

Navigation Alarm using Predictive user Location

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Abstract:

The main goal of the application is to develop a Predictive algorithm based application to meet the following Objectives: To notify the user when he or she reaches the destination location set by the user at the start of the travel. This application concentrates on saving battery from getting drained during travel because of GPS service running all the time. So this app uses machine learning algorithm to predict the user's current location and trigger alarm when the user nears his destination. This is a simple android app which can be used by everyone. Just install the app and its ready to use. This mobile alarm service will act as assistance for the frequent travelers to visit new places.

Keywords: Android, Predictive Algorithm, Alarm.

1. INTRODUCTION

In a kingdom like India, explorers discover difficult to discover areas, due to absence of signal sheets and bearing boards, and all through movement if individuals rest, there are possibilities to miss the goal place. In this situation, purchaser may want to set an alert for the intention area and easily rest or force or do some other work. It gives the consumer a caution whilst the client comes to method the goal location. This model makes a place primarily based alert which empower the voyagers to set an alert at anything factor it is required for that reason enhancing the nature of lifestyles. The caution can be determined inside the note bar, erased correctly and adjusted through the patron. Since we have applied Google administrations for the maps and Distance Matrix programming interface and geocoding programming interface we efficiently update the utility as google offers easy to apply refreshes. The utility can without lots of a stretch be refreshed through Google play store or via the apk report available on line. Due to prescient technique the

utilization of GPS is much less and spares battery of the system a super deal. So battery would not get depleted at some stage in motion which makes this utility an powerful one.

The software is moreover precious people to find out closest hospital, restaurants and many others.. Using the guide.

2. LITERATURE REVIEW

There exists various packages and location primarily based frameworks that may warning the customer via making use of cellular smartphone while coming to technique the vacation spot[1]:

Naplarm - Location Alarm/GPS Alarm

Naplarm - Location Alarm/GPS Alarm is a GPS prepare caution that is going with appreciate to when the customer is going to land at the selected purpose. When the patron chooses the aim on the pursuit bar or guide, the manual gets shut and the utility runs out of highlight intermittently customer's place is checked using the device's GPS. At the factor while the consumer methods the aim the purchaser ought to get down, consumer's favored alert performs a

ringtone. This application is utilized for sleepy or inconsiderate explorers.

Bus Snooze:[2] Shipping Snooze is a GPS area primarily based morning timer if you want to wake the customer up while the client land at the goal location. The software lets in the consumer to set vicinity primarily based alert or time based totally warning or each. The joined warning will sound whichever suggests up first – time or aim. The place following is completed using GPS just because the clients prepare dealer's region. Specialists: uses the 2 GPS and device area, layout custom range around purpose inner which the alert will go off, spare region for later use and Cons: Can simply spare two area in free initial rendition

I. WAKE ME THERE - GPS ALARM

WakeMe is a GPS based alarming application. It enables client to pick any area on the guide and set up isolated cautions for every area and spare them to use at some other point when the client goes in the comparative course. Whenever client can perceive how a lot of kilometers or miles the client is away from goal area . It can caution the client if the gadget loses GPS signal .[3]

Alarm-Me (Location Alarm / GPS Alarm):

Alarm-Me (Location Alarm / GPS Alarm) is a distance based alarm application that alerts the user when the user reaches the destination set by the user. The user can set a radius about the destination so that when the user comes inside the radius , the application alerts the user through an alarm or notification [4]

3. METHODOLOGY

The process adopted to design this application includes designing the basic prototype with appropriate technology, and then collect data by using the application, then using that previously travelled data and Bayesian Classifier can predict the user's location without GPS, its correctness and efficiency can be verified using GPS at an frequent

interval, so we can save device's battery from getting drained.

3.1 Design the Project Requirements

3.1.1 System Requirements

3.1.1.1 Hardware Requirements

System : i3 7th GEN. 2.4GHz

Hard Disk : 40 GB.

Monitor : 1920 x 1080 @ 60 Hz LED display

RAM : 8 GB or Higher.

Graphics Card: The **GeForce® GTX 1080 Ti**

3.1.1.2 Software Requirements

Coding Language : JavaSE 9 Tool Kit : Android Studio 3.4.2 IDE

3.1.1.3 Operating Systems

Windows 7 (32- or 64-bit) or Windows 10 (64-bit)

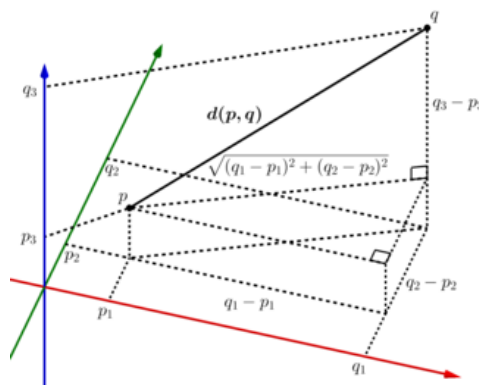
4. APPROACHES

A. USING EUCLIDEAN DISTANCE

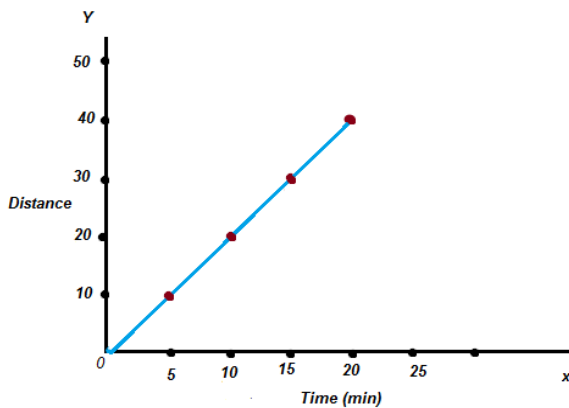
A. According to the Euclidean distance formula, the distance between two points in the plane with coordinates (x, y) and (a, b) is given by

$$\text{dist}((x, y), (a, b)) = \sqrt{(x - a)^2 + (y - b)^2}$$

So we can find the distance between destination and starting point using this method and trigger alarm when the user is nearing the destination. This method requires GPS to be on until the user reaches the destination. [5][6]

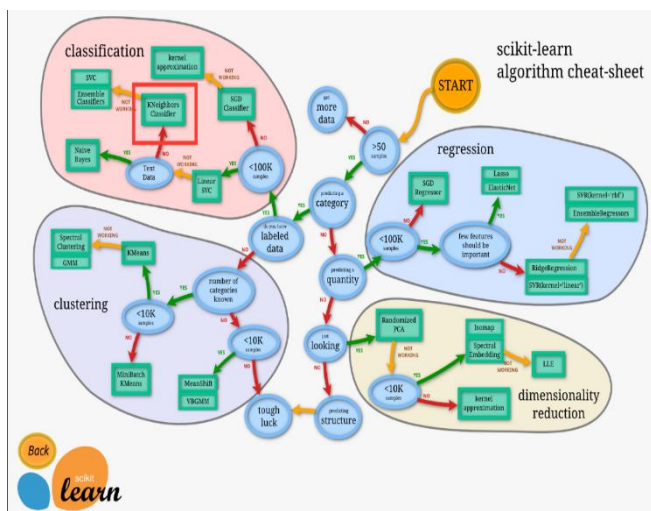


B. USING DISTANCE-TIME GRAPH



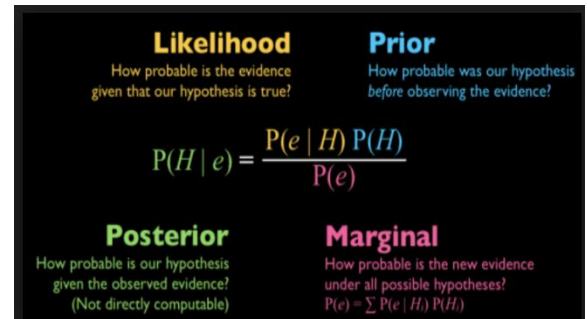
A separation time chart is a diagram that speaks to the separation secured with the aid of the consumer went inside the given term in-among. On the give up of the day, it enlightens us regarding the charge of the car even as voyaging a specific separation. As a example of the speed of an article, this diagram gives a advanced comprehension of the numerical information of separation and time. This chart moreover tells us the separation moved via the automobile at any 2nd of time. A separation time diagram is precious in locating the converting pace at various separations. Utilizing this technique we can find the position of the user . The speed of the user can be obtained by the accelerometer in the mobile phone of the user.[7]

C. MACHINE LEARNING APPROACH ON THE DATA COLLECTED BY PREVIOUS METHODS



C.1. BAYESIAN CLASSIFICATION

Bayesian classification is based on Naive Bayes' Theorem. Bayesian classifiers are the statistical classifiers. Bayesian classifiers can predict class membership probabilities such as the probability that a given tuple belongs to a particular class.[8]



Bayesian classification algorithms are statistical learning algorithms based on the Bayes theorem. The Naïve Bayes algorithm assumes that, the effect of the value of an attribute on the class attribute is independent of the values of the other attributes given the value of the class attribute (conditional independence).

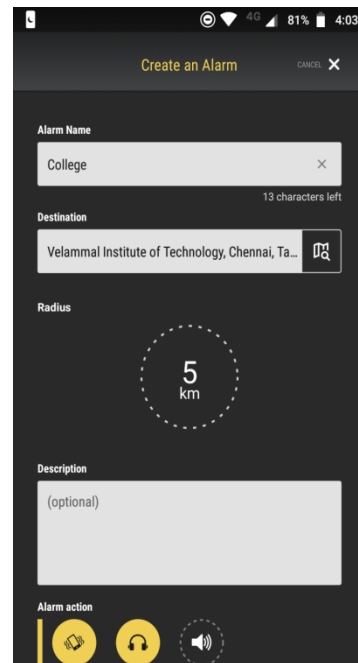
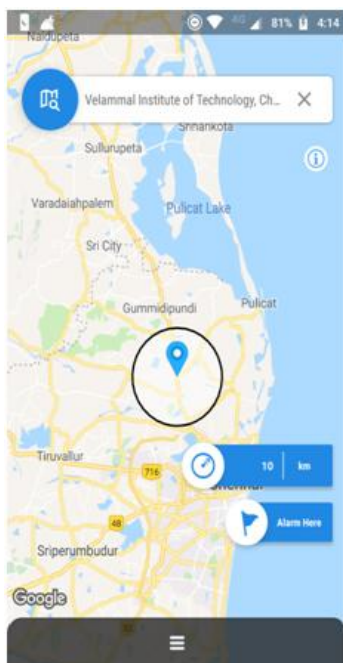
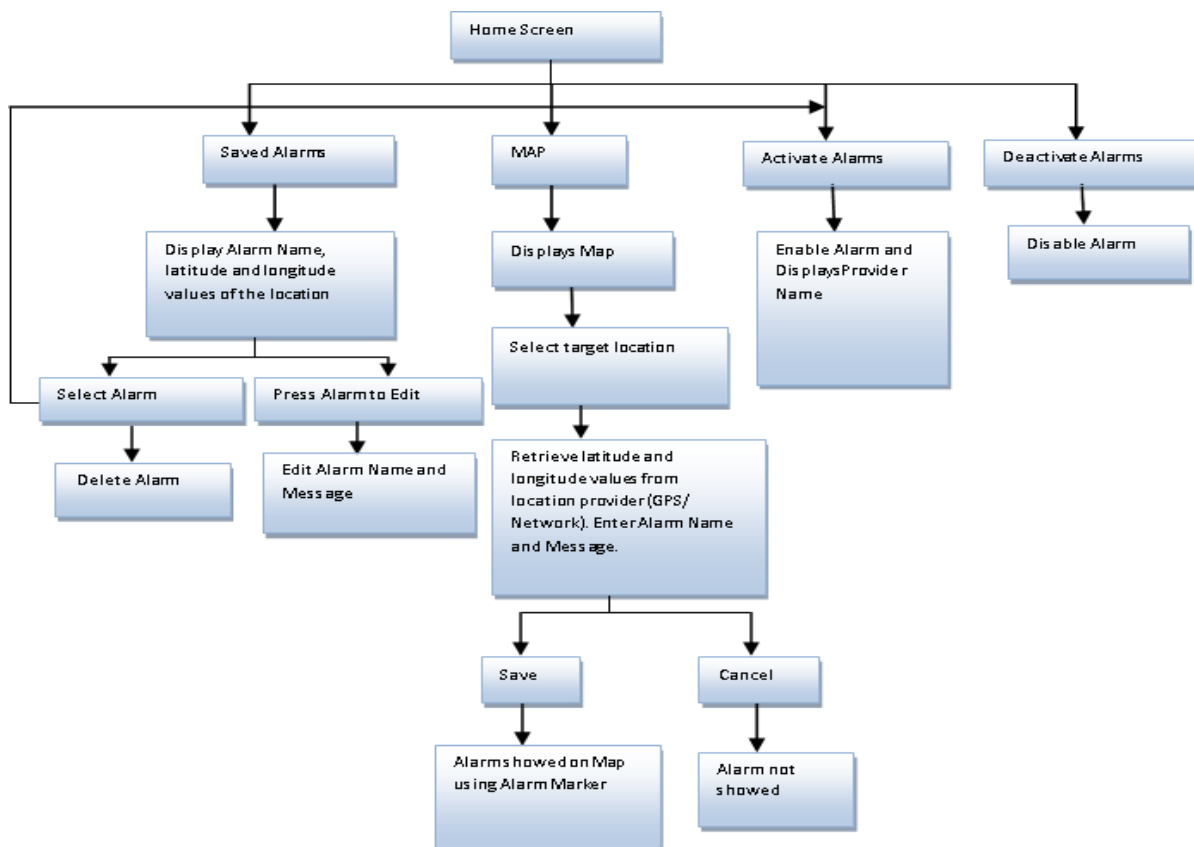
The performance of a classification algorithm is estimated on the basis of the correctness or accuracy of the user's location it has predicted using the previously travelled data. The correctness of the data can be verified by switching on-off GPS of the device at a frequent interval of time. The model M can be trained using the sample data with n class variables and the Classifier classifies each class with some probability values and predicts whether the user is near the destination location or not. The n class variables can be {user's starting location, destination location, speed travelled, time of alarm, distance travelled.....n}.

5. IMPLEMENTATION

The prototype or model creates an alarm when user reaches the destination location set by the user. The user can store the destination in a history list and can use whenever needed. So that the user can view the

history of alarms. As Google maps are uses the rate of accuracy can be high . User can alarmtone as per user's wish, it can be set to vibrate or loud alarm etc.. The UI of the application is very simple so all novice users can use the application. This application is diffrent from others applications

because its saves battery from getting drained due to GPS services all the time, instead we use bayesian probability to predict the user's particular location at that time.



6. FUTURE IDEAS

The quit version allows customers to enact caution inside the portable effectively. In view of the given vicinity at the transportable, caution will ring consequently and show leftover portion warning whilst the patron arrives on the aim vicinity. This flexible warning management will cross approximately as colleague for the non-stop explorers to go to new locations.

6.1 Future Work

Future Application

The future version of this framework is to contain voice caution. Currently, framework ringtone is utilized because the default ringtone within the software. Be that as it can, the ringtone can be set by means of the client since it has extent control and vibrates mode manipulate settings.

6.2 Process of Improvement

The procedure of progress of the framework consists of: development of the exactness of the GPS framework situating, sharing of warning with our partners or own family participants (sending/getting) and so on.

7. CONCLUSION

We constructed up a model for region forecast in view of the client's movement statistics. We represent how AI and records mining is implemented to foreseeing destiny areas in GPS SIGNAL LESS circumstance. The created utility misuses the purchaser records of movement and level of development in an effort to order and foresee destiny tendencies of the purchaser. The version is classified with units of currently voyaged customer trends with varying levels of randomness. We verify the version with Bayes' Theorem with distinct potential journey data gathered by way of the formerly referred to strategies. Our discoveries display that, the Bayesian association plot is right for area forecast of client because it shows palatable expectation outcomes for diverse customer journey behavior. The probability of the classifier predicts

the purchaser vicinity precisely so we finish up with the aid of announcing that Bayesian classifier is maximum appropriate to discover whether or not the purchaser have come to method the aim.

Our model may be upgraded with information of patron travel records like timespan internal a day, and aim/velocity of the client development. At long remaining, the combination of a few nearby grouping models ought to be taken into consideration to be able to abuse neighborhood spatial and worldly applicable data.

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