Our gadget has the unique mark confirmation module. During the acquisition of our gadget, client's unique finger impression will be recorded and just the enlisted client can use this gadget. Nobody can abuse our gadget. During the change of location of the kids apart from the regular area will also be notified to

the authorized people and this in turn alerts the parents that something is going wrong. The change of location is refreshed each time in the device so that exact location could be shared during dangerous situations.

The output of safety device is shown in the below Fig. 2 wherein the latitude and longitude information of the device is displayed in the model. This information is utilized by the controller to detect the exact location using GPS module.

Fig -2: Design Structure

5. CONCLUSIONS

The model is proposed with an aim of safeguarding the kids from unwanted illegal activities. Children nowadays are brought up by both parents working situations and most of the time they need to rely upon a third person to go to school, tuitions or other activities. In such cases, parents rely upon third persons to receive their kids. Ensuring safety of the kids is always a riskier task to the parents. The small kids are also unaware of using the mobile phones or calling their parents during dangerous situations. In such cases, unique finger print impression model could be used to safeguard the kids from danger instantly. Once the fingerprint is registered, the location of the kids is shared to the authorized number as a preprogrammed call to safeguard the kids instantly. Our proposed model is very much useful to the kids and parents. The accuracy obtained from our model is 99%.

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