ABHAYA SVASTHA: HEALTH MONITORING AND SAFETY APP

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Abstract: In recent years, a number of tragic incidents have occurred. India has reported more than 80 cases per day in 2019, according to the National Crime Records Bureau (NCRB). In 2019, a total of 51,56,172 total crimes were registered, including 32,25,701 Indian Penal Code (IPC) crimes and 19,30,471 Special & Local Laws (SLL) crimes. In comparison to the previous year, the number of confirmed cases increased across 1.6 percent in 2019. According to the NCRB survey, these cases have risen by 44 percent in the last ten years. Even though life expectancy is higher, people face a variety of health problems. According to the World Health Organization, more than 5 million people die each year as a result of diabetes, cancer, stroke, heart, and lung diseases. The outbreak of the Coronavirus (COVID-19) has caused widespread concern among the people around the world. As of May 6, 2021, India had registered more than 21 million cases of COVID-19. Since March 2, 2020, the country has been registering new incidents. The aim of this paper is to present an Android application for everyone's safety and health. It detects the victim's location via Global Positioning System (GPS) and sends a message along with the location Uniform Resource Locator (URL) to the registered contacts every 5 minutes to assist the victim in risky circumstances and safely rescue them. And regular health monitoring via health monitoring chatbot and heart rate monitoring to keep a close eye on things. It advises users about possible precautionary measures they should take. It also gives them advice on medical care and what to do if they are in a critical situation.

Index Terms - **Global Positioning System (GPS), Heartbeat Monitoring, Health Monitor Chatbot, Uniform Resource Locator (URL).**

I. INTRODUCTION

Violence and crime rates are rapidly rising all over the world. Problems may arise from any source while going to the supermarket, walking down the street after work, or for any number of other reasons that people go alone. Another consideration is people dying for no apparent cause while on excursions, industrial or school trips organized by companies and organizations, as well as abduction for the purpose of extracting a ransom from the parents. The social process and mechanisms are the root causes of criminal behavior. People commit crimes because they lack a firm sense of right and wrong, and because of new opportunities and expanding desires, which serve as strong motivators for committing crimes.

In 2019, 51,56,172 total crimes were registered, including 32,25,701 crimes under the Indian Penal Code (IPC) and 19,30,471 crimes under Special and Local Laws (SLL). The number of reported cases increased in 2019 compared to the previous year. From 383.5 in 2018 to 385.5 in 2019, the crime rate per lakh population has risen slightly. During the year 2019, 4,05,861 cases of crime against women were recorded, representing a rise of 7.3 percent over the previous year. A total of 1,48,185 cases of violence against children were recorded in 2019, representing a 4.5 percent rise over the previous year. Over the last few years, there has been a 13.7 percent rise in the number of lawsuits registered for crimes against senior citizens, totaling 27,696 cases [1].

Over the last few years, India has made tremendous progress Life expectancy has risen to 67 years, and child and mortality rates, as well as disease occurrence rates, are decreasing. In India, diseases such as polio, guinea, yaws, and tetanus have all been eradicated. Despite this development, communicable diseases are projected to remain a major public health issue, posing a significant threat to national and international health security [2]. Furthermore, non-communicable diseases (NCDs) are still the country's leading cause of death, accounting for 60% of all deaths [3,4]. Nearly 80% of all deaths were caused by diseases such as heart disease, cancer, diabetes, and chronic pulmonary diseases. Lack of knowledge, access to healthcare centers, human resource crises in healthcare centers, and inability to pay medical costs are the major obstacles that contribute to health risks.

Smart phone use has exploded in today's world, allowing them to be more effectively used for self-defense and health tracking. According to statistics, 52 percent of smartphone users collect health-related information from people of various ages on their phones, and doctors agree that mobile apps can improve patient health. In this paper, an Android app that ensures people's protection (male, female and third gender). It lowers the risk and assists the user in distress by locating the person in danger and providing a health-monitoring service that offers an end-to-end solution, that is, it provides pulse count using android, as well as potential precautions and recommendations to be taken at a later point.

II. LITERATURE SURVEY

Using a various tools and technologies, the authors have proposed safety and health monitoring applications for android and other platform users. They have suggested a various approach to aid in women's safety and health surveillance.

The authors stressed two points: first, self-defense, and second, sending the victim's location to the registered numbers. It makes use of Raspberry Pi, Arduino Uno, GPS, Global System for Mobile Communications (GSM), and other components. The Raspberry Pi has been used to stream real-time photos and videos. In addition, Arduino Uno is equipped with GPS, GSM, and an electric teaser, allowing for real-time location and self-defense of Victim. It sends the information about the Victim's location to the fixation number, just like the previous device [5].

This paper proposes an application for women in crisis using a voice-based contact list, which allows them to use the application and make calls when necessary. For this purpose, the client must remember having enrolled the key. It's known as the telephone's material telling administration segment, and it employs institutionalized interchanges conventions. It allows users to send short text messages between mobile phones. Voice acknowledgement is the fundamental procedure of this application [6].

In this paper, the hardware design of the watch for health monitoring, requires three sensors: tri-axial accelerometer, Photoplethysmography (PPG) related sensor HY2615 and Electrocardiograph (ECG) related sensor BMD101. The PPG related sensor can provide information regarding heart rate, and blood pressure of the users. And the ECG related sensor provides cardio data. The communication with other device is implemented using Bluetooth Low Energy (BLE). Besides, the Microprocessor Unit (MPU) collects these sensors' data and calculates the basic vital sign, such as heart beats, steps etc. and transmits these sensors' data and the calculated values to the smartphone with virtual Universal asynchronous receiver-transmitter (UART) service of BLE [7].

The author proposed, the mixing of Processor/Mobile generated data and Real-life Atmosphere is known as Augmented Reality(AR). Augmented Reality synchronizes the computer-generated universe with the real world. Simulated objects are placed into the real picture using graphical aspects and interrelated image processing techniques, allowing the user to have a realistic involvement. AR selects the real world images and incorporates simulated objects to it, thus the image looks like a real image [8].

In this paper, the Personal Digital Assistant (PDA) is used to store, process, and analyze ECG data locally, and it was suggested that in future studies, the computer be used for data transmission as well. For offline recording and local analysis of ECG, a program was built on the Windows Mobile platform. Heart rate, ECG, and SpO2 were all monitored remotely using a PDA [9].

In this paper, design data flow and system flow would begin by the registration of new users in order to log in and complete their personal information. Then, the health and behavioral assessment process would analyze users' information and screen the patient status after the registration. After that, the program would calculate the BMI and ask for the diet goal. Moreover, the health conditions and probability for obese would be determined. The decision support system (DSS) would show the appropriate health education lists and the courses for the users as suggested from the system. The food menus for users to calculate nutrient ingredient intake in the daily life would be provided [10].

Author proposed an app that has a number of features, including a spy camera and real-time GPS tracking. The user's emergency contacts will monitor him or her at all times. When the user witnesses any misbehaving behavior, the user should press the Panic button, which uses the GPS and GSM systems to obtain precise location coordinates and send SMS to emergency contacts. The camera's video recorder can be turned on to catch what's going on. Toll-free numbers are also available for calling to different helpline numbers for urgent assistance. For emergency assistance, first-aid information is also given [11].

The author made use of the Rapid Application Development (RAD) model proposed by James Martin was used to build an application. The model employs iterative, evolutionary prototyping, which was well adapted to the creation circumstances. It aims to protect women by allowing them to call the police in an emergency in a fast and discreet manner. The application is broken down into three sections: emergency contact input, alarm activation, and transmission of an emergency message and call to the local police [12].

III. PROPOSED SYSTEM

To develop an application for android users that will track their location of the user, monitoring of health on daily basis and provide daily news updates. This app uses GPS to locate the person in distress, a camera to track the heartbeat, and a chatbot to provide safety advice based on the information given by the user. Fig 1 shows the architecture diagram of the entire application. The application can be broken down into three sections:

SAFETY

The Global Positioning System (GPS) should be activated in users' Android devices to ensure their protection. The victim's current location can be monitored using a 3G/4G data link. For continuous location monitoring, a Short Message Service (SMS) will be sent from the user's phone to the registered contact every 5 minutes, along with the location URL. It also allows users to locate local hospitals and police stations within a 5-kilometer radius of where they are situated in the event of an emergency. It includes safety tips for users when they are in an unfamiliar environment, as well as a few self-defense videos for their safety. Any person can use the online complaint registration to file abuse-related complaints. This module assists users who are unable to file a report at a police station.
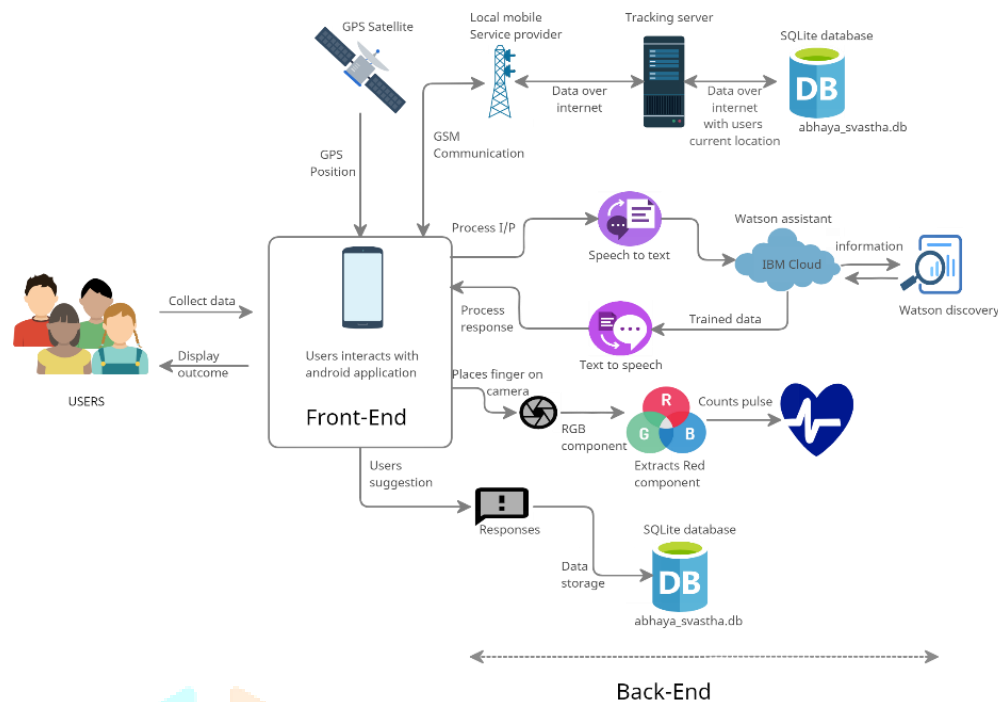
Fig 1: Architecture diagram of the proposed system

HEALTH MONITORING

Healthbot, which was developed using IBM cloud, is used to keep track of the user's health. The user's conversation will be driven by Watson Assistant. It determines the symptoms based on the information given by the users, then provides the appropriate precautions and advice. It involves both Speech-to-Text and Text-to-Speech conversion. It accepts input in the form of audio and text. It does not advise users to take any medications or tablets. Furthermore, by putting a finger on the camera, the user can track his or her pulse. It counts the pulse by extracting the red component from the RGB component of the finger placed on the camera. The obtained result can be sent to physicians, relatives, and friends as a message or by mail. It also contains a medicine reminder, as everybody forgets to take their drugs at some point. Based on the timer set by the user, a notification will be sent every few hours as a reminder.

NEWS FEED

The world's technology is constantly advancing. Users in today's fast-paced, information-driven environment must keep up with all events and news. This module gives users access to the most recent news from around the world. To keep users up to date in various fields, the news is divided into categories such as World, Science, Sports, Environment, Society, Fashion, Business, and Culture.

IV. EVALUATION RESULTS AND DISCUSSION

The modules have been implemented and evaluated. Along with the screenshots, the findings are addressed. The first move is to enter the contact information for relatives or acquaintances. These particulars will be saved in a database. Fig 2 shows the contacts that was registered by the user. The user can select which contact should receive the call for help message and, Fig 4 shows the current location of the victim.
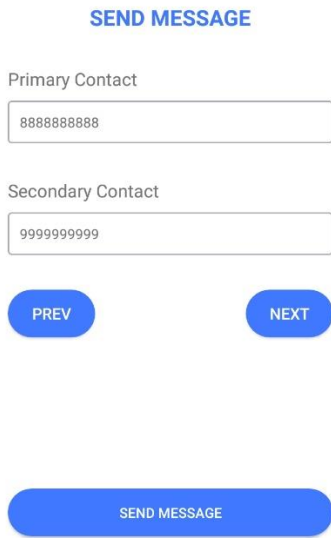
Fig 2: Registered Contacts

Fig 3: Victim's current location

The message will be sent to the selected contact numbers with the location URL when the user clicks the send message button. Fig 4 depicts the message received by the registered contact number. Fig 5 shows the tracking of victim's locations through Google Maps.
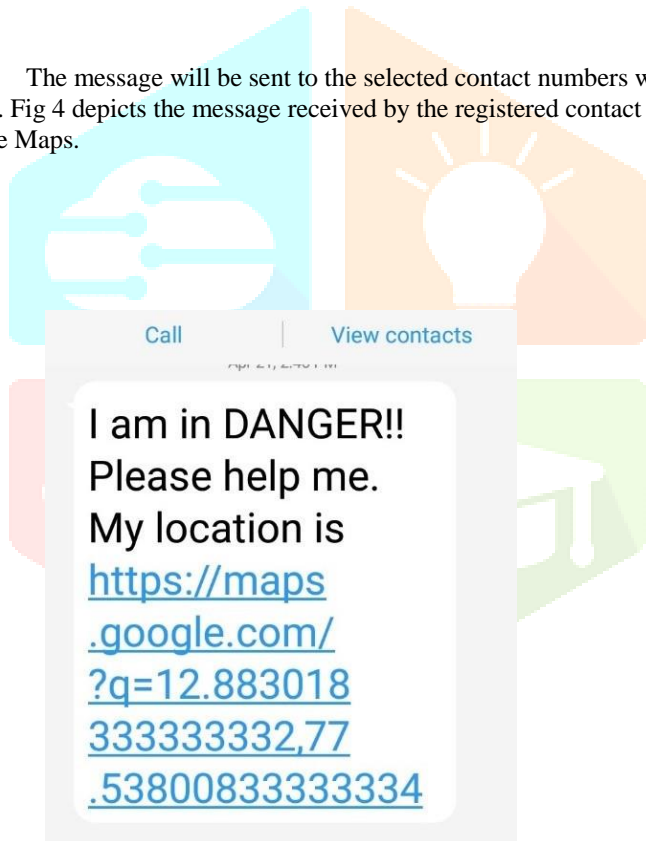

Fig 4: Message received by
the registered contacts

Fig 5: Tracking victim's location

Fig 6 depicts the health monitoring chatbot, which recommends precautionary steps based on the user's input. Placing the finger on the camera as well as the flashlight allows the pulse monitoring. It works best in a darkened room with consistent pressure on the camera, as shown in Fig 7.
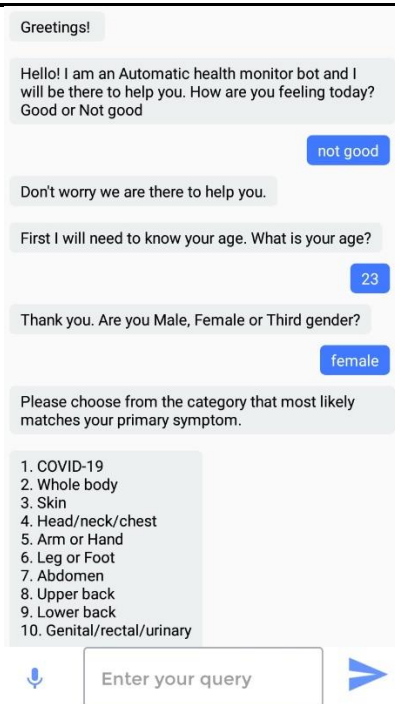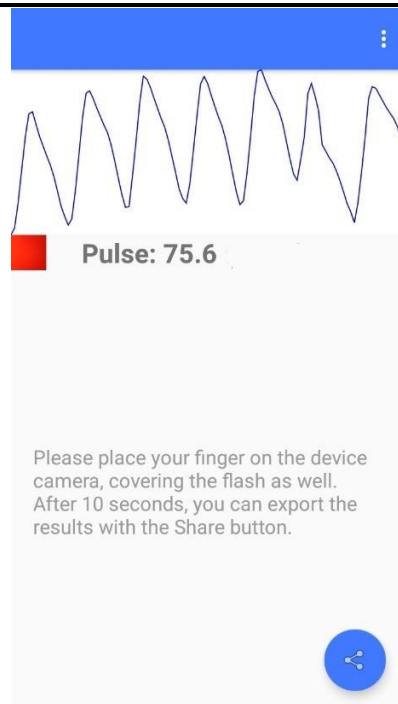
Fig 6: Pulse count   Fig 7: Health monitoring bot

V. CONCLUSION

As the world faces the threat of COVID-19, this paper proposes an Android framework to assist users in avoiding dangerous situations and tracking their health on a regular basis. The proposed system would assist the user regardless of gender. This application assists in the victim's continuous monitoring by sending the victim's location URL to the registered contacts. It also offers regular monitoring based on the user's specified symptoms, as well as COVID-19 screening. It also allows users to view news from various countries, keeping them up to date. Further, it can also be made for the iOS and Windows smartphone platforms. It can also be integrated with a law enforcement database for online complaint filing, which contains all of the people's reported grievances so that they can be resolved. As a result, this technology can not only save users' lives in dangerous situations, but also help them stay healthy.

REFERENCES

[1] "Crime in India 2019", available online at: https://ncrb.gov.in

[2] Dikid T, Jain SK, Sharma A, Kumar A, Narain JP, "Emerging and re-emerging infections in India: An overview", Indian Journal of Medical Research, 2013.

[3] Narain JP, Dikid T, Kumar R, "Noncommunicable diseases: Health burden, economic impact and strategic priorities.", Text Book of Chronic Noncommunicable Diseases: The Health Challenge of 21, 2015.

[4] Jain DC, Rana R, Prasad J, "Noncommunicable diseases in India: The burden, priorities and future plans", Text Book of Chronic Noncommunicable Diseases: The Health Challenge of 21st Century. Delhi: Jaypee Brothers Medical Publishers; 2015.

[5] A. Z. M. Tahmidul Kabir, A. M. Mizan and T. Tasneem, "Safety Solution for Women Using Smart Band and CWS App", 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), 2020.

[6] V. Mishra, N. Shivankar, S. Gadpayle, S. Shinde, M. A. Khan and S. Zunke, "Women's Safety System by Voice Recognition", IEEE International Students' Conference on Electrical,Electronics and Computer Science (SCEECS), 2020.

[7] Y. Gu, J. Shen and Y. Chen, "Poster Abstract: Know You Better: a Smart Watch Based Health Monitoring System", IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2019.

[8] P. Chaudhari, R. Kamte, K. Kunder, A. Jose and S. Machado, "'Street Smart: Safe Street App for Women Using Augmented Reality", Fourth International Conference on Computing Communication Control and Automation (ICCUBEA), 2018.

[9] E. O. Tartan and C. Ciflikli, "An Android Application for Geolocation Based Health Monitoring, Consultancy and Alarm System", IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC), 2018.

[10] K. Boonphan, P. Soontornpipit, C. Viwatwongkasam, J. Sillabutra, P. Sativipawee and P. Pramnoi, "Health Monitoring Application of Obese Children in Perspective for Guardian in Thailand", International Electrical Engineering Congress (iEECON), 2018.

[11] D. S. Prashanth, G. Patel and B. Bharathi, "Research and development of a mobile based women safety application with real-time database and data-stream network", International Conference on Circuit Power and Computing Technologies (ICCPCT), 2017.

[12] D. Chand, S. Nayak, K. S. Bhat, S. Parikh, Y. Singh and A. A. Kamath, "A mobile application for Women's Safety: WoSApp", TENCON 2015 - 2015 IEEE Region 10 Conference, 2015.