PROPOSED SOLUTION FIT:

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TITLE	IoT Based Safety Gadget For Child Safety Monitoring & Notification
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SOLUTION FIT:

This paper mainly focuses on child safety solutions which contain two major devices namely Smart gadget and BLE Listener device. The system also includes an Android app namely Parental App which will be developed and installed on parental phone.

This paper consists of 6 modules as follows:

1) Live Location Tracking:

   Safety gadget contains a GPS module which will fetch the current location and sends it to the microcontroller for required processing, the safety gadget is also installed with the GSM module to respond for location request sent via SMS from parental phone. The system is connected to cloud via Wi-Fi technology and hence the GPS location is updated to the cloud at

regular intervals or on request, whenever parent want to monitor the location of safety device then parental app can be used which fetches all the data from the updated cloud and also display the current/live location of the safety gadget.

2) Panic Alert System:

The gadget is equipped with panic alert system feature which mainly consist of a button that is triggered only during certain abnormal/panic situations, this button is programmed in such a way that, once it is triggered then multiple alerts in various forms occurs within few seconds of time, SMS and also phone call is triggered to the parental phone from the safety gadget GSM module to the parental phone, which consists of current location of gadget fetched from its GPS and a pre-installed panic message seeking for help. An alert notification on parental app is triggered via WiFi on safety gadget communicating to cloud where parental app receives the information.

3) Stay Connected Feature:

This feature is to communicate between safety gadget (GSM module) and parental phone always connected irrespective of the situation, safety gadget can make a phone call anytime to parental phone and vice-versa. Safety gadget which will be displayed on its screen.

4) Health Monitoring System:

The gadget consists of heart beat and temperature sensor which is used to monitor the general health condition of child. Any abnormalities being detected in the health monitoring parameters by the safety gadget then an immediate alert is sent on the parental app via Wi-Fi. Also, displays on parental app.

5) Gadget Plug and Unplug Monitoring:

This feature is to keep monitoring if the safety gadget is plugged or not by monitoring the contact switch, necessary alerts are provided on parental app whenever the device is unplugged.

6) Boundary Monitoring System: Binding gadget is the device which is used to satisfy this feature along with safety gadget and parental phone. This gadget is used to monitor safety gadget within a bounded area using wireless technology. Once the safety gadget is moving out of the threshold distance from the BLE listener device then an alert is provided on device itself, which will be used by parent/guardian. This feature of binding gadget is designed to work independently without phone network signal/internet so that safety gadget can even be under monitoring when it reaches remote areas where communication signals are not reachable like forest.

A. Software Specification

The Arduino Software (IDE) which is an open-source and makes it easy to write the code as well as to upload in to the board. It runs on the Linux, Mac, IOS and Windows. The programs are written in Java, based on the Processing and other open-source software. This software makes the interfacing with Arduino-Uno much more reliable. The primary reason for using the GS shield as the mode of communication over Wi-Fi and Bluetooth was that this gadget was aimed at being accessible to any smartphone user. Also, to make the user- friendly as possible. Applications for the Android operating system are programmed using the SDK Android software development kit and Java programming language that also may be used with C or C++. The Android Studio is the official programming environment that allows

developers to build Android apps. The idea behind the Android app has been derived from having an automated bot to respond to text message responses from the user. It will provide the user with pre-defined response options at just the click of a button. The user doesn't need to memorize the specific keywords to send. Also, the both will be preprogrammed to present the user with a set of pre-defined keyword options such as “DEVICE_LOCATION”.

CONCLUSION:

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children. If any abnormal readings are detected by the sensor, then an SMS and phone call is triggered to the parents mobile. Also, updated to the parental app through the cloud. The system is equipped with GSM and GPS modules for sending and receiving call, SMS between safety gadget and parental phone. The system also consists of Wi-Fi module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on parental phone. Panic alert system is used during panic situations alerts are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud. Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the BLE listener gadget an alert is provided to itself.