ORIGINAL ARTICLE

Model for Laptop Theft Tracking and Data Retrieving

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ABSTRACT

The usage of a number of personal portable devices like palmtops, laptops are increasing day by day. The more we use our laptop, the more we have lost if it is stolen or misplaced. The cost of the device may be recovered from insurance but the loss of data cannot be recovered. We proposed software that will track the device without GPS system in them. By this software, we can trace our device location by using Wi-Fi hotspot instead of IP address. It also retrieves our data and important files without knowing anyone by using latest cloud computing technology. Also, we can access and control hard-drive from home and watch as to what is typed from the keyboard in real-time.

Key Words: Remote administrative tool, cloud computing, data retrieving, laptop tracking

Introduction

The major concern of any portable computing device like notebook, PDA, the laptop is the security.[1] Because of having sensitive data and access to the internet. The mobile devices move along with their owner, so the chance of being stolen or misplaced is increased. If the laptop misplaced or stolen the integrity and confidentiality of the data may also be lost. To retain the confidentiality and integrity of the data some authentication mechanism like password and pin code will apply. The tracking of the laptop is also important. Different methods are used for laptop tracking without using GPS. We use IP geolocation process to find the stolen laptop.[2] Different approaches of geo-location systems are used such as Net Geo and Geo Cluster. IP geolocation uses databases to map IP addresses to their geographical locations. [3] These databases are used to determine the location of the users. They are usually provided by commercial vendors like IP2Loacation, Digital Element, and NeuStar.

In our system, we use Google Gears Geolocation to track our laptop. [4] Geo-location databases are used to trace the location if the laptop. The resources for geo-location information are DNS, Google Gears and host IP. The data send to Google in the case of GPS as a part of the request and it calculates the absolute position of the laptop using longitude and latitude.

Literature Review

Millions of people in the world compromised their data by lost or stolen laptop. The laptop itself is not that important but the data has a great value to the user. The security of the data can be maintained by data integrity. .[5] Data integrity assured that the consistency and accuracy of the data remain same over its entire lifecycle. An unauthorized person cannot change or modify the data even the device is stolen or misplaced. Now a day many laptop tracking methods are used to recover the laptop and protect our data. Laptop location tracking has two categories.[6]: Laptop recovery and

laptop protection. The laptop recovery involves the methods like using encryption key blacklisting mechanism with DHCP server to identify the lost or stolen laptop location based on unique ID. In laptop protection methods like wireless locking, acceleration based detection are used to protect data from the thief and recover it. Different data retrieving methods such as direct connection protocol (DCP),[7] RAT etc are used to retrieve our data from any location of the laptop.

Remote Administration Tool (RAT) acts as remote control software. RAT controls a computer by running the hidden server on victim device also a client working as an interface between attacker and server. The most common way to generate infection through attached email. The developer of the virus is using different techniques to spread the virus to incognizant users. RAT uses an array of techniques to remain invisible and hide their traces and remain on victim device for the long haul. [8] Once the RAT is installed on the computer, it is able to take the control of your device. Remote control software works like as if you were there and using its keyboard. And using this software the remote device is easy to use, fast and reliable. The papers analyzing much remote control software which provide ease you to determine the Remote Administrative Tool. [9]

Overview of the Proposed System

The objective of our work is to develop a system that can track the stolen or lost the laptop and retrieve our sensitive data or files from that laptop. In our system, we use Wi-Fi hotspots for tracking our laptops instead of an IP address which can locate a computer within 25 feet or even closer. To track the stolen laptop a Wi-Fi connection and Google latitude are used. The Google calculate the location of the stolen laptop (latitude and longitude) and Wi-Fi data calculates your relative position to each Wi-Fi. The absolute position of each Wi-Fi tower based on the mobile absolute location is already known and Wi-Fi relative location from the mobile is also known. Google stores the MAC address and the SSID together with the absolute location in a Geodatabase that is kept updated and we can get Wi-Fi data using a library to access Wi-Fi information.

The system is divided into three parts. The first is hosted a website through which we can control our misplaced or stolen laptop. The second is cloud server through which we can retrieve our data from the laptop. The third is the software which is installed in laptop for tracking by using a remote administrative tool (RAT) to remotely access and control our device from any remote location.

The flow of our system and the state diagram is shown in Figure 1 and 2 respectively. The system starts working by login to our hosted website and submits a request for the location of the misplaced or stolen laptop. The software processes the request and checks the availability of the internet, if the internet facility is available the software sniff the Wi-Fi signals and hardware invokes the Wi-Fi module to get the signal strength and BSSID of the Wi-Fi towers in range. As the signals are sniffed the system invoke the camera and take the picture of the person who using a laptop and send it to the server and server send this picture to the user and give access to the stolen laptop to the user. The user can also retrieve data, lock or delete any file or folder from the stolen laptop and see the activities performed by the thief on the laptop. The real-time environment of our system is exposed in Figure 3.

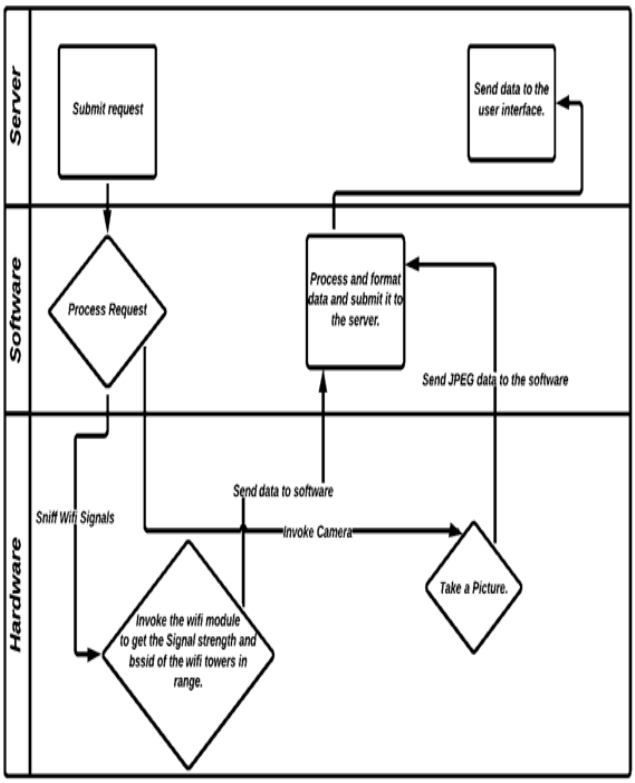


Figure 1. Overall System Flow

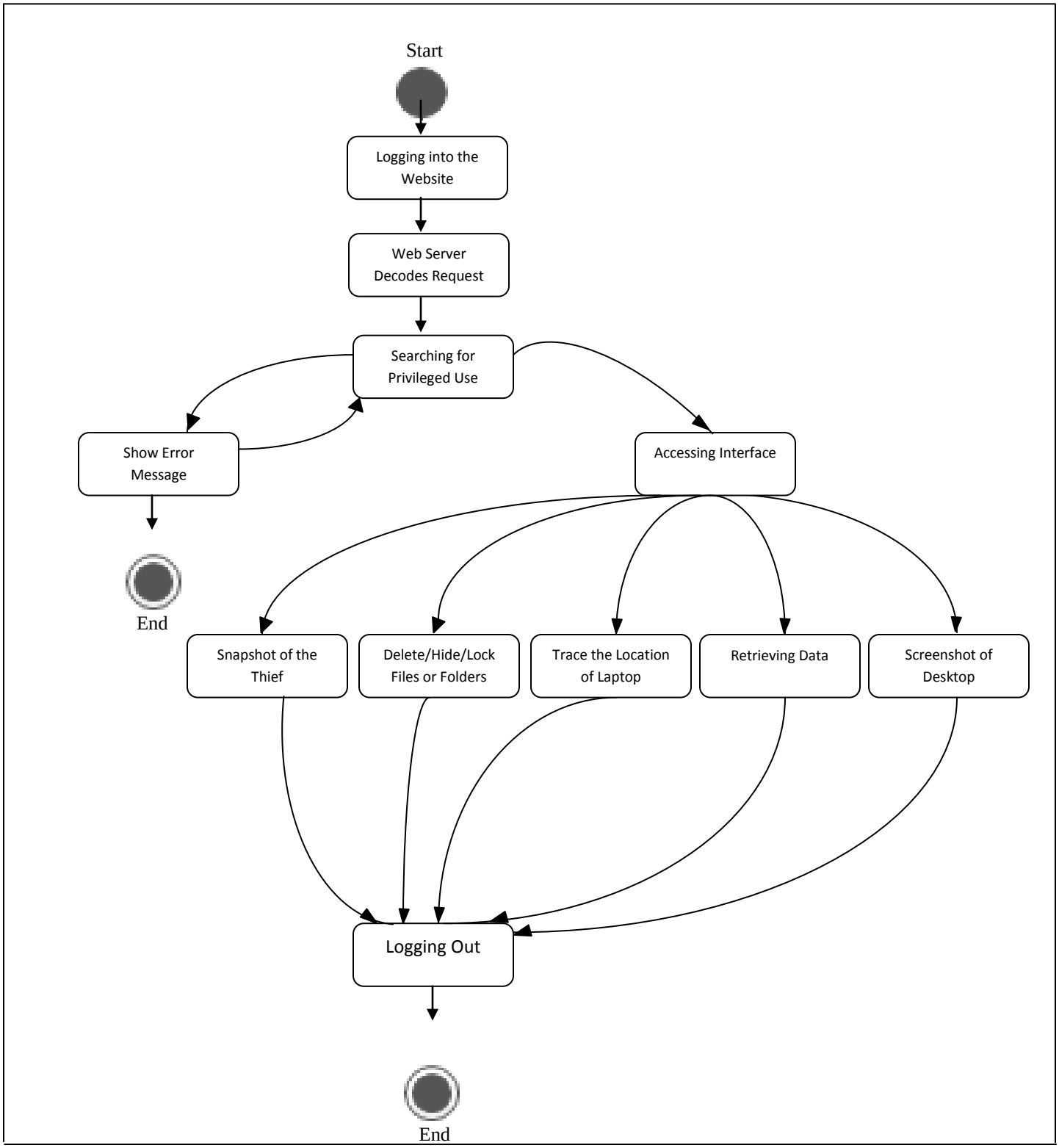


Figure 2: State Diagram of the Proposed System

Features

The evaluator will be able to control all the aspects of another computer from our system He will also be able to control the camera and locate the computer.

- **Tracker**
  Track the location of the laptop.
- **Cloud Server**
  Using latest technology cloud computing we retrieve our data on a cloud server.
- **Camera control**
  Take snapshot from the camera.
- **Screenshot**
  Take a screen shot of the desktop.
- **Key logging**

Watch, what is typed on the keyboard in the real time.

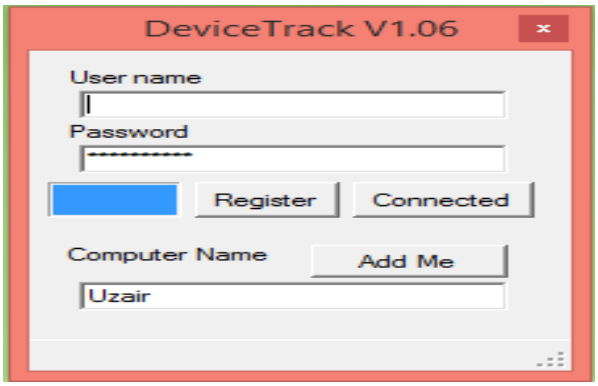
- **Retrieving Personal Data**
  Get access to important files or folders without knowing of anyone.
- **Control from home**
  Controls and access hard drive from home.
- **Web Application**
  End users can get an idea about working with our software.

Components used for System Generation

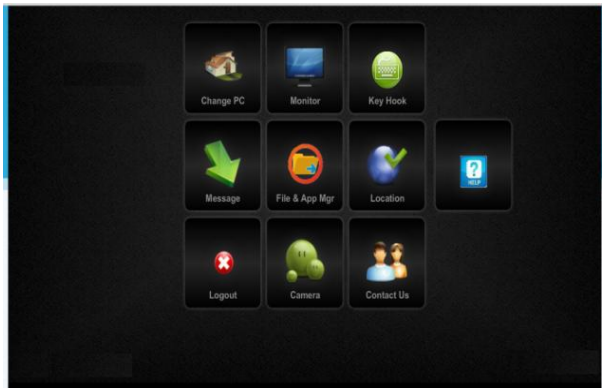
- Laptop
- Built in webcam
- Operating system: win vista/7/8
- Memory: minimum 80Gb hard disk
- SQL Server
- Dot net 3.5
- Html5
- CSS
- Google location API.

Results

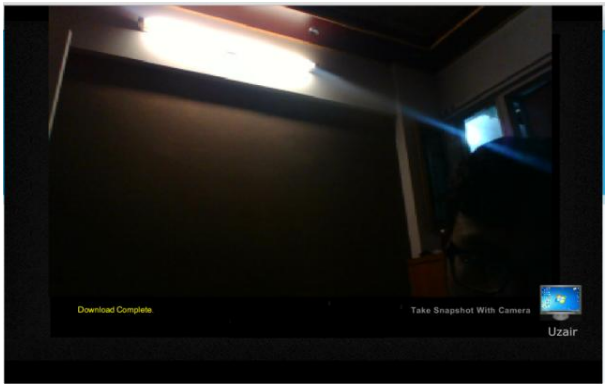
We developed software that is used to track our stolen laptop, also retrieve our data from the laptop. The simple login and some other sample forms are shown in Figure 3. In Figure 3(a) graphical users interface of our system which consists of username and password. If the user is not registered then first registered him and then connected to the server. Once an authentic log in is achieved the main menu of our software is exposed in Figure 3(b). The webcam of the stolen laptop is also on and we can capture the thief's picture as shown in Figure 3(c). Once we get the access to our stolen laptop, remote device file manager is open from to access all of our files and folders, lock files or folders of the stolen device also able to hide the data as publicized in Figure 3(d).



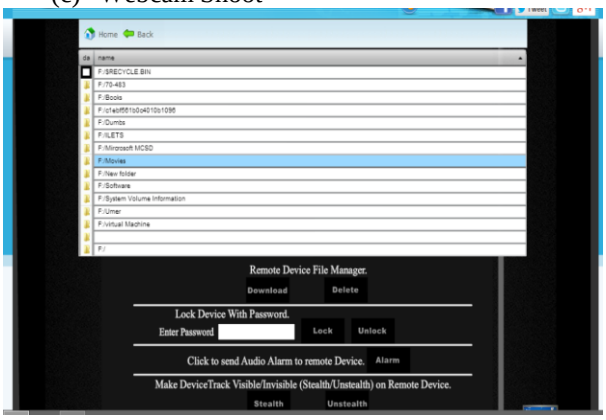
(a) Log in form



(b) Main Manu



(c) Webcam Shoot



(d) Remote device File manager

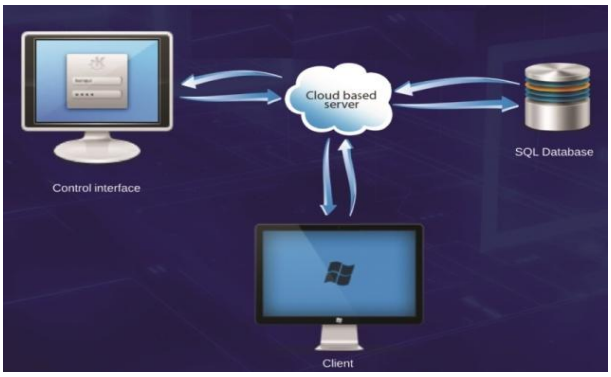
Figure 3. Sample forms at the client end

Our system is divided into four phases as shown in Figure 4. In phase 1 the hosted website makes a connection with the cloud-based server as exposed in Figure 4(a). In phase 2 identification of user checked by cloud server from database shown in Figure 4(b). After the identification of the user from the database, the cloud-based server gives access to the user for data as shown in Figure 4(c). The cloud server allows the user to enter in the client side software and use different features as shown in Figure 4(d).

(a)

(b)

(C)



(d)

Figure 4. Sample forms at the client end: (a) Phase 1: Website connection with cloud-based server (b) Phase 2: User identification (c) Phase 3: Cloud-based server connection established with database (d) Phase 4: User access in the client side software

Figure 5.Actual Screenshot Generated from Software

This is the actual screen shot generated from the software that how the laptop is tracking from our software and give its current location.

Conclusion

We have developed an integrated software solution that helps the user to track and recover their laptops and personal data with the help of the cloud server and geo-location API, Laptop tracking and data retrieving software has been able to easily and quickly enhance its solution to give users powerful new location tracking and data retrieving capabilities.

Reference

1. Selvarani, D. R., & Ravi, D. T. (2013). Issues, Solutions, and Recommendations for Mobile Device Security. International Journal of Innovative Research in Technology and Science (IJIRTS), ISSN, 2321-1156.
2. Hu, Z., Heidemann, J., & Pradkin, Y. (2012, November). Towards geolocation of millions of IP addresses. In Proceedings of the 2012 ACM conference on Internet measurement conference (pp. 123-130). ACM.
3. Shavitt, Y., & Zilberman, N. (2011). A geolocation databases study. IEEE Journal on Selected Areas in Communications, 29(10), 2044-2056.
4. Siddharth, G., & Saravanan, E. (2014). International journal of research in computer applications and robotics. Vol.2 Issue.4, Pg.: 116-121
5. Sachin S. Bahade, Lalit Dole. (2014). "Laptop Theft Tracking: A Review", International Journal of Advanced Research in Computer Science and Software Engineering. 4(1), 900-902.
6. Gopalan, J., & Rengarajan, V. (2005). U.S. Patent Application No. 11/215,493.
7. Kondalwar, M. N., & Shelke, P. C. (2014). Remote Administrative Trojan/Tool (RAT)", International Journal of Computer Science and Mobile Computing. JCSMC, 3(3), 482-487.
8. Ismail, A., Hajjar, M., & Hajjar, H. (2008). Remote Administration Tools: A Comparative Study. Journal of Theoretical and Applied Information Technology, 4(2), 140-148.