International Journal of Multidisciplinary Research and Growth Evaluation

International Journal of Multidisciplinary Research and Growth Evaluation
ISSN: 2582-7138
Received: 01-09-2021; Accepted: 17-09-2021
www.allmultidisciplinaryjournal.com
Volume 2; Issue 5; September-October 2021; Page No. 372-374

Short solution for PC activity analytics and recommendation

Giao N Pham
Department of Computing Fundamentals, FPT University, Hanoi, Vietnam

Corresponding Author: **Giao N Pham**

Abstract
There have been research activities in the area of keystroke dynamics biometrics on physical keyboards for desktop computers or conventional mobile phones undertaken in the past three decades. However, in terms of touch dynamics biometrics on virtual keyboards, there has been little published work. Particularly, there is a lack of an extensive survey and evaluation of the methodologies adopted in the area. In this paper, I would like to present a solution to analytic PC activity log based on keystroke dynamics biometrics on physical keyboards for desktop computers. The proposed system will analysis desktop computer activity to detect anomalies, and then make recommendation for user including warning, lock computer, statistics and make reports to user.

Keywords: Recommender System, Deep Learning, PC Activity Detection, Log Analytics, Abnormal Activity Detection

1. Introduction
Logs play a big role in the development and maintenance of software systems. Using logs, developers and engineers analyze what's happening at every layer of a system and track down problems. Despite a large amount of distributed log data, analyzing it all adequately is still a huge challenge. Currently, there are many existing solutions for data security, but the results produced by them are not up to mark. But, there is a drawback that the response time taken by the administrator is huge and efforts made for the detection of leakage of data in vain. Deep Learning provides the best results in analyzing the personal computer (PC) log files [1]. This paper proposes a solution that uses Deep Learning Algorithm to ensure and improve the security for personal user [2]. Sec. 2 explains traditional log analysis problem [3]. The proposed solution is shown in Sec. 3. Discussion are shown in Sec. 4.

2. Traditional Log Analysis Problem
In fact, log analysis is reviewing and making sense of computer-generated log messages, such as log events or audit trail records such as generated from computers, networks, firewalls, applications servers, and other IT systems [4, 5]. It's used by organizations to improve performance and solve issues as shown in Fig. 1. It also mitigates a variety of risks, responds with security policies, comprehends online user behavior, and conducts forensics during an investigation.

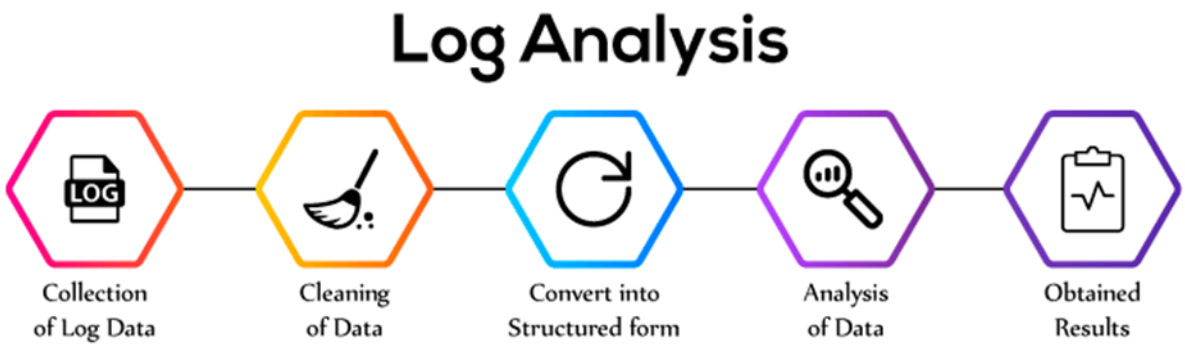

Fig 1: Steps of Log Analysis. [4]

Increasing scale and complexity of modern software systems expanded the volume of logs, making the traditional, manual log inspections unreasonable. In fact, modern software systems generate tons of logs. Manual log analysis depends on the proficiency of the person running the analysis. If they have a deep understanding of the system, they may gain some momentum reviewing logs manually. However, this has serious limitations. It puts the team at the mercy of one person. As long as that person is unreachable, or unable to resolve the issue, the entire operation is put at risk.

3. The Proposed Short Solution for PC Activity Analytics and Recommendation

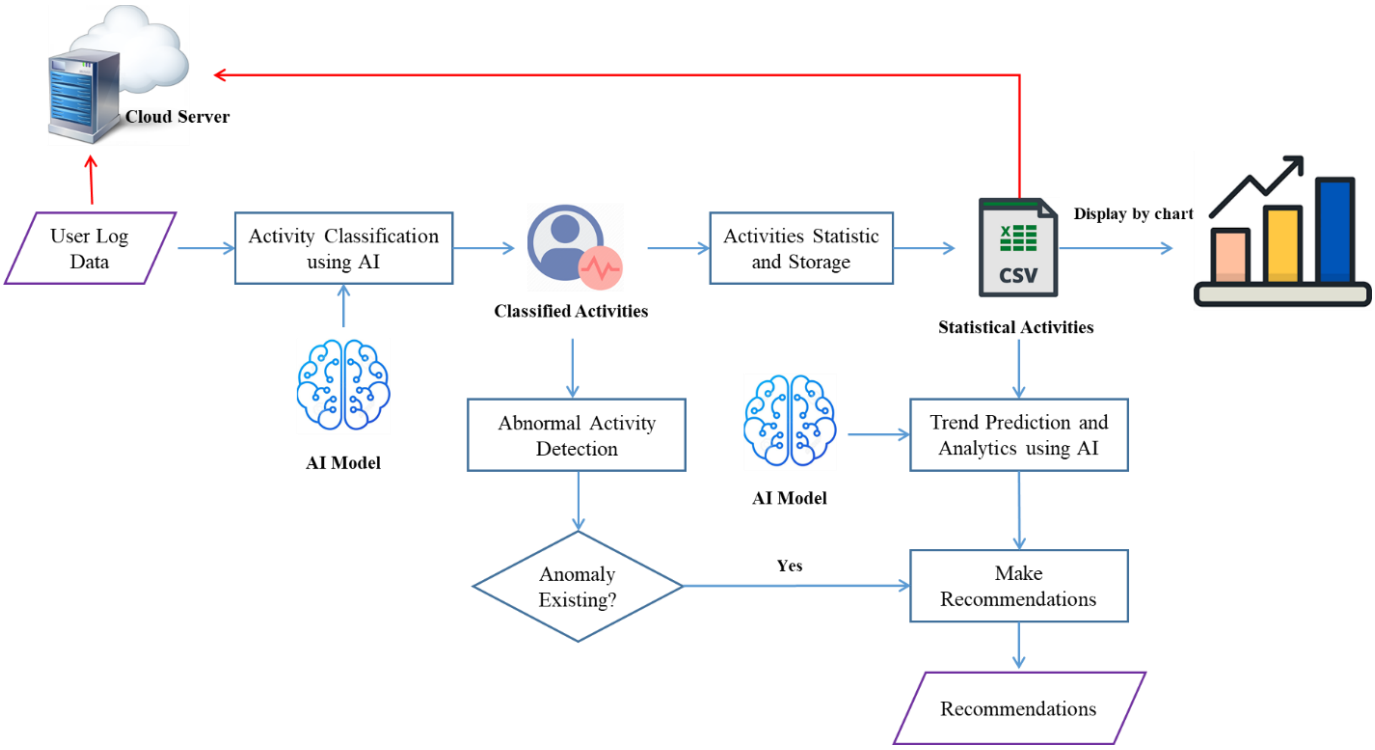

Fig 1: The Proposed Experiment Method

The proposed solution for PC Activity Analytics and Recommendation is shown in Fig. 1. The recommender system will perform main tasks as below:

- Classify and statistic user's activities using AI/Deep Learning. To do this part, I will perform following steps: User's activities processing; Activity classification using AI model. This task is implemented by deep learning methods such as CNNs, LSTM, and so on. The classified activities are used for anomaly detection (if existing) and statistics, storage into time series structure (time series data).
- Analysis and predict the trend of activities using AI/Deep Learning. Time series data will be used for statistics, trend prediction and analytics. The results of statistic, prediction and analytics are used for the recommendation making process. These deep learning methods for this task: ARIMA; CNNs; Regression; MLP.
- Make recommendations based on trends and statistical results. In this part, the system will make recommendations to user including: Abnormal activities if existing; Recommend advices based on statistical results such as most activities; good activities; or products related to activities; Recommend trends and analytic results such as increasing, decreasing or products should buy, sale-off products.

4. Conclusion

In this paper, I presented a solution for PC Activity Analytics and Recommendation using deep learning methods. The purpose of this solution is to provide a solution to reduce the worry about enterprise cyber security incidents. Leaving computers unattended or sharing with someone else are common behaviors that result in security incidents. Typing continuous authentication will spot the intruder based on his typing patterns/keystroke patterns and will take action like system lockdown and alerts. Next time, I will present the experimental results of the proposed solution on PCs.

5. Acknowledgments

This work is supported by FPT University, Hanoi, Vietnam

6. Disclosure of conflict of interest

On behalf of all authors, corresponding author declares that there is no conflict of interest to publish this research.

7. References

1. C Stylios, T Olga, I Androulidakis, Z Elena. A Review of Continuous Authentication Using Behavioral Biometrics, SEEDA-CECNSM, 2016.
2. Continuous authentication for desktops and laptops with keystroke dynamics technology, available online: https://www.typingdna.com/continuous-

authentication.html, accessed on 20 Sep. 2021.
3. Four Challenges of Traditional Log Management Solutions, available online: https://solutionsreview.com/security-information-event-management/4-challenges-traditional-log-management-solutions/, accessed on 20 Sept. 2021.
4. A Machine Learning Approach to Log Analytics, available online: https://neptune.ai/blog/machine-learning-approach-to-log-analytics, accessed on 20 Sep. 2021.
5. How to Analyze Logs Using Artificial Intelligence, available online: https://www.logicmonitor.com/blog/how-to-analyze-logs-using-artificial-intelligence, accessed on 20 Sep. 2021.