A Review of GPS Based Applications

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Abstract – Here in this paper we are giving information of all the GPS as far as our knowledge concerned we have tried to highlight the basic functioning of GPS which could be used in many other number of application which may be the need of the hour. We have also purposed here an application which is based on GPS functioning.

Index Terms – GPS, GSM, Android application, Bayesian network.

1. INTRODUCTION

GPS (Global Positioning System) is a satellite based navigation system made of number of satellites, 24 to be precise. GPS uninterruptedly works in any condition whether it is raining or anything. GPS was first used by U.S army where they put satellite into orbit for military purposes, which was later made available to civilians free of cost without any charges.

2. HOW IT WORKS

Each GPS satellite goes around earth twice a day transmitting a unique signal and parameters related to orbit that allow the GPS devices to decode and unveil the exact location of the satellite. GPS receiver receives this information and compute user's exact position. This information can be displayed on any device to find a way to somewhere or find someone's location.

- Various other parameters can also be calculated such as
- Speed
- Track
- Distance to destination
- A GPS signal contains following information:

2.1 Pseudorandom code is an I.D. code that identifies 0000000000which satellite is transmitting information.

2.2 Ephemeris data is needed to determine a satellite's position and gives important information about the health of a satellite, current date and time.

2.3 Almanac data tells the GPS receiver where each GPS satellite should be at any time throughout the day and shows the orbital information for that satellite and every other satellite in the system.

3. RELATED WORK

3.1 The smart helmet is quite easy and efficient. In this technique the helmet if strikes the ground. Now Alcohol sensor evaluate the quantity of the alcohol present in the encircled environment. If any drunken person passed then the sensor recognized the senses and send them to microcontroller via ADC. Now microcontroller squeeze out GPS data using GPS components. Now set the timer for the 10 minutes. If individual is not adept to ride the bike upto 10 minutes then automatically a message is sends to ambulance and his parents. The aim of this project is to perceive the alcohol drunken bikers.

3.1.1 Microcontroller board:-

A small computer on a basic chip. It contains a peripheral devices, CPU's and memory. These are embedded in electronic devices**.**

3.1.2 GSM (Global system for mobile communication):-

Send for cellular services like voice and data transfer. Here we are using this technique for message transmission.

3.1.3 Accelerometer:-

It is used to measure the static and dynamic acceleration.

3.1.4 Declaration of object in all three axis.

3.1.5 Power supply:-

Power supply depends upon the requirement. That what amount of power is required to run the system. Here +5 volt power is required for this project**.**

- ADC**:-**It converts the Analog signals to Digital signals**.**

3.2 Singhal, Manav, and Anupam Shukla purposed Location based devices have relevance to a group of application that utilize the knowledge of mobile location in order to serve the mobile clients personalized services in accordance with their geographical location**.**

Some LBS are stated below:

3.2.1 Helping an individual to receive the geographical position of the stolen mobile.

3.2.2 To advise the current traffic condition.

3.2.3 To provide information related to Routing.

3.2.4 To recognize the location of the mobile phone, LBS must use Real Time Positioning method. The correctness of the methodology can be determined by approach that is used. Locations can be represented in text format including street, city, pin code, country etc.

3.2.5 Satellites play major role to detect the mobile location. A batch of 24 satellites circumnavigating the earth is used by GPS.GPS discovers the mobile user location by evaluating the interval in the signal emitting time, from various satellites, take to arrive at receiver's side. So it is necessary that the cell phone must have a built-in Global Positioning System.

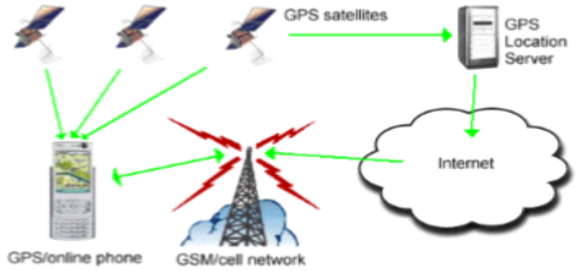

Figure 1. Architecture of A-GPS System

Arguments	Description
Location	The latitude/longitude about which place information is to be found.
Radius	Distance(in meters) about which to show place results.
Language	The language code, showing in which language the result must be shown, if possible.
Name	A turn to be mapped against the names of the places.
Sensor	Indicates whether or not the place request is from the device having location sensor this value is either true or false.
Key	Application's API key.

Table 1 Place Search API Arguments

Arguments	Description
Reference	A identifier that uniquely defines a place, given from a place search request.
Language	The language code, showing in which language the results should be returned.
Sensor	Defines whether or not the place details request is from the devices having a location sensor(e.g. GPS). This value is either true or false.

Table 2 Place Detail Web Service Arguments

3.3 Sposaro, Frank, Justin Danielson, and Gary Tyson purposed paper a tool has been introduced which enhance the accidentalism of dementia patients treatment using android application iwander can run a variety of android based gadgets with GPS facility. With the help of it caregivers can remotely monitor dementia patients. The application running in background gathers the data from gadget sensor(GPS).Then evaluation of the gathered data is evaluated using Bayesian network technology to state the probability that an individual is wandering. On the basis of this probability iwander takes a course of action by its own, that navigate the dementia patient to a safe tone ,send notification to caregivers & provide the current geographical position of the dementia patients.

In order to identify a dementia patient that is not in safe zone such as home/indoor location, where he is safe from any kind of wandering harms. Once the dementia patient is outside of the safe location the probability of wandering harm is obtained using Bayesian network.

Keyword:-

3.3.1 Bayesian network:-model to determine the event occurrence probability .A group of variable or group between these variables forms a Bayesian network. There are a finite number of mutually exclusive state for each variable .Variables and direct edges constitute a "Direct Acyclic Group". The variable selection is done carefully because variables directly affect the estimation of probability**.**

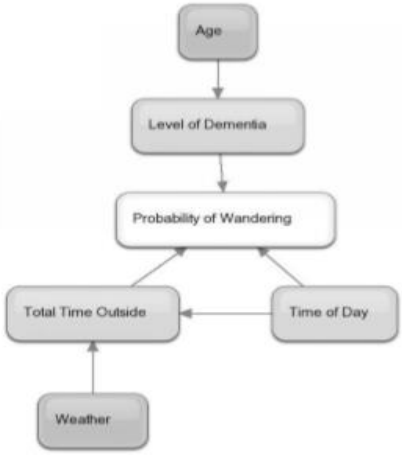

Figure 2. Bayesian Network Variable Relations Affecting Wandering Probability

3.3.2 Alert Action:-If the estimated probability indicates that the patient is likely wandering, then a course of action is taken.

A notification is prompt to send feedback, if they are okay**.** After getting the positive feedback from the patient, the alert process will resume. In case the patient does not respond, it is inferred that he is in danger. Google Map and navigation tools are used to navigate them to safe zone. If there is no progress after a period of time then an alert notification is sent to the caregivers. So the caregiver communicate with their patients and evaluate their location in order to plan an appropriate course of action to prevent them.

4. PROPOSED WORK

By using Minimum spanning tree we can apply it on various application. We are trying to give a model which will design a minimum path between sender(victim) and receiver(rescuer). We have explored a number of Minimum spanning tree which will we required in developing our GPS applications.

5. CONCLUSION

Smart Helmet will be need of the hour in the coming time. The biggest edge of this helmet is that it will be very helpful, as today's generation is more prone to alcohol consumption activities. Because of this, help provided by this technology, most of the youth as well as adult will be pushed to the safe side rather than risking their life.

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