Protection of Fishermen lives during Border Crossing in Ocean

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Abstract: The application can be widely used by people in the border to find the appropriate path to reach the destination. The notification will be sent to the border security forces which act as the server to all other devices that are operated by people in ships. The application will notify the information of where the devices are being located and intimate them about the issues that occur due to opponent forces in ships to server. This can act as an incident management application to avoid conflicts at varying situations. This is processed mainly for Tamil fishermen's who are employed in the borders. The automatic alarming system is going to be provided along with this device which alerts in case any sort of issues. This is devised in such a way that the application can be easily been utilized by all the people in the surroundings. The application operates based on device tracking. This provides ease to operate even for illiterate people.

Keywords: Android application;GPS tracker,Google Map

I. Introduction

The whole system allows the user's mobility to be tracked using a mobile phone which is equipped with an internal GPS system. A mobile application has been developed and deployed on an android phone whose responsibility is to track the GPS location and send it to the remote location. As a unique identifier we have used mobile's International Mobile Equipment Identity (IMEI) number which will be sent along with the latitude and longitude coordinates. The person's position is further saved in Mobile Object Database (MOD) for live tracking which is created in MySQL. From MOD the data will be first transferred into an XML file which will be fed as an input to a web application which is developed with PHP and JSON server based Google Map API integrated into which will be responsible for showing the current location of the mobile phone.

Android is a modern mobile platform that is designed to be truly open source. Android applications can use advanced level of hardware and software, as well as local and server data, exposed through the platform to bring innovation and value to consumers. Android platform must have security mechanism to ensure security of user data, information, application and network. Open source platform needs strong and rigorous security architecture to provide security. Android is designed with multi-layered security that provides flexibleness needed for an open platform, whereas providing protection for all users of the platform designed to a software stack, android includes an operating system, middleware and core application as a complete.

Android powers hundreds of millions of mobile devices in more than 190 countries around the world. Android architecture is designed with keep ease of development ability for developers. Security controls have designed to minimize the load on developers. Developers have to simply work on versatile security controls. Developers are not familiar with securities that apply by defaults on application. Android is also designed with focused on user's perspective. Users can view how applications work, and manage those applications.

Most of the applications developed so far use a handheld GPS receiver de vice for tracking the location, but we have reduced the cost of device by using the mobile phone which has an inbuilt GPS receiver. The new application works as an automatic incident management application that intimates the user if border crossing occurs.
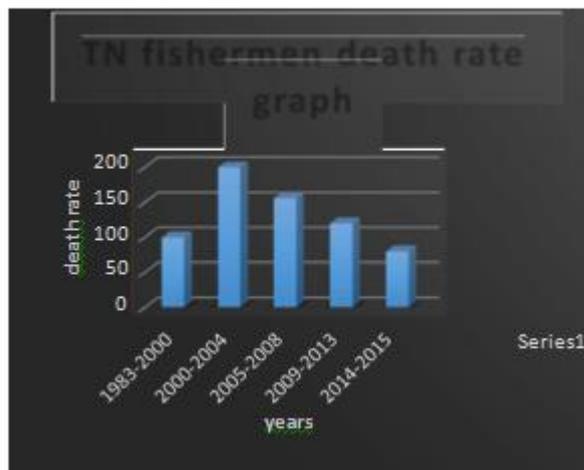
Fig 1: Fishermen death rate graph

The application uses the Global Positioning System (GPS) to provide the latitude and longitude information and its being used for tracking devices. The system entirely uses the device based tracking which avoids failure in the system due to network problems.

II. Literature Review

Literatures on the prior research work done by accredited scholars in the Ubiquitous Computing domain are reviewed. Challenges and solutions proposed are in specific to context aware location based service are presented here.

J. E.Marca et al[6] has put forth the major challenges faced in designing a ubiquitous application. Android operating system is suggested as a best tool for designing context aware applications. Towards the end, author had featured an analysis report on performance of various mobile devices for a location aware computing.

Asim S,Daniel et al in their manuscript [10] have described on the anatomy of Android architecture. Components of Android platform such as Activity, Services, Content Providers and Broadcast Receivers were introduced thus providing a better insight of application development.

Ioan Lita et al[9] have outlined the significance of location based services. Technological development in an exponential manner have paved a way to access hardware directly by customized application interface such as GPS, web service, programming cameras were elucidated. Ubiquitous Computing is an emerging technology and has lot of challenges in design, modelling and user interaction which are identified and implemented in this organizer application .

Several techniques and methods have been carried out effectively to monitor employee attendance. Lawson et al. [3] proposed a cost effective computer based embedded attendance management system by which authority electrically monitors the attendance for verification using an improvised electronic card. These cards contain necessary information of an individual. These are inserted in an electronic machine which will record the time and other information to a server system. Password based authentication and verification of attendance monitoring system of any individuals has also been carried out in the literature. A system that applies user id and password of a person for authentication was designed and implemented by Cheng et al. [4]. However, an issue with these electronic cards or password based system allows for imposture since cards or passwords can be shared or someone can ask other person to insert his/her card or password. This problem can be addressed by using biometric recognition system which includes finger print or iris recognition.

A system was proposed and implemented by authors

in [5] fingerprints to identify and calculate the attendance and generate the reports after a fixed time duration. Individuals simply put their fingerprints on the fingerprint reader which scans the finger print and verifies that person.

Bandra.U, et al [11] solved the problem by proposing a wireless attendance management system where iris of an individual is used for authentication. It is also like fingerprint where no two people can have the same eyes. A scanner will scan the eyes and automatically log the person in. Unlike fingerprint, iris is more preserved from the external environment. But both the fingerprint and iris recognition based approach needs some extra devices or scanner which can be connected to the server computation system.

III. Border Cross Alert System in Android

The application works as an automatic incident management application that intimates the user if border crossing occurs. The application that is being made is installed in the mobile phones and the device/mobile phone is tracked by using its IMEI number. The application also records the issues that recorded information are sent to the server, which is monitored by the security force in the border ranges and also stores them in all devices coming under that range.

The data/information is transferred from web to mobile and vice versa via a windows server. This is devised to use even by very normal people at their affordable rates.
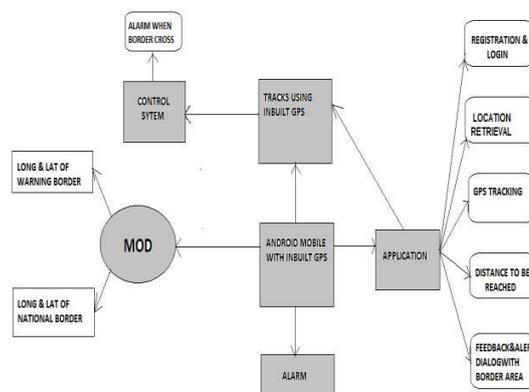

Fig 2: An imaginary diagram of proposed system

Fig 3: Proposed System Architecture

A. Working of Mobile GPS

Cell phones with GPS receivers communicate with units from among the 30 global positioning satellites in the GPS system. The built-in receiver trilaterates your position using data from at least three GPS satellites and the receiver. GPS can determine your location by performing a calculation based on the intersection point of overlapping spheres determined by the satellites and your phone's GPS receiver. In simple terms, trilateration uses the distance between the satellites and the receiver to create overlapping "spheres" that intersect in a circle. The intersection is your location on the ground.[10]
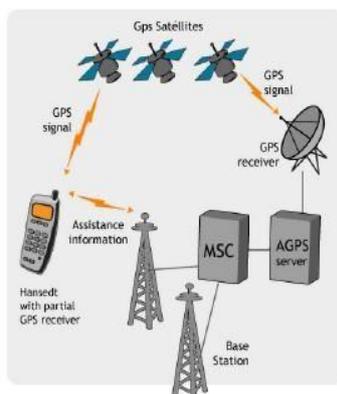

Fig 4: Mobile GPS system

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B. Registration & Login:
This allows the new user to register and install the application to the device. This helps to monitor the actions that are happening in the location that could be traced by the user. This ensures the security credentials so that issues that occur can be easily resolved. The registration can also be done by means of thumb print/voice recognition also which is highly useful for illiterate people. This can be directly used by the user by just placing their thumb print in that slot.

HOME PAGE

LOGIN
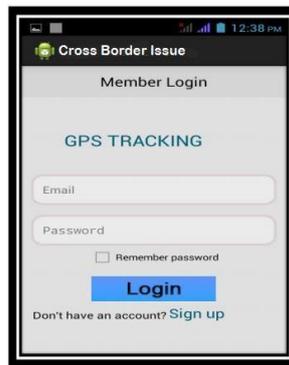
C. Location retrieval:
The place to where we should reach can be mapped and the direction to the destination is also being provided to the people using tithe google map API provides the user with the location they are currently located. This option allows to find the appropriate path to reach the destination location by using the button to track the resultant path by providing its current latitude and longitude values of the current location it's residing in the world.

DATABASE RETREIVAL


D. GPS Tracking:
This is used to track the location of where the mobile devices is being currently located. This provides a secure travel to all people in the ships. This will also provide periodical updates to the server about the devices that are used in that range. The GPS present in the device provides information and reports to the

server accordingly. The system directs the user with the appropriate information and reports to all users who are using that device at that instant of time.

GOOGLE MAP
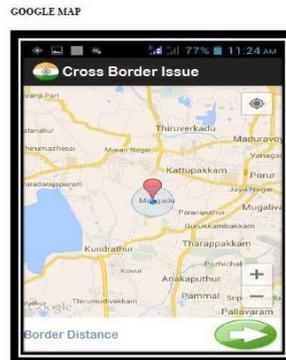
E. Distance to be reached:

The tracker provides the server with the remaining distance the registered users have to reach every minute and report to the server. This provides them with the complete information about all the GPS users currently in that location. When the source and the destination locations are specified the path or route to reach the destination will be provided along with the distance span to be reached by the user who is currently in travel.

REPORT
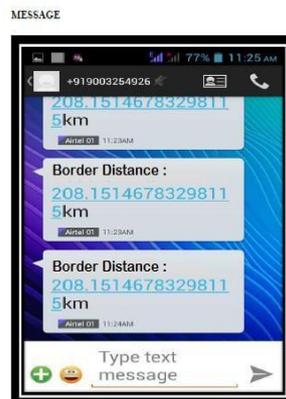
MESSAGE

F. Feedback and Alert dialog with border area:

This provides information about the current situation of the system and the reason to which the problem has been created. This enables the server in notifying the information as a message every minute and also to the GPS mobiles when they are in case of any discrepencies.The tracking here totally depends on the device and not on the signal/network that is currently used.

The server is being reported with information about the devices current location in the system. This alarm will start when any unexpected attack by forces is reported. This will be very much useful when their device is being switched off and in case of lack of signal coverage in the mid region of ships in which they are travelling inside. The alarm is setup such that it starts ringing in case any sort of issues that may occur in their surroundings.

Few advantages of our proposed work:
- x   Android mobile phone is affordable to all.
- x   Costs less when compared to kit.
- x   Ease of use even by illiterate people.
- x   No overhead of device maintenance.

IV. Conclusion And Future Enhancement

The android application which we have developed will provide an effective solution and prevent fishermen's from crossing other country border. The application can save the lives of many fishermen.
In future this idea can be enhanced by using smart watches and satellite phones.

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