## PROBLEMS AND SOLUTION FIT FOR CHILD SAFETY - IOT ENABLED

### IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

# PROBLEMS/CHALLENGES:

Challenges faced in IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION,

- In this research, IoT is applied to propose a wearable smart band which helps parents to monitor and get known of their child's condition at anywhere and anytime even if they are not by their children side
- Via the IoT smart band, children safety is guaranteed, and crime rate is reduced as immediate actions can be taken in case the child is in danger. Besides, unlike existing smart band, which is less focusing on child security aspect, the proposed system emphasizes in getting as much data as possible so that actual situation can be identified.
- The use of IoT in this device is motivated by the need of child security system in Malaysia due to child safety issues resulting from increasing cases on child related crime.
- To cope with the issue, the system is proposed with these objectives:

1. Enable tracking of the child's location and capturing of data remotely such as temperature, pulse, respiratory rate, quality of sleep and many more.
2. To show the child's actual data with reference values.
3. Enable sending of notification if the child is out of location or when the device realizes abnormal conditions/situations.
4. To trigger the alarm and enable automatic video recording whenever the emergency button is pressed. Then, emergency notification along with real-time video will be sent to and display in the parents' mobile apps.
5. Develop a prototype of IoT wearable smart band connected to parents' mobile apps so that they can monitor the actual condition of children at anytime and anyplace.

# SOLUTIONFIT:

- 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.

- 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.

- 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.

- If children's actual data is not within the range of reference value, alert notification and some suggestions will be sent to parents' devices. Also, when children leave geofences, notification will be sent to parents' device.