

Malicious Android Application Detection Method using Machine Learning

Divya Chaudhari¹, Arati Chaure², Shreyash Dhadke³,
Tushar Dhanawate⁴, Prof. Shraddha Shirsath⁵

Students, Department of Computer Engineering^{1,2,3,4}

Professor, Department of Computer Engineering⁵

Smt. Kashibai Navale College of Engineering, Pune, Maharashtra, India

Abstract: *With the increasing popularity of the Android platform, we have seen the rapid growth of malicious Android applications recently. Considering that the heavy use of applications on mobile phones such as games, emails, and social network services has become a crucial part of our daily life, we have become more vulnerable to malicious applications running on mobile devices. This paper demonstrates on the problem of detecting malicious applications in the mobile internet, which is of great importance for personal information security and privacy security. We convert the android internet malicious application detection problem to a classification problem, and utilize the SVM classifier to solve it. Finally, we conduct an experiment to test the performance of the proposed method. Experimental results that the proposed can detect android internet malicious application with higher accuracy, true positive rate, and lower false positive rate.*

Keywords: SVM, Android internet, malicious application.

REFERENCES

- [1]. Number of Mobile Phone Users Worldwide from 2016 to 2023 (In Billions). Available online: <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/> (accessed on 19 May 2021).
- [2]. Mobile Operating System Market Share Worldwide. Available online: <https://gs.statcounter.com/os-market-share/mobile/worldwide/> (accessed on 19 May 2021).
- [3]. Number of Android Applications on the Google Play Store. Available online: <https://www.appbrain.com/stats/number-of-android-apps/> (accessed on 19 May 2021).
- [4]. Gibert, D.; Mateu, C.; Planes, J. The rise of machine learning for detection and classification of malware: Research developments, trends and challenges. *J. Netw. Comput. Appl.* 2020, 153, 102526. [Google Scholar] [CrossRef]
- [5]. Khan, J.; Shahzad, S. Android Architecture and Related Security Risks. *Asian J. Technol. Manag. Res.* [ISSN: 2249-0892] 2015, 5, 14–18. Available online: http://www.ajtmr.com/papers/Vol5Issue2/Vol5Iss2_P4.pdf (accessed on 19 May 2021).
- [6]. Platform Architecture. Available online: <https://developer.android.com/guide/platform> (accessed on 19 May 2021).
- [7]. Android Runtime (ART) and Dalvik. Available online: <https://source.android.com/devices/tech/dalvik> (accessed on 19 May 2021).
- [8]. Cai, H.; Ryder, B.G. Understanding Android application programming and security: A dynamic study. In *Proceedings of the 2017 IEEE International Conference on Software Maintenance and Evolution (ICSME)*, Shanghai, China, 17–22 September 2017; pp. 364–375. [Google Scholar] [CrossRef]
- [9]. Stephen Feldman, Dillon Stadther, Bing Wang, “Manilyzer: Automated Android Malware Detection through Manifest Analysis,” in 2014 IEEE 11th International Conference on Mobile Ad Hoc and Sensor Systems.
- [10]. William Enck, Peter Gilbert, Seungyeop Han, Vasant Tendulkar, Byung Gon Chun, Landon P. Cox, Jaeyeon Jung, Patrick Mcdaniel, Anmol N. Sheth, “TaintDroid: An Information-Flow Tracking System for Real time

Privacy Monitoring on Smartphones,” ACM Transactions on Computer Systems (TOCS) TOCS Homepage archive Volume 32 Issue 2, June 2014

- [11]. G. Y. Wang, After Access: Inclusion, Development, and a More Mobile Internet, International Journal of Communication, 2017, 11:323-326
- [12]. Q. Shi, X. Ding, J. Zuo and G. Zillante, Mobile Internet based construction supply chain management: A critical review, Automation in Construction, 2016, 72: 143-154
- [13]. Liu, K.; Xu, S.; Xu, G.; Zhang, M.; Sun, D.; Liu, H. A Review of Android Malware Detection Approaches Based on Machine Learning. IEEE Access 2020, 8, 124579–124607. [Google Scholar] [CrossRef]
- [14]. Gilski, P.; Stefanski, J. Android os: A review. Tem J. 2015, 4, 116. Available online: <https://www.temjournal.com/content/41/14/temjournal4114.pdf> (accessed on 19 May 2021).