

Office Security Monitoring System

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Abstract—: In this paper, a “real time“ desktop monitoring strategy is implemented using NetBeans IDE, JDK 1.7 for development of monitoring software which will monitor desktop continuously, create a video using Xuggler, upload it to a secure Google Drive cloud storage and sends a notification to administrator. Administrator can view videos of activities performed by individuals on the system. Our main focus is implementation of the software in office use where if you doubt that your employees might not be giving their best performance or accessing confidential data and using it for some reasons then you might require stretching the strings and increasing security. As a reference, closed-circuit television (CCTV) camera systems are employed worldwide as a security system for surveillance in residences and organizations. However, it is limited to surrounding views and is unable to capture the desktop activities of an individual while working on a pc. This is where our system comes into picture by monitoring the desktop continuously, creating a video and uploading it to the server. A notification is sent to the administrator containing the link to the video for viewing purpose.

Key words— NetBeans IDE, JDK 1.7, Xuggler, Google Drive, Cloud.

I. INTRODUCTION

One of the major concerns of an organization is not knowing the activities performed by employees on their computers. In this age where the web has become a powerful tool, providing Internet facility is necessary for producing more output. However, this also has its cons when employees are misusing the company's resources for their own work due to which less output is being produced. Thereby demanding the need for monitoring employees activity throughout their work session without their knowledge. Organizations are always in need of solutions to help them know what is going on in an employee's desktop as no employer can spare time to personally spy an employee's computer. In order to maintain the rate of investment (ROI) and work submission on time, employers have to keep a check on all activities and performance of their employees. The most common trouble faced by employers in an organization is keeping track of what every employee is doing at what time.

CCTV [1] or surveillance cameras can help keep a lot of check on physical activities of the employee; however it is the computer activity that must be taken care of. Recent surveys indicate that more than seventy percent of employees indulge

themselves in chatting, social networking or checking their personal emails during work sessions. The worst part is when employees end up sharing crucial information to a third party! Some software or settings block user's websites and hide certain information from them but it is not very impressive. Users can easily find out ways to unblock the tools and do what they wish to. Hence, it is important to ensure employees do work instead of wasting time in the office hours.

Office Security Monitoring System is a software that keeps a check on all desktop activities by taking snapshots regularly and reporting to the admin. The fact that the admin can install and use this utility without informing users, makes it an effective monitoring method. The stealth mode enables the software to not be displayed on the task manager as well. This ensures all activities of users are recorded without their notice. Moreover, it is proven that if the users know that they are being monitored, there are fewer chances of them to deviate from work. The software records the history of accessed applications, internet activities and every copy-paste action being performed by the user. This feature helps if you must find out who copied and sent some important information. Additionally, by looking at past download and software records, you can know if some changes were made in any software. In case of some underlying errors, you can know who changed what and the reason behind every mess and rectify it easily.

II. LITERATURE SURVEY

This system is used for monitoring purposes. In a real life scenario, a person can send confidential data to third party without concerning owner and our CCTV camera cannot catch it. Our system will monitor desktop continuously and create video and upload it to server and also send notification to owner and say “someone has login to the system, do u want to see video?” **Closed-circuit television (CCTV)** uses video cameras to transmit signals to specific places, on a limited set of monitors. CCTV surveillance is used in areas that require monitoring such as casinos, airports, banks, convenience stores, and military installations. CCTV equipment may be used in industrial plants to observe parts of a process from a central control room, for example it can be used in areas where the environment is not suitable for humans. CCTV systems can operate continuously or as required to monitor a

particular event only. It provides recording for possibly many years, with a variety of performance options and quality.

Our system works like an internal CCTV camera for PC/Laptop which captures screenshots from login to logout of the system. It creates a video of it and uploads it to the online storage (Google Drive) [2] and sends SMS with link for watching the video and as per user requirement; video starts playing via video streaming. In this way, we improve the security system by catching the culprit on the spot.

III. METHODOLOGY

Design

The architecture given below shows that when an unauthorized user logs into your personal computer (e.g. during your absence) this software will continuously monitor all activities performed by the culprit and directly sends an SMS to you on your mobile phone informing you that someone is using your system. It depends upon the owner whether to check the video or not. He can any time view it by accessing the link sent with the SMS. The video is uploaded on the cloud [3].

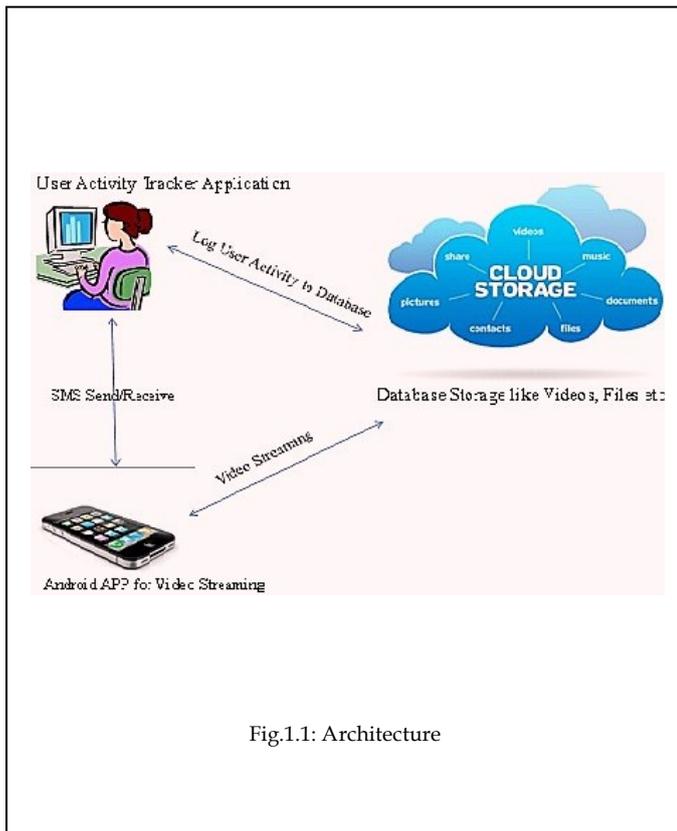


Fig.1.1: Architecture

This system directly sends an SMS to you on your mobile phone informing you that someone is using your system. It depends upon the owner whether to check the video or not. If he doesn't want to check the video, he can check the video at a later time as the video is uploaded on the server.

Details of Completed Modules with supporting results

Capturing screen-shots in Java

Java [4] provides an inbuilt class called as Robot Class. This Robot class captures the screen image with an interval of micro seconds. This image is then saved as .JPG/.PNG image.

```
public class Robot
extends Object
```

This class is used to generate native system input events for the purposes of test automation, self-running demos, and other applications where control of the mouse and keyboard is needed. The primary purpose of Robot is to facilitate automated testing of Java platform implementations.

Using the class to generate input events differs from posting events to the AWT [5] event queue or AWT components in that the events are generated in the platform's native input queue. For example, Robot.mouseMove will actually move the mouse cursor instead of just generating mouse move events.

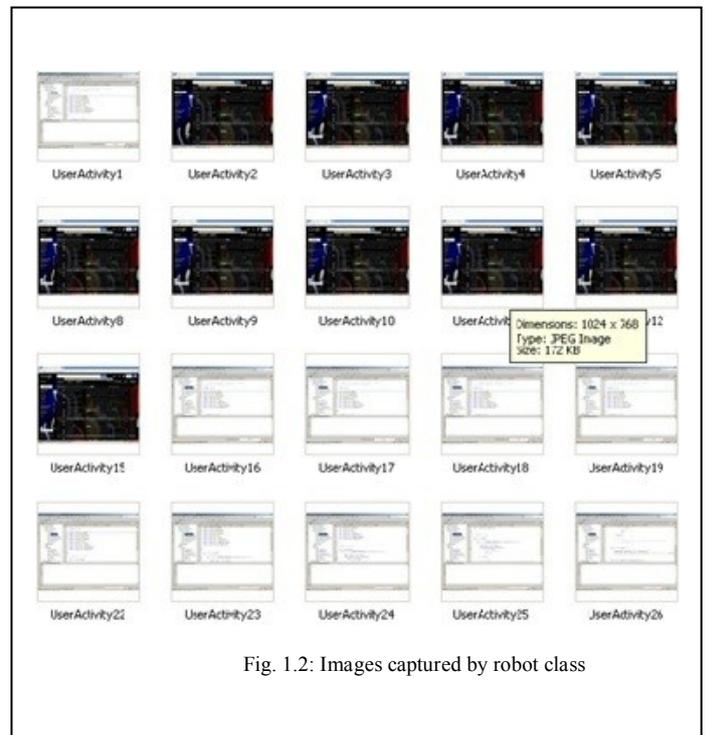


Fig. 1.2: Images captured by robot class

Creating video

Xuggler will be used in our system to create the video streaming. It uses the images captured by the Robot class and streams them into a video format.

For creating video we need sequential snapshots from our desktop. This can be used for a rudimentary screen recording application. This is very important to create individual frames and make custom video. We have used Xuggler for that purpose.

In short, to create video from image frames with Xuggler, one should follow these basic steps:

- Make an *IMediaWriter* to write the file using *ToolFactory makeWriter(outputFilename)*.
- Get the screen Dimension that we need using *Toolkit.getDefaultToolkit().getScreenSize()*.
- We need to specify *IMediaWriter* that we're going to add one video stream, with id 0, at position 0, and that it will have a fixed frame rate of *FRAME_RATE* calling

writer.addVideoStream(0,0,ICodec.ID.CODEC_ID_MPEG4,screenBounds.width/2,screenBounds.height/2);
- Use *Robot.createScreenCapture* to take Desktop screenshots and convert it the right image type.
- Encode the image to stream using *writer.encodeVideo*.

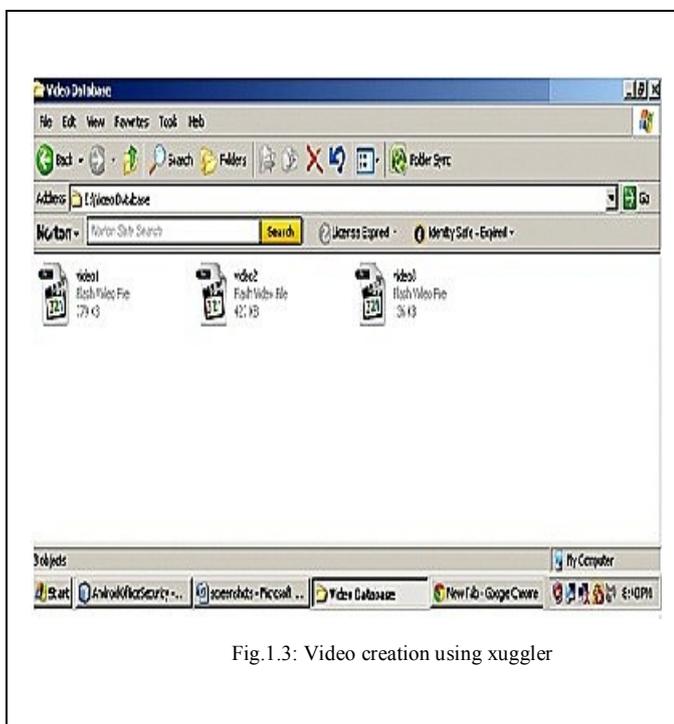


Fig.1.3: Video creation using xuggler

Creating User interface

In Our system we have provided user interface for login action.

It needs Username and password for login. If the User enters correct username and password the system displays message "Login Successful".

For this Purpose we have used Java AWT (abstract Window Toolkit).

IV. OBJECTIVES

The main objective is:

- To create a video
- To upload the video on the server
- To send notification to user, if any unauthorized person is using the system and monitor activities performed.

V. SCOPE

Using this monitoring tool, you can know some things that you always suspected:

- What employees in an organization actually do when they are supposed to focus on their work?
- How much time employees actually spend in doing work scheduled to be done?
- Do employees kill their working time in playing games online, online chatting and shopping or visiting social networking websites?
- Are the employees misusing organizational resources such as Wi-Fi in illegal activities?

VI. CONCLUSION

Low employee productivity is one of the main worries for any organization. Many business organizations now use IT infrastructure to run their businesses. In a large IT company, Employees usually spend their office time in useless activities that affect the overall productivity. Companies can now effectively monitor and check the unproductive desktop activities of employees with a Desktop Monitoring Strategy. Plus the system has potential for security services.

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