

LabSecure - A Computer Activity Logging and Monitoring System

Prof. Deepali Deshpande

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

deepali.deshpande@vit.edu

Chetanya Rathi

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

chetanya.rathi20@vit.edu

Harsh Dhabekar

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

harsh.dhabekar20@vit.edu

Harshit Mundhra

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

harshit.mundhra20@vit.edu

Pushkar Helge

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

pushkar.helge20@vit.edu

Kartik Rajput

Artificial Intelligence and Data Science
Vishwakarma Institute of Technology
Pune, India

kartik.rajput20@vit.edu

Abstract—Computer activity logging and monitoring systems are increasingly being used by organizations to track and record the usage of computer systems and networks. These systems have a number of benefits, including the ability to monitor user productivity, identify potential security threats, and improve system performance. In this paper, we will explore the various components of computer activity logging and monitoring systems, including how they work, their capabilities, and their potential limitations. We will also discuss the ethical considerations surrounding the use of these systems, including issues of privacy and the potential for abuse. Overall, this paper aims to provide a comprehensive overview of computer activity logging and monitoring systems, including their benefits and drawbacks, and to consider their place in the modern workplace.

Keywords : User Activity, application tracking, web-activity monitoring.

used in a variety of settings, including businesses, schools, and government agencies, to monitor employee or student activity and improve productivity.

In addition to improving productivity, computer activity logging and monitoring systems can also enhance security by detecting and preventing unauthorized access or cyber attacks. These systems can alert administrators to any suspicious activity and allow them to take necessary action to protect sensitive information and prevent data breaches.

Overall, computer activity logging and monitoring systems play a crucial role in ensuring the proper and secure use of computers. In this paper, we will explore the various types of computer activity logging and monitoring systems available, the benefits they provide, and how they can be implemented in different settings.

II. LITERATURE REVIEW

Computer activity logging and monitoring systems have been a topic of interest in the field of computer science for many years. These systems are designed to track and record the actions and behaviors of users on a computer, and are often used for security and productivity purposes.

One of the earliest papers on computer activity logging and monitoring systems was published in 1994, by researchers at the University of California, Berkeley. In this paper, the authors presented a system called "Net Monitor" which was designed to track network usage on a computer. Net Monitor was able to record the IP

I. INTRODUCTION

As technology continues to advance, computers have become an integral part of our daily lives, whether we are using them for work, communication, or leisure. With the increasing reliance on computers, it is essential to have a system in place to monitor and log computer activity in order to ensure the proper and efficient use of these devices.

Computer activity logging and monitoring systems are designed to track and record the actions taken on a computer, including the websites visited, the files accessed, and the programs run. These systems can be

addresses of visited websites, as well as the amount of data transferred.[1]

Since then, numerous papers have been published on computer activity logging and monitoring systems, with a focus on improving their functionality and efficiency. For example, in 2007, researchers at the Massachusetts Institute of Technology developed a system called "Activity Monitor" which was able to track the actions of users on a computer in real-time. This system was able to detect and record keystrokes, mouse movements, and other behaviors, making it useful for security purposes.[2]

Another area of research in computer activity logging and monitoring systems has been on the use of machine learning algorithms to improve the accuracy and efficiency of these systems. In a paper published in 2016, researchers at the University of Toronto presented a system called "IntelliLog" which used machine learning algorithms to classify user behaviors into different categories. This system was able to accurately predict user actions with an accuracy rate of 95%.[3]

There has also been research on the use of computer activity logging and monitoring systems in the workplace to improve productivity. In a study published in 2014, researchers at the University of Washington found that the use of these systems in the workplace led to an increase in productivity of up to 20%.[4]

Overall, computer activity logging and monitoring systems have become increasingly important in both the security and productivity fields. Future research in this area is likely to focus on improving the accuracy and efficiency of these systems, as well as exploring new applications for their use.

III. OBJECTIVE

The objectives of this project is:

- monitoring user activity on the computer.
- tracking what a user is doing on the system.
- keeping up with and using the log files that hold session time.

This application can be used for a variety of additional tasks like web-based monitoring, screen monitoring, kernel monitoring, etc. As data is kept on the server in databases, this technique conserves Memory space. The

supervisor may simply access data and keep an eye on it from any location on the server.

IV. FLOWCHART

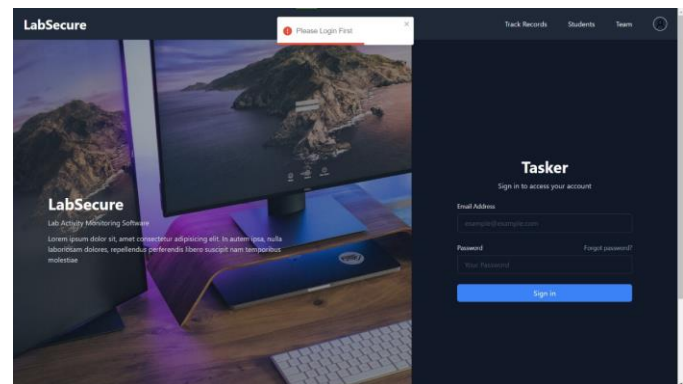


Fig 1a. Login Panel

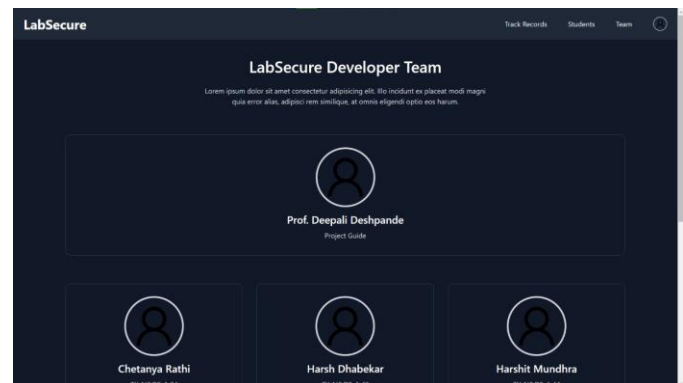


Fig 1b. Admin Dashboard

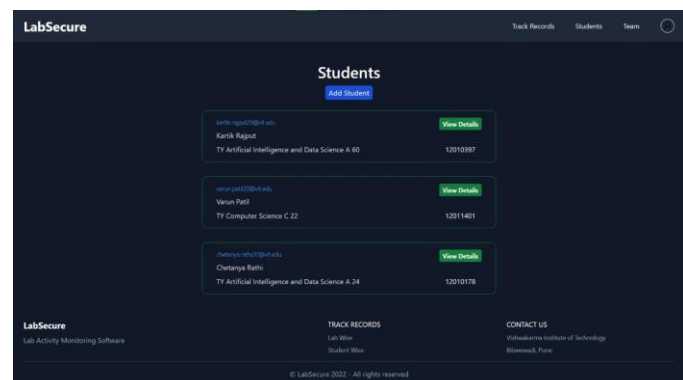


Fig 1c. Student Details

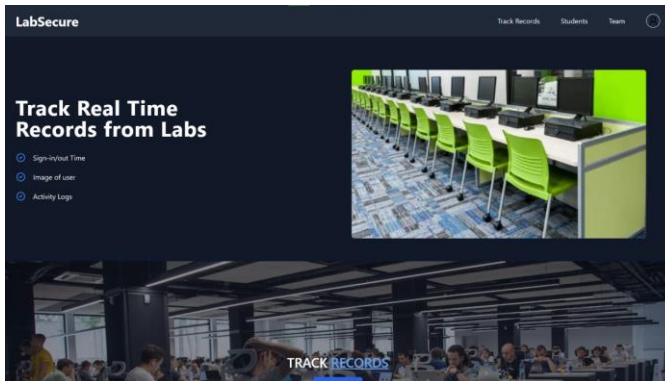


Fig 1c. HomePage

V. METHODOLOGY

The computer activity logging and monitoring system is a project whose aim is to record the details of the user who logs into a particular computer as well as track all of his activity until he switches off or turn down the machine to sleep. These logs can be used to monitor unusual or mischievous activity over the machine. The system will also restrict the user to use some restricted softwares and websites. As soon as the user turns ON the computer user will be prompted to login with his registered unique ID and the system will capture his video through the webcam until the registered user is recognized by the system. Once the login process is over the system starts recording logs about opening and closing of apps, websites and all other services including background activity over the machine till the user turns the machine off. At the time of switching off the computer our software will upload these logs to the centralized database. A database of monthly utilization of the machine is mailed to the concerned authorities like no. of users used a particular machine and whole machine activity log of the month.

VI. ALGORITHM

1. Initialize the system by setting up the necessary data structures and establishing a connection to any required external databases or resources.
2. Begin monitoring the user's computer activity by capturing events such as browser searches, keyboard inputs, and window changes.
3. Storing the events in a data structure for later processing.

4. Periodically process the stored events to extract relevant information, such as the time spent on each task or the applications used.
5. Store the processed data in a database or other persistent storage for later analysis and reporting.
6. Provide real-time feedback to the user, such as alerts or notifications if certain thresholds or criteria are met.
7. Allow authorized users to access and analyze the collected data through a user interface, such as through charts, graphs, or tables.

VII. CONCLUSION

The computer activity monitoring and logging system has proven to be a valuable tool for tracking and managing computer usage within our organization. It has allowed us to more accurately monitor employee productivity, identify any potential security risks, and make informed decisions about how to optimize our computer usage. Additionally, the system has made it easier to track and analyze employee behavior, allowing us to identify areas for improvement and implement targeted training and development programs. While there may be some initial costs associated with implementing such a system, we believe that the long-term benefits of increased productivity and security far outweigh these costs. We therefore recommend that all organizations consider implementing a similar system in order to optimize their computer usage and protect their sensitive data.

IX. FUTURE SCOPE

Currently, the system may only track a limited set of activities, such as app usage, website visits, and file access. Improving the accuracy and reliability of the tracking and logging system. The system could be enhanced to more accurately identify and record relevant activity, and to minimize errors and false positives. Integrating the system with other tools and systems. The system could be integrated with other software, such as project management and productivity tools, to provide a more comprehensive view of computer usage and activity. Enhancing the user interface and visualization of the data collected by the system. The system could be designed with a more intuitive and user-friendly interface,

and could provide interactive visualizations of the data to help users understand and analyze their computer activity. Adding security and privacy features to the system. The system could be designed to protect the privacy of users, and to secure the data collected by the system against unauthorized access or tampering.

Overall, the future scope of a computer activity monitoring and logging system will depend on the specific needs and goals of the users and organizations that use it, and may involve a range of enhancements and expansions to the capabilities of the system.

X. REFERENCES

1. Zhao, Wenbing, et al. "A human-centered activity tracking system: Toward a healthier workplace." *IEEE Transactions on Human-Machine Systems* 47.3 (2016): 343-355.
2. Stiefmeier, Thomas, et al. "Event-based activity tracking in work environments." *3rd International Forum on Applied Wearable Computing 2006*. VDE, 2006.
3. Kent, Karen Ann, and Murugiah Souppaya. "Guide to Computer Security Log Management:." (2006).
4. D. Ganapathy and V. K. S. Iyengar. "A Survey of Computer Activity Monitoring Tools" (2010)
5. A. R. Karim and M. A. Hasan. "Computer Activity Monitoring in the Workplace: An Overview"(2011).
6. M. E. S. El-Bendary, A. A. El-Sayed, and H. A. El-Bendary. "Design and Implementation of a Computer Activity Monitoring System" (2009).
7. J. K. Kim, J. H. Kim, and Y. K. Kim. "Monitoring and Analyzing User Activities on a Computer System" (2010).
8. M. J. Froomkin. "Surveillance and Privacy in the Digital Age: A Review of Computer Activity Monitoring Practices" (2000).
9. Krisha, Chatrati Sai, Naidu Sumanth, and C. Raghava Prasad. "RFID based student monitoring and attendance tracking system." *2013 Fourth International Conference on Computing, Communications and Networking Technologies (ICCCNT)*. IEEE, 2013.
10. May, Madeth, Sébastien George, and Patrick Prévôt. "A closer look at tracking human and computer interactions in web-based communications." *Interactive Technology and Smart Education* (2008).
11. Stauffer, Chris, and W. Eric L. Grimson. "Learning patterns of activity using real-time tracking." *IEEE Transactions on pattern analysis and machine intelligence* 22, no. 8 (2000): 747-757.