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Retraction

Retracted: Mobile Learning Platform in Cloud Computing with Information Security and Android System

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] D. Guan, "Mobile Learning Platform in Cloud Computing with Information Security and Android System," *Security and Communication Networks*, vol. 2022, Article ID 5491411, 8 pages, 2022.

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Research Article

Mobile Learning Platform in Cloud Computing with Information Security and Android System

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In order to meet the real-time communication between teachers and students and improve students' interest and efficiency in learning, this paper designs a mobile learning communication system based on information security and Android system with cloud computing. By using the method of combining database records and web logs to mine the user's browsing records and behaviors, these implicit user behaviors are transformed into explicit user evaluations of the project. Then, the cosine similarity calculation method is used to calculate users and the similarity between the users. The users are clustered by the K-means clustering method, so that the users are automatically divided into several user clusters according to their behaviors. Finally, the user's nearest neighbor score is used to predict the pair. Based on the above method, a mobile learning communication system based on Android is realized, and the system basically meets the functional needs of users. The development of this system not only promotes the mutual communication between students but also facilitates the students' learning, which has a certain promoting effect on the improvement of their academic performance.

1. Introduction

Nowadays, the application of cloud database in the field of modern education has already become a trend [1, 2]. The cloud database platform has the advantages of large capacity, high reliability, strong scalability, strong compatibility, and high transmission efficiency. In this regard, when schools rely on the cloud database platform to build a mobile learning information system, they must give full play to the various advantages of the cloud database platform. Starting from the performance requirements of the system, teachers, students, and managers, the overall structure of the system is scientifically designed. The system functional framework is reasonably divided. It is divided into basic function modules, resource management modules, teaching management modules, and learning management modules to ensure that the system is fully functional, easy to operate, safe, and reliable [3, 4].

The innovation of software and hardware technology required for mobile learning has gradually promoted mobile learning in the market [5], and both the education and wireless communication circles are developing around the word "mobile." The age group of mobile learning objects varies greatly [6]. College students are passionate and active learning groups and are willing to try new things. They are important objects of mobile learning. Their environment allows them to satisfy the application of mobile learning [7]. Currently, most colleges and universities have installed wireless networks on their campuses, and various signs indicate that colleges and universities meet various hardware and software conditions for mobile learning. At the same time, mobile learning is a kind of personalized learning [8]. If it is popularized on university campuses, this mode has important significance for the transformation of college students' learning methods and the sharing of learning resources [9]. Survey statistics found that the concept of mobile learning is relatively unfamiliar to college students. Students do not know how to make full use of their mobile devices and mobile networks as auxiliary tools for their course learning. Therefore, research on mobile learning is

carried out among college students [10]. It is very necessary and urgent.

The emergence of emerging network information technologies such as big data and cloud computing has greatly improved the transmission efficiency of network information and improved the information processing capabilities of computers [11, 12]. Cloud databases can store a large amount of information resources, which greatly reduces users' requirements for the storage space and storage capacity of their own mobile terminal equipment and reduces the user's dependence on their own mobile terminal equipment.

The advantages of cloud computing are becoming more and more obvious. If cloud computing is applied to the field of mobile learning, the main impacts on applied learning are as follows [13, 14]:

(1) The massive data storage capabilities of cloud computing will provide massive learning resource storage support for mobile learning.

(2) The resource sharing of cloud computing will realize the sharing of mobile learning resources and promote educational equity.

(3) The resource self-scheduling function of cloud computing reduces the configuration requirements of mobile devices used by users to a certain extent.

(4) The security of cloud computing ensures the security of mobile learning resources.

The goal of this research is to develop a mobile learning system and server-side development practice [15], to provide an online learning mobile platform for teachers and college students, and to improve learners' enthusiasm and initiative. The main work and innovations of this paper are as follows:

(1) This paper puts forward Android system-based intelligent teaching platform for the disadvantages of traditional teaching mode.

(2) According to user's requirement and current education characteristics, the paper operates request analysis on the system in detail including analysis of management and maintenance in resource function, analysis of class test project and process, and the analysis of mode and method in interactive communication.

(3) The test results show that the teaching platform satisfies the expected requirement and reaches design purpose.

2. Related Work

Mobile learning is currently a relatively innovative learning method and a new direction in the field of educational technology research. Although it cannot completely ban the traditional educational form, it affects the form of learning to a certain extent. Mobile learning is an important direction for the development of future learning and education.

Cloud computing [16, 17] is a type of distributed computing, which refers to the decomposition of huge data processing programs into countless small programs through the network "cloud." Then, cloud computing processes and analyzes these small programs through a system composed of multiple servers to obtain results and return them to users. Cloud computing is neither a computer nor the Internet [18]. It is a big data platform developed based on the Internet and computers. It needs to integrate and calculate personal data to obtain accurate data [19] and make advance planning for teaching.

As a new type of learning method, mobile learning is not only an extension of distance education but also an independent learning method. Mobile learning platforms have been practically used in university work, but most of the current learning platforms have certain problems: most of the learning content is in small fragments; part of the content is in the form of static web pages; and the interaction between users is poor [20–28]. The learner is just a receiver of information. Table 1 shows some typical research projects of mobile learning.

Based on the results of mobile learning research in various countries around the world, the development trend of mobile learning in the future is mainly in the following aspects:

(1) Combine with network technology to form an environment where you can learn everywhere.

(2) Strengthen the interactivity on the mobile learning platform and promote the development of mobile learning.

(3) Introduce the famous foreign education concept to the mobile learning platform to realize modern learning anytime, anywhere.

(4) Realize lifelong learning and education.

(5) Exploring from the aspects of teaching mode and curriculum resources, the presentation mode of mobile learning is diversified.

Finally, it is worth noting that with the rise of new technologies such as big data [29–31], mobile learning platforms must actively adapt to the era of big data [32–35], conform to the characteristics of the development of the times [36–38], establish a benign cooperative relationship between the industry and universities, and strive to cultivate more outstanding professionals [39, 40].

3. Research System and Design

This section mainly explains mobile learning and cloud computing based on security and Android system, including the concept and supporting environment of mobile learning, the structure of software development, and the influence of cloud computing characteristics on mobile learning. Finally, the key technologies used in the design are introduced,

Table 1: Some typical research projects of mobile learning.

Project name	Research organization	Research content
M-Learing project [1]	UK Learning and Skills Development Authority (ISDA)	The project is mainly aimed at unemployed young people aged 16 to 24 in Europe who have not received any education, in order to allow them to study through mobile phones, improve their employment opportunities, and provide them with learning materials or related information.
KnowMobile project [19]	University of Oslo	This project helps medical students to solve problems or confusions in practice and enables them to use the smart mobile terminal that they carry to query relevant information in real time for help. It solves problems in a timely manner.
OLPC (One Laptop per Child) project [21]	Massachusetts Institute of Technology	The project's research is how to use mobile technology to improve the learning problems of children in developing countries.
Mobile Learning in Rural Africa project [25]	University of Pretoria	This project provides educational management support for students' learning.

including UI component design, data storage and access technology, mobile streaming media technology, and so on.

3.1. UI Modules for the Platform. The user interface is a window that realizes the interaction between the system and the user, and it can show the information content of the system to the user. Figure 1(a) shows the GUI migration process. The Android interface framework uses an XML file description method to display the user interface, and the size of the interface and the relative position of each element can be personalized. The advantage is that it can avoid various screen incompatibilities and errors. If the user interface can be designed with efficient and fast visual effects, it is very important [39]. Figure 1(b) shows the layout model. The steps to implement an excellent Android interface are as follows.

Firstly, in the Android interface, define the interface elements, structures, and relationships in an orderly manner through the layout definition interface and then use XML files to describe the layout of the interface. You can dynamically add and modify the layout of the user interface while the program is running. For this system, the LinearLayout method will be mainly adopted. In the linear form layout, all the subelements are arranged in a horizontal or vertical order.

Secondly, the layout object of the system interface needs to be called in the program. The layout resource is called using "setContentView," and the control object can be referenced using the "findViewByld" method.

Figure 1(c) shows excerpt of the widget model. In the actual development process of Android applications, the Android framework is generally used to interact with the bottom layer of Android. The Android SDK software development tool includes three important components: Activity, Broadcast Intent Receiver, and Content Provider. When the application receives data, it generally saves the data to a file or SQLite database. In particular, when data sharing is required, content providers are particularly important. The content provider can allow other applications to save or read the various data types it handles [39].

Figure 1(d) shows the example of widget identification. The commonly said control objects are generally divided into two types: system controls and custom controls.

System controls are interface controls that have been encapsulated by the Android system and are generally functional controls commonly used in developing applications.

A custom control is a user-defined independently developed control or a new control realized by modifying the original system control, which is convenient to meet the display requirements of the user's special function.

For this system, the main controls used are TextView, EditText, Button, ListView, Checkbox, RadioButton, BLButton, Progress, Dialog, etc. In the process of UI design, we can design it by setting the attribute values to change the shape and other information.

3.2. Cloud Computing Module Based on Android System. According to the characteristics of general mobile learning and the basic requirements of system design [39], the Android-based mobile learning system is mainly divided into two parts: the client and the server. The server uses Alibaba Cloud services to connect the server to the cloud service.

For mobile phone users, the cost of mobile traffic is very high and network bandwidth is limited. All data file compression technologies are very important for data transmission and storage, and the requirements for server storage space are getting lower and lower. In the process of designing this system, data compression operations were performed on the data between the client and the server.

The operation process is as follows:

(1) The Android client sends a file request to the server through the front end of the intermediary application.

(2) The application front end makes a request to the server from the application front end.

(3) After the application front end receives the reply file, it compresses the request file.

(4) The application front end transmits the compressed file to the client. After the client receives the file, it

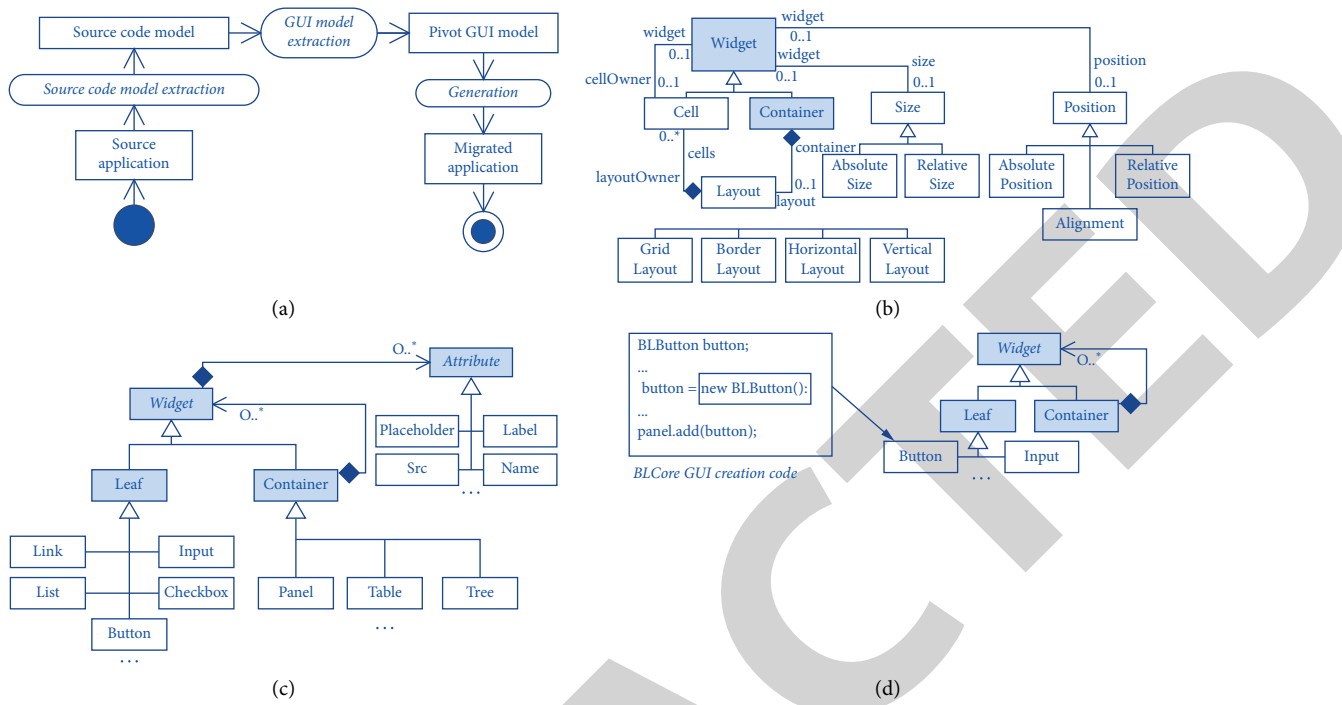

Figure 1: Main modules of mobile learning platform. (a) GUI migration process. (b) Layout model. (c) Excerpt of the widget model. (d) The example of widget identification.

decompresses the file and finally displays the result to the user.

3.3. Information Security Analysis for the Platform. We import the obtained feature data into the classifier and adapt the format of the data to be processed into a format acceptable to the classifier. How to determine whether an app has vulnerabilities can be understood through the similarity of attribute vectors. The task of machine learning is to minimize these objections [39, 40]. Each example can be represented as a point in n-dimensional space. This fact makes it possible to calculate the set distance between each pair of examples, such as calculating its Euclidean distance. A common way to find the nearest neighbor of an object x is to compare the set distance from x to each training example. The expression for calculating similarity by attribute value is

$$d = \sqrt{\sum_{i=1}^{N} (x_{1i} - x_{2i})^2}. \quad (1)$$

After the training model is established, this set of data is linearly separable. In order to test the effect of the classifier, we can use the data that already know the result to test the result and judge whether the result given by the classifier meets the expected goal. Through a lot of basic testing and data analysis, we can analyze the error rate of the classifier. When new data are given to the classifier again, the classification can be successful and the result can be obtained.

Table 2: The distance between the known app and the unknown app.

App number for learning	Distance to unknown app
1	12.4
2	36
3	129
4	160
5	192

The formula for calculating the distance between the vector point xA and the point xB is

$$d = \sqrt{(xA_0 - xB_0)^2 + (xA_1 - xB_1)^2}. \quad (2)$$

In addition, the secure platform trust model can be defined as

$$E_{i-1} \xrightarrow{v_{i-1}} E_i \, (1 \le i \le n), \quad (3)$$

where E_{i-1} is the previous entity; E_i is the current entity; and V_{i-1} is the trusted verification module of the previous entity E_{i-1}, which is used to verify the credibility of the current entity. The root of trust is expressed as follows:

$$E_0 \longrightarrow E_1 \longrightarrow E_2 \longrightarrow \ldots \longrightarrow E_n. \quad (4)$$

The main function of building a security defense system is to solve the security incidents such as external intrusions or loopholes in the system in time [39] and do a good job in system security protection. It can be said that the security

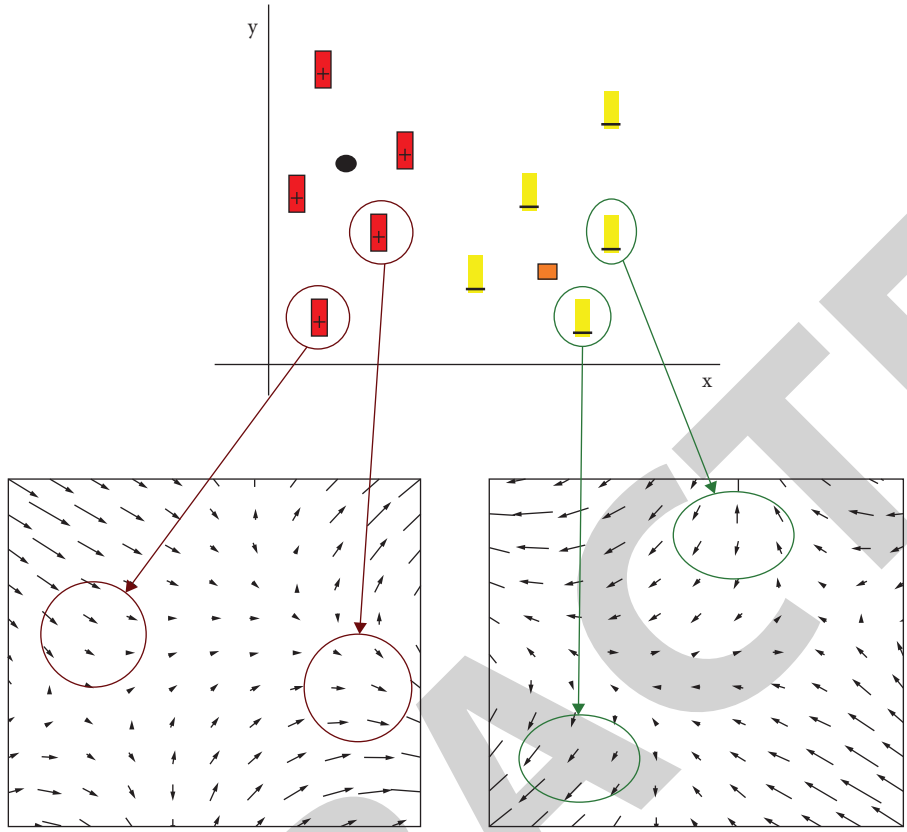

Figure 2: Clustering results of mobile learning platform for users.

defense system is an indispensable part of the mobile learning platform.

4. Result

Table 2 shows the distance between the known app and the unknown app. When the sample information is obtained, the K-nearest algorithm is used to classify the information we get, and the model is trained. Once another example is input, the K examples closest to the example are matched in the training dataset. Most of these K examples belong to a certain class, and the input instance is classified into this class. The smaller the difference, the higher the similarity. The most common method is to use the so-called attributes. In the "vulnerability" problem domain, there can be attributes, such as app name, app version information, phone model, vulnerability, and so on, and Figure 2 shows further in-depth research in the later process that will learn how to add the relevant attributes of each sample to reduce the impact of irrelevant attributes.

Since all the data points are in a plane rectangular coordinate system, a line can divide the plane at this time. The support vector is the set of points with the smallest distance from the dividing line. Next, we have to try to maximize the distance from the support vector to the separation surface, and we need to find an optimal solution to this problem.

We use the number of users as the y-axis of the image and the number of occurrences of privacy types as the x-axis. The higher the number of users, the smaller the possibility of app vulnerabilities, and there is a certain linear relationship between the number of users and the number of vulnerabilities. In the process of analyzing data, we need to adjust the data with the largest difference, that is, the eigenvalue data that have the greatest impact on the experimental results. You can adjust the value range from 0 to 1. There are formulas that can convert the eigenvalues of various value ranges into values in the interval from 0 to 1:

$$\text{new value} = \frac{(\text{old value} - \min)}{(\max - \min)}. \tag{5}$$

Input data to the classifier will output a category label. If the input app data are vulnerable, it will appear in the + sign set position in the figure, and if it is in the − sign set position, then there is no vulnerability. Enter the data of an unknown app, analyze the distance between all apps in the sample set and the unknown app, sort them in ascending order according to the distance, and calculate the k closest apps. The K-nearest neighbor algorithm determines the type of the unknown app according to the types of the two closest apps, and both apps have vulnerabilities, so we determine that the unknown app has vulnerabilities. Figure 3 shows stability analysis for information flow on our platform, and Figure 4 shows security analysis for our platform. The results show that the system we developed has good stability and security.

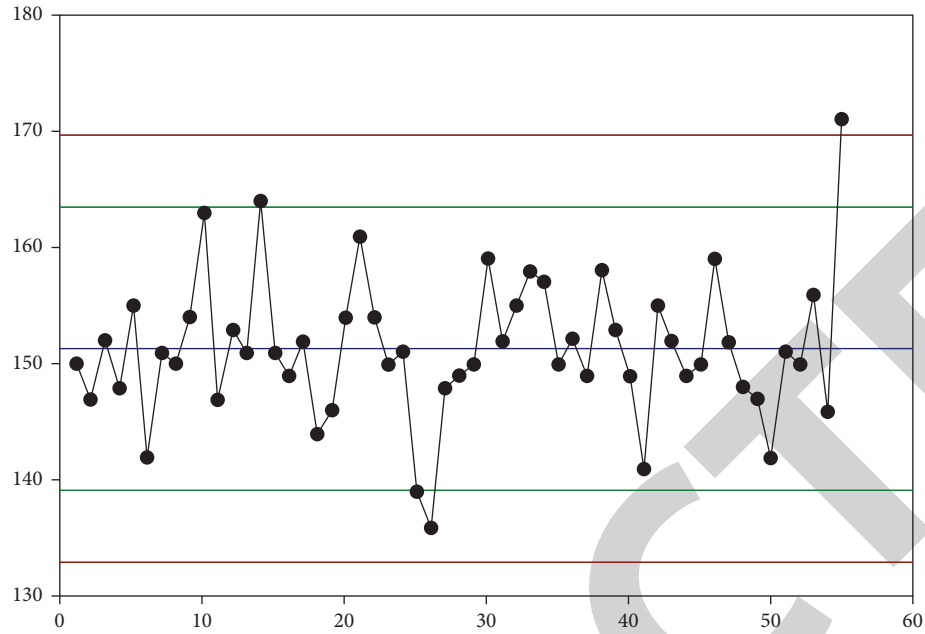

Figure 3: The result of stability analysis for information flow.

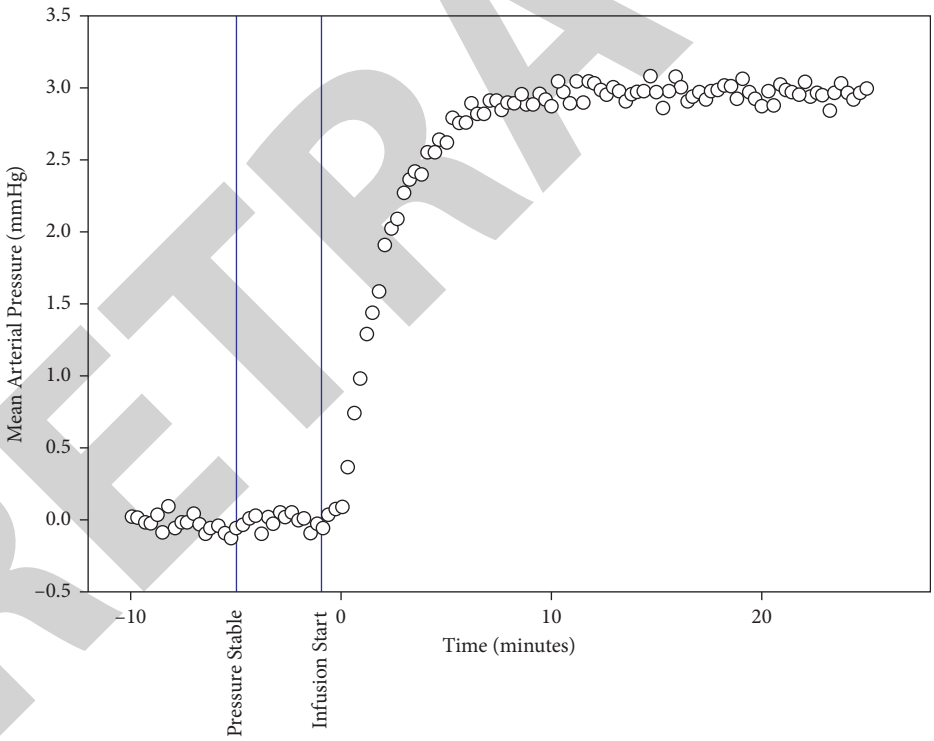

Figure 4: The result of security analysis for our platform.

5. Conclusion

The Internet is impacting the development of the traditional information. With the general improvement of people's quality of life, big data technology has been widely valued and recognized by people, and it is applied to education to the greatest extent. But opportunities and challenges exist at the same time. Information technology under the nonsecurity umbrella will cause many adverse effects on users' personal privacy. Therefore, security issues should be paid attention to by technicians. It shows that the platform we developed is in a safe and stable state and can be applied to practical teaching. Android-based mobile learning is a product of the times that combines network technology, multimedia technology, communication technology, and education. It is also an innovation in educational methods.

The establishment of a mobile learning system can not only provide learners with real learning anytime but also realize resource sharing, improve the enthusiasm of all people in society to learn, and build a learning society. In future work, we will study the security of mobile learning platforms and information data from different research directions.

Data Availability

The simulation experiment data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this paper.

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References

[1] Z. Liu, R. Wang, N. Japkowicz, D. Tang, W. Zhang, and J. Zhao, "Research on unsupervised feature learning for Android malware detection based on restricted boltzmann machines," *Future Generation Computer Systems*, vol. 120, pp. 91–108, 2021.

[2] S. Alam, S. A. Alharbi, and S. Yildirim, "Mining nested flow of dominant APIs for detecting android malware," *Computer Networks*, vol. 167, p. 10, 2020.

[3] V. M. Afonso, M. F. de Amorim, A. R. A. Grégio, G. B. Junquera, and P. L. de Geus, "Identifying Android malware using dynamically obtained features," *Journal of Computer Virology and Hacking Techniques*, vol. 11, no. 1, pp. 9–17, 2015.

[4] J. Mitola and G. Q. Maguire, "Cognitive radio: making software radios more personal," *Ieee Personal Communications*, vol. 6, no. 4, pp. 13–18, 1999.

[5] M. Mozaffari, W. Saad, M. Bennis, Y.-H. Nam, and M. Debbah, "A tutorial on UAVs for wireless networks: applications, challenges, and open problems," *IEEE Communications Surveys & Tutorials*, vol. 21, no. 3, pp. 2334–2360, 2019.

[6] A. Ananya, A. Aswathy, T. R. Amal, P. G. Swathy, P. Vinod, and S. Mohammad, "SysDroid: a dynamic ML-based android malware analyzer using system call traces," *Cluster Computing*, vol. 23, no. 4, pp. 2789–2808, 2020.

[7] Y. Aafer, W. Du, and H. Yin, "DroidAPIMiner: mining API-level features for robust malware detection in android," in *Proceedings of the Security and Privacy in Communication Networks, Securecomm 2013*, T. Zia, A. Zomaya, V. Varadharajan, and M. Mao, Eds., pp. 86–103, Springer, Sydney, NSW, Australia, September 2013.

[8] B. Zoph, V. Vasudevan, J. Shlens, and Q. V. Le, "Learning transferable architectures for scalable image recognition," in *Proceedings of the 2018 Ieee/Cvf Conference on Computer Vision and Pattern Recognition*, pp. 8697–8710, Salt Lake City, UT, USA, June 2018.

[9] L. Y. Gong, H. Lin, Z. H. Li et al., "Systematically landing machine learning onto market-scale mobile malware detection," *IEEE Transactions on Parallel and Distributed Systems*, vol. 32, no. 7, pp. 1615–1628, 2021.

[10] Y. L. Arnatovich, M. N. Ngo, T. H. B. Kuan, and C. Soh, "Achieving high code coverage in android UI testing via automated widget exercising," in *Proceedings of the 2016 23rd Asia-Pacific Software Engineering Conference, Asia-Pacific Software Engineering Conference*, A. Potanin, G. C. Murphy, S. Reeves, and J. Dietrich, Eds., IEEE, New York, pp. 193–200, 2016.

[11] H. Cai, N. Meng, B. Ryder, and D. Yao, "DroidCat: effective android malware detection and categorization via app-level profiling," *IEEE Transactions on Information Forensics and Security*, vol. 14, no. 6, pp. 1455–1470, 2019.

[12] Q. Zhang, X. Hu, Z. Su, and Z. Song, "3D car-detection based on a mobile deep sensor fusion model and real-scene applications," *Plos One*, vol. 15, no. 9, p. e0236947, 2020.

[13] M. E. Karar, F. Alsunaydi, S. Albusaymi, and S. Alotaibi, "A new mobile application of agricultural pests recognition using deep learning in cloud computing system," *Alexandria Engineering Journal*, vol. 60, no. 5, pp. 4423–4432, 2021.

[14] A. Rangra and V. K. Sehgal, "On performance of big data storage on cloud mechanics in mobile digital healthcare," *International Journal of E-Health and Medical Communications*, vol. 12, no. 5, pp. 36–49, 2021.

[15] S. Levine, P. Pastor, A. Krizhevsky, J. Ibarz, and D. Quillen, "Learning hand-eye coordination for robotic grasping with deep learning and large-scale data collection," *The International Journal of Robotics Research*, vol. 37, no. 4-5, pp. 421–436, 2018.

[16] M. Armbrust, A. Fox, R. Griffith et al., "A view of cloud computing," *Communications of the ACM*, vol. 53, no. 4, pp. 50–58, 2010.

[17] J. Gubbi, R. Buyya, S. Marusic, and M. Palaniswami, "Internet of Things (IoT): a vision, architectural elements, and future directions," *Future Generation Computer Systems*, vol. 29, no. 7, pp. 1645–1660, 2013.

[18] R. Buyya, C. S. Yeo, S. Venugopal, J. Broberg, and I. Brandic, "Cloud computing and emerging IT platforms: vision, hype, and reality for delivering computing as the 5th utility," *Future Generation Computer Systems*, vol. 25, no. 6, pp. 599–616, 2009.

[19] G. Bruzual and S. Charlot, "Stellar population synthesis at the resolution of 2003," *Monthly Notices of the Royal Astronomical Society*, vol. 344, no. 4, pp. 1000–1028, 2003.

[20] K. N. Chee, N. Yahaya, N. H. Ibrahim, and M. N. Hasan, "Review of mobile learning trends 2010-2015: a meta-analysis," *Educational Technology & Society*, vol. 20, no. 2, pp. 113–126, 2017.

[21] M. Sharples, J. Taylor, and G. Vavoula, *A Theory of Learning for the Mobile Age: Medienbildung in Neuen Kulturräumen*, Springer, New York, 2010.

[22] K. Ishaq, N. A. M. Zin, F. Rosdi, M. Jehanghir, S. Ishaq, and A. Abid, "Mobile-assisted and gamification-based language learning: a systematic literature review," *Peerj Computer Science*, vol. 10, 2021.

[23] A. Kukulska-Hulme, "How should the higher education workforce adapt to advancements in technology for teaching and learning?" *The Internet and Higher Education*, vol. 15, no. 4, pp. 247–254, 2012.

[24] P.-L. P. Rau, Q. Gao, and L.-M. Wu, "Using mobile communication technology in high school education: motivation,

pressure, and learning performance," *Computers & Education*, vol. 50, no. 1, pp. 1–22, 2008.

[25] J. C. Cronjé, "Using Hofstede's cultural dimensions to interpret cross-cultural blended teaching and learning," *Computers & Education*, vol. 56, no. 3, pp. 596–603, 2011.

[26] N. Pachler, J. Cook, B. Bachmair, G. Kress, and K. Rummler, *Mobile Learning: Structures, agency, Practices: Mobile Learning: Structures, agency, Practices*, Springer, New York, 2010.

[27] A. Kukulska-Hulme and L. Shield, "An overview of mobile assisted language learning: from content delivery to supported collaboration and interaction," *ReCALL*, vol. 20, no. 3, pp. 271–289, 2008.

[28] J. Cheon, S. Lee, S. M. Crooks, and J. Song, "An investigation of mobile learning readiness in higher education based on the theory of planned behavior," *Computers & Education*, vol. 59, no. 3, pp. 1054–1064, 2012.

[29] B. Li, G. Xiao, R. Lu, R. Deng, and H. Bao, "On feasibility and limitations of detecting false data injection attacks on power grid state estimation using D-FACTS devices," *IEEE Transactions on Industrial Informatics*, vol. 16, no. 2, pp. 854–864, 2020.

[30] X. Chen, T. Wang, R. Ying, and Z. Cao, "A fault diagnosis method considering meteorological factors for transmission networks based on P systems," *Entropy*, vol. 23, no. 8, 2021.

[31] K. Cai, H. Chen, W. Ai, X. Miao, Q. Lin, and Q. Feng, "Feedback convolutional network for intelligent data fusion based on near-infrared collaborative IoT technology," *IEEE Transactions on Industrial Informatics*, vol. 18, no. 2, pp. 1200–1209, 2022.

[32] Z. Wu, C. Li, J. Cao, and Y. Ge, "On scalability of association-rule-based recommendation," *ACM Transactions on the Web*, vol. 14, no. 3, pp. 1–21, 2020.

[33] Z. Wu, A. Song, J. Cao, J. Luo, and L. Zhang, "Efficiently translating complex SQL query to mapreduce jobflow on cloud," *IEEE Transactions on Cloud Computing*, vol. 8, no. 2, pp. 508–517, 2020.

[34] C. Zhao, X. Liu, S. Zhong, K. Shi, D. Liao, and Q. Zhong, "Secure consensus of multi-agent systems with redundant signal and communication interference via distributed dynamic event-triggered control," *ISA Transactions*, vol. 112, pp. 89–98, 2021.

[35] C. Zhao, S. Zhong, X. Zhang, Q. Zhong, and K. Shi, "Novel results on nonfragile sampled-data exponential synchronization for delayed complex dynamical networks," *International Journal of Robust and Nonlinear Control*, vol. 30, no. 10, pp. 4022–4042, 2020.

[36] T. Ni, D. Liu, Q. Xu, Z. Huang, H. Liang, and A. Yan, "Architecture of cobweb-based redundant TSV for clustered faults," *IEEE Transactions on Very Large Scale Integration Systems*, vol. 28, no. 7, pp. 1736–1739, 2020.

[37] M. Zhang, F. Conti, H. Le Sourne et al., "A method for the direct assessment of ship collision damage and flooding risk in real conditions," *Ocean Engineering*, vol. 237, Article ID 109605, 2021.

[38] Z. Xie, J. Wang, and L. Miao, "Big data and emerging market firms' innovation in an open economy: the diversification strategy perspective," *Technological Forecasting and Social Change*, vol. 173, pp. 1–14, 2021.

[39] T. Zhou, W. Wu, L. Peng et al., "Evaluation of urban bus service reliability on variable time horizons using a hybrid deep learning method," *Reliability Engineering & System Safety*, vol. 217, Article ID 108090, 2020.

[40] W. Shu, K. Cai, and N. N. Xiong, "Research on strong agile response task scheduling optimization enhancement with optimal resource usage in green cloud computing," *Future Generation Computer Systems*, vol. 124, pp. 12–20, 2021.