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IOT BASED HUMAN RESCUE SYSTEM USING MACHINE LEARNING

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ABSTRACT

The proposed system is a wearable edge computing device. The embedded device is capable of locating its user's current location, alerting the victims' family such that locating the crime area becomes easy and fast. The user with the device on hand can alert his/her relatives and even police in single press of a button. The data collected can be used by nearest Police Station and make analysis to increase the security and patrolling in such areas. This main aim is to discourage criminals and the work is targeted to prevent if not reduce social crimes

Keywords*-Serviceorientedsystem, GPS, rescuers, Admin, Sufferers, Interaction between clients andadmin.*

I. INTRODUCTION

The safety and security of an individual has become an issue of major concern across the country. Cities like Bangalore,Delhi and Mumbai have timings of work that extent to late hours causing people to travel during odd times of the day. This leaves them to be vulnerable to robbery, kidnapping, molestation and other life threatening situations. Our main objective is to reduce such nuisances and offences from occurring if not completely curb it.

Our idea is to implement an edge computing device as a wearable device on the user. Be it in the form of a watch or a pendant or even in their clothing. This variation in it's application keeps the attacker in ambiguity whether the uses posses any such device or not.

The device is capable of reading the user's GPS coordinates after every few (predetermined) number of minutes. This is then stored on the device for when required. The device is triggered upon pressing of a tactile button. This button triggers a response in the device which then reads the previously stored GPS coordinates and inserts it into a Google Maps URL and sends it to the user's selected phone numbers. This is done with the help of a GSM module which has the capability of sending a SMS with the victim's last known GPS location as well as navigation from the user's current position to the closest police station.

The GPS coordinates of the victims location is tagged and then can be further provided to the respective city's police department to increase security in that area. The timings of these events occuring is also recorded and additional measures can be taken to increase police security by patrolling that area at that time.

AI. LITERATURE SURVEY

Use of Smart Sensors have been made to receive the input which is cost ineffective at the same time resource hungry. There is a place where we can leverage the data obtained from sensors like GPS,GSM and GPRS to obtain meaningful insights[1].

The trains are tracked as they move along their tracks with the help of a GPS module and the GSM module sends the location of the train to a central base station. The GSM module is used to pass messages among the trains to maintain a medium of communication. Haversine formula is used to determine the closest distance between the trains. The inaccuracy in the GPS reading is the major drawback[4]

Soldiers in modern warfare can only be as efficient as the information provided for them. The devices carried by the soldiers need to be portable, lightweight and discrete. The soldiers location(GPS sensor) and health(Body vitals sensor) is tracked constantly by the central command room. The soldier can ask for directions at any given point of time. The GSM module makes the communication possible.The soldiers can discuss their war strategies with the base station and take further instructions.[6]

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A smart device that provide security that the person out there feel safe . By implementing GPS,GSM/GPRS module to track the person , that gets triggered as soon as victim heart beat rate increases to the point by secretion of epinephrine hormone from hpa axis[3]

BI. EXISTING SYSTEM

The existing system has either IoT module without any efficient use of available data or just use of sensors for coordinates transmission. There is lack of pattern finding using the data. Also the components are resource hungry and consumes a lot of power .

IV. PROPOSED SYSTEM

We propose a system that consists of two independent module. Firstly it comprises of IoT setup which helps in communicating the coordinates from the crime location to the nearby police station. Secondly with the help of immense data collected through this system, we deploy a Machine Learning model to predict the crime prone area such that we can increase the security level in such places to lower the foul activities as in Fig 4.

A. Location Communication

In any case of misconduct, the victim presses the button provided with setup. With this trigger, the GPS tracks the crime location which can then be shared through GSM module with anyone nearby that could be reliable.

IoT Setup comprising GSM GPS and GPRS ensures

“ Data Communication between victims and the victims’ relatives and even Security officials. “

B. GPS Prediction

Here we are leveraging the datasets collected through the sensors. Data consists of certain patterns which can be extracted using Unsupervised machine learning algorithms like K Means Clustering.

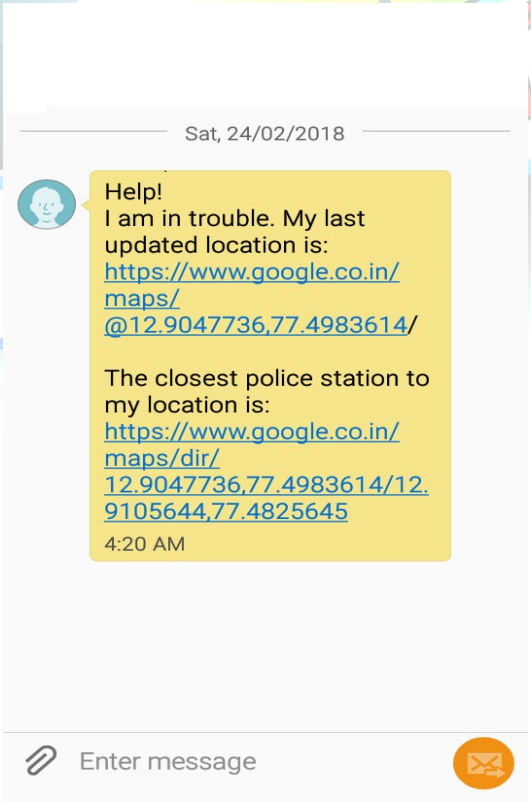

Fig 4 Real time Coordinates Transmission

V. SYSTEM IMPLEMENTATION

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Fig.2 shows the way we implement our concept that make use of arduino uno board to control the GPS/GSM module where GPS module extract the GPS coordinates from satellite and forward it to desired person through the use of sim enabled GPRS system.

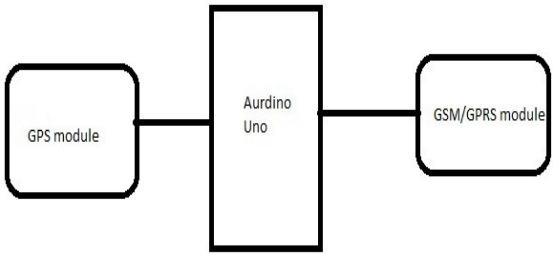

Fig.2 Block representation

The user powers up the device and the GPS module starts to store the coordinates after every few minutes. The user clicks the tactile button upon the occurrence of an event, the button triggers the following series of events in the device:

- *Fetching of GPS coordinates*: The tactile buttons send the request to the device asking for the details on the current GPS location. These values in the form of latitude and longitude are then sent to the GSM/GPRS module.

- *Data collection:* The current GPS coordinates are read from the GPS module and then inserted into a SMS consisting of a Google Maps URL which shows the victim's last updated GPS location along with the navigation the the closest police station from the victim's location.
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- *Rescue Mechanism:* The SMS that was composed in the previous event is then sent to a series of receivers which consists of the predetermined contacts of the user. The SMS is also sent to the respective police department so that immediate response can be sent to the victim's location. The SMS is also sent to the victim so that the victim can navigate to the closest police station.

- *Clustering of data based of GPS coordinates :* The GPS coordinates periodically collected is then further processed. The data collected is clustered to find the pattern hidden in data. The optimal number of clusters are found using Elbow Method as in Fig 3.

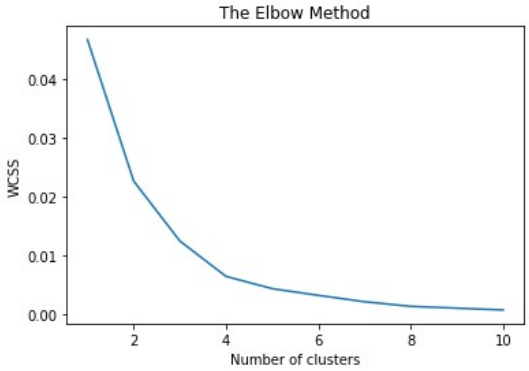

Fig 3 Elbow Method

VI. CONCLUSION

Our main objective is to ensure safety irrespective of the time or location of the user. The periodic location update keeps the users last known location updates whereas the clustering algorithm provides us with information about the locality. This information can be collaborated with the existing criminal database of that locality to decide if the crime in that area has increased or decreased over time. This gives us a statistical analysis on that region which can be used toprocess through K-Means thereby giving us a further refined information on that area.

VII. FUTURE ENHANCEMENT

In future the proposed model can be implemented as a wearable device for edge computing. Since every people leaves some pattern of doing activities everyday so in case of any irregularities deep learning algorithm can be used to check the irregular activities form users daily routine. Different algorithms can be used to predict the next location where the victim might be taken to.

REFERENCE

[1]"Smart Security Solution for Women based onInternet Of Things(IOT)"(2016) G C Harikiran, Karthik Menasinkai, Suhas Shirol.
[2]"Prediction of GPS User Position using LM and CGF Algorithms"(2016). Sameeha Fahmeen, Masroorah, Syed Raziuddin,*Quddusa Sultana
[3]"A Smart Watch For Women Security Based on IoT Concept 'WATCH ME'"(2017)A. Helen,M. Fathima Fathila, R. Rijwana,Kalaiselvi .V.K.G
[4]"GPS and GSM based Rail Signaling and Tracking System"(2017)Muddana Tarun, Vinay Kumar, Sudhir Kumar, Mukunda Ujwal Jajoo, Saif UR Rahman and Joydeep Sengupta
[5]"A Potential approach for mobility prediction using GPS data"(2017)Binh T. Nguyen, Nhan V. Nguyen, Nam T. Nguyen and My Huynh T. Tran] University of Vietnam
[6]"GPS Based Advance Soldier Tracking with Emergency Message and Communication System"(2014). Mr. Palve Pramod
[7]"A Potential Approach For Mobility Prediction Using GPS Data"(2017) Binh T. Nguyen, Nhan V. Nguyen, Nan T. Nguyen and Huynh T. Tran

[8]"Analysing and Predicting Driver's Next Location"(2016) Sneha Gandhi
[9]"Smart Girl Security System"(2014). Prof .Basavaraj Chougula, Archana Naik, Monika Monu, Priya Patil and PriyankaDas
[10]"An Innovative Approach for Women andChildren's Security Based Location Tracking System"(2016)Dr.Velayutham.R, Sabari.M, Sorna Rajeswari.M