

Anti-Theft Location Detection Chip (ATT)

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Abstract—In today's world of revolutionary innovative technology various gadgets that can fit our pockets for everyday use are manufactured and made available at low rates. With the technology becoming cheaper, more people use different devices on a much larger scale with an exponential increase in the rate of sales. These days it's very common for a person to own mobile phones, cars and other valuable tech items. However these gadgets and items like mobile, purses, wallets, bags, etc. become easy targets for thieves to steal them. With the increase in the robbery and such crimes it is very important to contain it. Gone are the traditional days of searching stolen items, with the techno-boom there is also increased intelligence available in the field of security which should be harnessed. Hence, using this motivation to try and contain these robberies and actually recover the stolen item we introduce the idea of ATT (Anti-Theft Tracking and Location Detection Chip).

Keywords—ATT, Bluetooth, Tracking, Location Detection, Communication, Chip Interface.

I. INTRODUCTION

ATT is a Bluetooth tracking device that when installed in a device can provide its location and give the information to the owner (via website). The latest tracking devices make use of Bluetooth module. The additional feature ATT has is that it can communicate with other ATTs in its proximity and make the owner of the device aware of the location. All the owner has to do is to go to the site and flag his device as stolen so that other ATTs are aware of the stolen device. This makes the location of object a relatively simpler task. If the device with the chip on it gets stolen then the location I.D is sent to the company which then sends alert messages to all the other devices in the vicinity. All the other chips of the vicinity will start searching the particular chip with the I.D and as soon as any chip finds the chip in question then the location is found of the stolen device which can then be retrieved. The aim of this project is to develop a means of communication by which the stolen object can be tracked.

II. LITERATURE SURVEY

Bike Tracking:

Bicycle theft has been a well-known issue for many years. This study presents BikeTrack, a participatory sensing system

that uses everyday smartphones and low-cost Bluetooth devices to help people recover their bicycles. In BikeTrack, a customized Bluetooth tag mounted on a participant's bicycle broadcasts a beacon ID for bicycle identification. To detect the presence and location of a bicycle, BikeTrack participants use Bluetooth and GPS enabled smartphones to upload data to a remote server. Users can also check their bicycle's last seen location. To evaluate the feasibility of BikeTrack, a two-week user study with eleven participants was conducted at a school campus. Preliminary user-study results show that the bicycle and its location was detected 5.1 times per day on average and mostly located within campus boundary. The results also show that user smartphones detect other bikes at different times of the day, suggesting that potential battery reduction can be applied based on user behavior.

Anti-Car Theft System using Android Phone: [1][10]

The rapid growth of technology and infrastructure has made our lives easier. The whole system allows the user's mobility to be tracked using a mobile phone which is equipped with an internal GPS receiver and a GPRS transmitter. A mobile phone application has been developed and deployed on an Android Phone whose responsibility is to track the GPS location and send it to a remote location. Currently almost of the public having an own vehicle, theft is happening on parking and sometimes driving in insecure places. The safe of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system installed in the vehicle, to track the place. In this system client just send one message to the vehicle and the vehicle mobile will send you the current location of your vehicle in the form of web link and user has to click on a link and that link goes to google map and will show the current location of your vehicle.

Bluetooth an Optimal Solution for Personal Asset Tracking: [3][8]

This paper aims to present a comprehensive study for various Asset Tracking technologies. Our study scales down from introduction of chief underlying tracking and localization principles to technologies and systems at higher level. At lower tier, we introduce schemes like triangulation, Time difference of Arrival (TDOA or trilateration), multilateration, Angle of Arrival (AOA), Doppler, Signal Strength (RSSI), Beam forming etc. At

surfacer, our primary focus has been laid on RFID and Bluetooth based technologies while an overview of other technologies like satellites (GPS), cellular (GSM) or data connectivity (WIFI) etc. An insight to associated schemes like Active and Passive, Indoor and Outdoor, and Behavioral Sensing augment this. Each technology is further analyzed with benefits and drawbacks for a tracking solution. After technical insight, we will focus our study on Personal Asset tracking and highlight the pros and cons of previously mentioned tracking technologies in line with five aspects; Accuracy, Budget, Energy, Host and Platform independence. Within these five regimes, we tabulate the requirements of an affordable, efficient and practicable scheme and illustrate with current examples. We keep our focus on a common user who has a cell phone inhand and resolve an optimal tracking solution within the resources available to him. As a consequence we conclude Bluetooth Low Energy based tracking schemes to be optimal candidate. We foresee our endeavor to serve as a compendium for the readers who wish to get an overview of such technologies without going into discrete technical details, and propose the Bluetooth based tacking scheme as a viable and affordable solution for a common user.

Wi-Fi Tracker

Path and location tracking are one of the main interesting and fast growing applications in mobile and wireless communications. The developments of such systems have interested many research, industrial and government bodies with solutions that range in scale and accuracy. The GPS system, cell based tracking in cellular networks are just few examples. However such technologies have their limitations. GPS does not work inside buildings, cellular systems are not owned by organizations and only work with mobile phones and have high subscription fees. The prototype implemented in this paper illustrates a simple path and location tracking system within an organization based on its available infrastructure Wi-Fi network. By using signal strength and histories of access points used by a mobile node we can provide an approximate determination of the location in the services area and also the moved path of the mobile node. In our work we use Web services for location services to enable queries and manage the path and location of the mobile node. The system has shown impressive results that enable software developers to provide useful types of location based service applications for organizational tasks

III. PROPOSED SYSTEM

Following are some of the functionalities of Proposed System:

- User can make ATT buzz, sound or flash LEDs by pressing the button in the Application from your Smartphone to detect the mobile device or gadget to which ATT is attached.

- By pressing the detection key in your ATT device provision will be made to detect the Smartphone to which the ATT device is synchronized with.

- ATT will sound, vibrate and flash LEDs automatically when about 10 meters away from your Smartphone .i.e. it will indicate that the ATT device is moving out of the Bluetooth range of the Smartphone. If you mark an item as lost the entire ATT community of users will anonymously and securely help you find your ATT. This essentially expands your reach in finding your device. The more family and friends in the community, better the capability. ATTs can be designated to easily discover which of your friend ATTs is closest to your lost.

Scenario 1

In the first scenario, gadget location on which the device is mounted is found out by the strength of the signal between the smartphone and the ATT chip. As the chip is in the vicinity it can be connected to the smartphone and based on the signal strength the user could be able to navigate to the gadget. This is done by receiving the RSSI[5][9] value. The RSSI value returns the signal strength between the devices. When the distance between the devices increase the RSSI value drops down and accordingly the user is indicated that the signal strength is decreased. Therefore when the user goes in one direction for searching the gadget he/she will see the signal strength, if the signal strength drops the the device is not in the direction they are going and thus can change the direction. Eventually the user reaches the gadget as the signal goes on strengthening.



Figure 1: The BT signal strength between bt module and the smartphone.

Scenario 2

In the second scenario, to find out the gadget location is much complicated. The gadget is not in the vicinity and thus cannot be connected to the ATT Chip. If the user is not able to find it, then he/she can go up to the web server and tag the device as stolen. Tagging the device as stolen puts the device in the search list and this search list is updated in smartphones that have the ANT App. Thus when the stolen chip comes in contact with any of the smartphones, the smartphone sends its location to the server and the corresponding owner of the chip is informed. This works in the following manner: the list of devices which are tagged lost or stolen are updated to all the smartphones containing the ATT app. When the stolen chip is in the vicinity of the smartphone app, the smartphone immediately sends its GPS [7] coordinates to the server. Based on the coordinates received, the server maps the location and the user is notified. The user then can untag the device from the list or if the device is not found at the location, the user may leave the tag on the device and let other smartphones find the chip. The proposed work would be to analyse various parameters mentioned above by changing the existing setup.

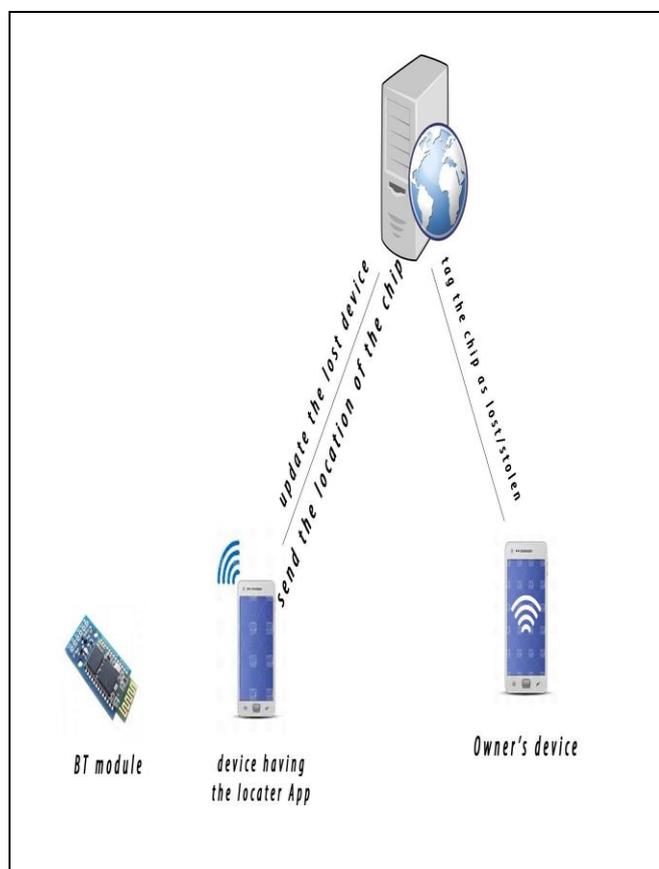


Figure2: Retrieving stolen device location

IV SCOPE

The utility model is a Bluetooth anti-theft anti-lost location detection and tracking chip called as A.N.T.

The ATT is using the following protocol: It contains the Bluetooth chip, LED lights, speaker and / or micro vibration motor, battery; the Bluetooth chip includes a transmitter and receiver components member, the LED lights are battery powered and are used for easy detection of device (with respect to visibility of device) in case it is misplaced or in absence of visible light, the speaker and / or micro vibrator motor too are battery powered and serve the same functions as the LED lights and will be used to detect the device with sound waves as the medium.

The ATT is Bluetooth anti-theft anti-lost location detection and tracking chip and is installed on various mobile devices and accessories like mobile phone sets, tablets, watches, key chains, etc.

The Bluetooth chip in ATT device transmits and receives information with a mobile phone having the application installed in it. Each A.N.T. device will have an independent verification scheme to synchronize with the Smartphone Application.

The chip will be designed to serve two main purposes (scenarios):

1) To detect a misplaced object:

In this case the person has misplaced his/her gadget in the vicinity for example in a room, the device's Bluetooth communication, communicates with the user's Smartphone and the user is able to find the device on the basis of the Bluetooth signal strength.

2) To track and find a lost object:

In this case the person has lost the device or the device has been stolen and the ATT is not in user's Smartphone's range. This is the case where the user has to just tag the device as stolen on the website and the server will list the ATT device as lost and sends this information to all the ATT users with the app installed and keeps their phone on look out for the lost object.

V APPLICATIONS

Theft is one of the most common and oldest criminal behaviors. From the invention of the first lock and key to the introduction of RFID tags and biometric identification, anti-theft systems have evolved to match the introduction of new inventions to society and the resulting theft of them by others. Anti-theft solutions are crucial for mobile devices, as thieves

favor these small and expensive gadgets.

ATT chip is used to track, detect and motion monitor remotely locatable mobile devices and gadgets.

Following are some of the applications ATT:

- 1) ATT Application will be compatible with any given android Smartphone.
- 2) User can make ATT buzz, sound or flash LED's by pressing the button in the Application from your Smartphone to detect the mobile device or gadget to which ATT is attached.
- 3) Also by pressing the detection key in your ATT device provision will be made to detect the Smartphone to which the ATT device is synchronized with.
- 4) ATT will sound, vibrate and flash LED's automatically when about 10 meters away from your Smartphone .i.e. it will indicate that the ATT device is moving out of the Bluetooth range of the Smartphone.
- 5) Alert tone to track your belonging or Smartphone.

If you mark an item as lost the entire ATT community of users will anonymously and securely help you find you're ATT This essentially expands your reach to anywhere in the world. The more family and friends in the Community the better the capability! Friend ATT's can be designated to easily discover which of your friend ATT s is closest to your lost.

VI. CONCLUSION

ATT security system can be installed in mobile easily. This security system is suitable for a real time monitoring of the object and avoid the theft. The application included a transmitting module which contains an embedded system to combine GPS and GSM devices to retrieve location of objects and it to the ATT users. ATT is made to make low cost and excellent anti-theft control system. ATT users will anonymously and securely help you to find lost/stolen objects. This essentially expands your reach to anywhere in the world. The more number of people use it the better the capability!

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