Safety System for Passenger Pilgrims Travelling to North Western Part in Myanmar Using IOT

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Abstract:-**This paper presents the security for pilgrims to Zalon Taung Pagoda in Sagaing Division. The pilgrim will be provided with a device which consists of GPS and the location values are displayed on Liquid Crystal Display (LCD). Neither pilgrim nor their family need to worry about the time or places or happens when they go out. All they need is a device that can be carried lightly whenever the pilgrim feel unsafe. GSM is used to give alert message to the relative people through Wi-Fi. This propose IoT based model will track the pilgrim's location and signal message might be given to guardians and police station to continuously monitor for the pilgrims condition. This propose model intend to cover the safety and provide successful programmes for any pilgrims.**

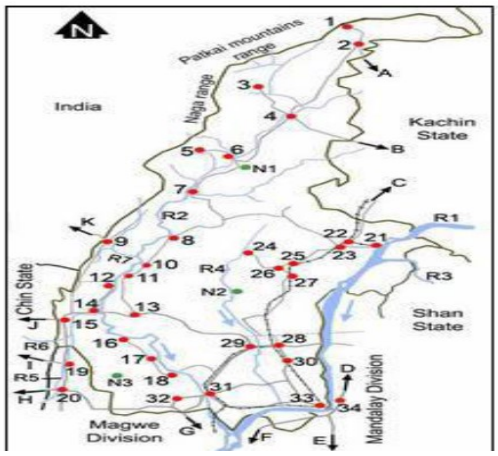
Keywords: **IoT, GSM, GPS, Sensors, Microcontroller**

I. INTRODUCTION

Sagaing Division is located across the Ayeyarwaddy River from Mandalay. This division is the largest in Myanmar. The Sagaing Region is a division of Myanmar, located in the north-western part of the country between latitude 21º31¹ north and longitude 94º 97¹ east. The capital is Monywa and it is bordered by India's Nagaland and Manipur States to the north. Kachin State, Shan State and Mandalay Region to the east. Mandalay Region and Magway Region to the south and Chin State and India to the west. This region has an area of 93.527 km^2 and population (1996) of over 5,300,000. Sagaing Division contains eight districts and thirty four townships. Among these famous townships in Sagaing Division, the Banmauk Township is the most famous place because of the Zalon Taung Pagoda lies in this region and many historical places for local travellers and foreigners. Zalon Taung Pagoda is located 12 miles North West of the Banmauk Township. The granite mountain morphology which looks like on elephant is very fantastical and charming on visitors.Zalon Taung Pagoda is similar to Kyaiktiyo pagoda and a well known Buddhist pilgrimage site in Banmauk area. Zalon Taung Pagoda is similar to Kyaiktiyo pagoda and a well known Bud pilgrimage site in Banmauk area[10]. The number of pilgrims in Zalon Taung Pagoda had increased significantly from 2017 and more than 200,000 local pilgrims visited the pagoda in 2017. In 2018, over 400,000 pilgrims visited the pagoda[11]. Myanmar's population is estimated at over 50 million and most of the people are Buddhist. Myanmars all over the country visit Sagaing for the purpose of religious retreat. The hills top of the Sagaing is dotted with stupas and the slope areas are occupied by monasteries and nunneries. Also silver-ware workshop can be found in Ywa-Htaung village. Various kinds of silverware such as jewelleries, bowls, trays, boxes and Buddha images are made.Today, Sagaing is known as a meditation center. The following figures are the map, Zalon Taung Pagoda and historical place. The following figures are the Zalon Taung Pagoda, Sagaingmap, and famous manle monestry.

In this paper proposed a model of a band will provide a required safety to pilgrim so that they can go any place along the time. This system includes IOT for long and short distance wireless data communication. This system also uses sensors and interface LCD (Liquid Crystal Display) for displaying output of all the sensors. The social networking is the part of our life and also a source for travellers harassment by uploading the photograph taken by hidden cameras. Since the prediction of incident is not possible hence to minimize the possibility of physical violence (robbery, sexual assault etc.) by keeping all the help tools ready to safely escape from violent situation. This reduces risk and brings assistance when needed. In this paper present a proposed model of a band will provide a required safety to pilgrim so that they can go any place along the time. This system includes IOT for long and short distance wireless data communication.

This paper proceeds as the following sections. The related work will be described in Section 2. In Section 3 present the block diagram for proposed model. Section 4describe the hardware component consists of the block diagram. Section 5 discusses the working features of proposed model. And finally in section 6 presents the conclusions of this paper



(a)

(b)

(c)

(d)

Figure 1(a): Sagaing Map

Figure 1(b): Zalon Taung Pagoda (Top View)

Figure 1(c): Zalon Taung Pagoda

Figure 1(d): Silver Smith Accessories

II. RELATED WORK

Wearable sensors have become very popular in many applications such as medical, entertainment, security and commercial fields. They can be extremely useful in providing accurate and reliable information on people's activities and behaviors, thereby ensuring a safe and sound living environment. It may be that the smart wearable sensors technology will revolutionize our life, social interaction and activities very much in the same way that personal computer shave done a few decades back.

In Bridge Monitoring System Using IOT, The sensors and the LCD are interfaced with the Atmega. The sensors used are Flex and Water level. The Flex sensor display the angle of tilt of the bridge as well as cracks. The value is set so that if there is any sort of tilt or little crack and if it crosses our set value then the crack is detected. The water level sensor will be placed below the bridge and within the gaps. When the water touches the sensor it will give alertness to the Atmega. Then the alarm will beep. A LCD is kept so that if there is any danger and if the system finds the fault then the LCD will display "DANGER". Servo motors are also there to closed the roads so that no vehicle reach the bridge. It is placed before the bridge. A buzzer is also used to spread alerrtness when the danger is detected. The wi-fi modem is used to send the data to the server [5].

In Human Activity Monitoring system, the sensor networks of the HAM system play a significant role for continuous monitoring of physiological parameters especially of the elderly or chronic patient. The network should be selected based on cost, performance, ease of configuration, addition of extra sensor nodes, range and power consumption etc. The sensor network architecture comprises of body worn sensors and ambient sensors distributed in the environment. A mobile platform consists of a wearable sensor system for collecting algorithm training data in the lab, and a mobile phone application used to deliver therapeutic interventions as triggered by real-time sensor data for cognitive behavioral therapy (CBT) developed for an ongoing study for patients with drug-addiction and post-traumatic stress disorder (PTSD) has been presented [6].

III. BLOCK DIAGRAM

Block diagram consists of the following components. Power supply: 5v supply is used for Microcontroller, GSM and GPS module while 3.3v power supply is used for various sensors. Sensors will continuously give their values to microcontroller. Microcontroller will compare readings of sensors with threshold values. Microcontroller will generate "HELP" message accordingly. GPS attach to microcontroller will track the position of the device. GSM attached to Microcontroller will give message to contacts stored in SIM. Raspberry Pi or laptop as a receiver for checking the values of sensors. It can be used to process and display values of sensors and position of device. End device which is being used for display should be connected to internet.

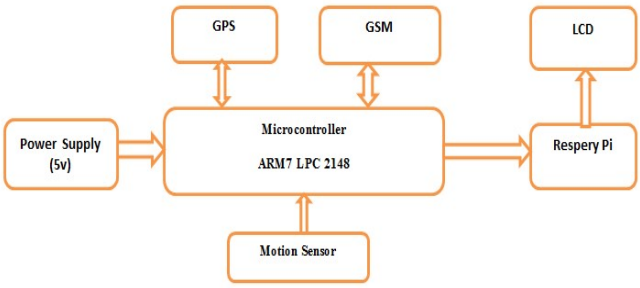


Figure 2: Block Diagram

IV. HARDWARE COMPONENTS

Hardware components of this proposed model are as follows:

4.1 Power Supply Unit: The power supplies are intended to change over high voltage AC mains power to a reasonable low voltage supply for electronic circuits and different gadgets[12]. A power supply can by separated into a progression of obstructs, every one of which plays out a specific capacity. A DC control supply which keeps up the yield voltage consistent regardless of AC mains vacillations or load varieties is known as "Directed DC Power Supply"[13].

4.2 Motion Sensor: A motion sensor is a electronic a device that detects moving objects, particularly people. It is integrated as a component of a system that automatically performs a task a passenger of motion in an area.

4.3 Microcontroller: Any ARM 7 microcontroller having two UART ports can be used. In proposed model we have used ARM 7 LPC2148. LPC 2148 is 32/16 bit RISC microcontroller. It has two 10 bit ADC with 14 channels. It also has two UART port which used for GSM and GPS systems[14].

4.4 GPS (Global Positioning System): GPS stands for global positioning system. GPS is used to track the device. GPS gives a position of a device in terms of latitude longitude and altitude. GPS is used to track moving device using satellite signal. When GPS is used there is communication between GPS transceiver and GPS satellite.

4.5 GSM (Global System for Mobile Communication): GSM stands for global system for mobile communication. GSM is a cellular technology which is used for data transmission. GSM operates in-band of 900 MHZ to 1.8 GHZ. Through GSM it is possible to transmit SMS.

4.6 Raspberry pi: Raspberry pi is single board computer. Its CPU speed ranges between 700MHZ and 1.2 GHZ. It also has on board memory between 256 MB and 1GB Ram. This is used at receiver to display values and position in terms of latitude and longitude.

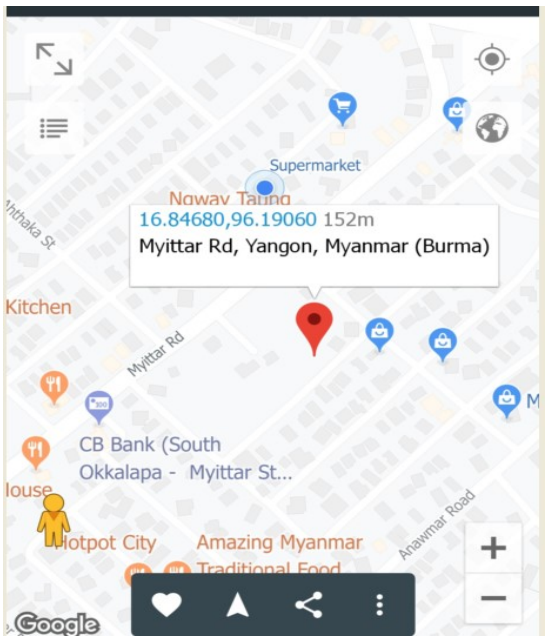
4.7 LCD (Liquid Crystal Display): LCD provides for displaying various prompts and status information of the system. It is also used display the messages while communicating with the system. The microcontroller sends the signals to LCD through its port pins.

V. WORKING OF PROTOTYPE DEVELOPED

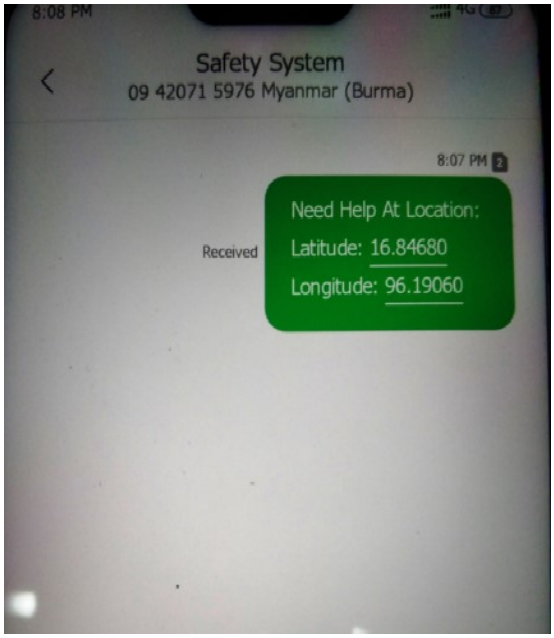
Proposed Model is wearable model. After supply power to device, sensors in this device will start scanning. This scanning is continuously sent to microcontroller. Microcontroller will compare this scanning with the threshold values given to it .This threshold values can vary from person to person. After comparing this threshold values, Microcontroller will send "Help" message accordingly. GPS is used in device to continuously track device. GSM attached to Microcontroller will send message to contacts stored in SIM of the device. Using IoT technology we can continuously monitor changes in sensors values. Position of device can also be track continuously. At the receiver side device like laptop, mobile phone, raspberry pi etc., can be used to see sensor values and position. The device at receiver side should be connected to internet in order to receive data from transmitter.

5.1 Testing of Proposed Model

In this proposed system, the controlling device of the system is the microcontroller. Sensors are fed as input to the microcontroller. Microcontroller process this data and transmit message over Wi-Fi to the IoT. A strong communication network is necessary for tracing the location of passengers and reports of tracking. To show the passenger location, Google map system is used. An appropriate geographical location is specified on the basic of the available coordinates this will help family members and police to trace the location of passengers. The following figures 3(a) and 3(b) are the sample GPS location on map and sample sms.



(a)



(b)

Figure 3(a): Show sample GPS location on map

Figure 3(b): Show the sample message containing location of the coordinates

VI. CONCLUSION

The proposed system is to ensure the security of the passenger pilgrim in the society by providing automatic sensing of threats and send the "HELP&POSITION" to the relatives and the Police Station using Internet of Things for any passenger along with the travel time. It is expected that many more light-weight, high-performance wearable devices will be available for monitoring a wide range of activities.

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