Retraction

Retraction: Research on New Path of Internet of Things Data Mining Based on Cloud Computing Platform (J. Phys.: Conf. Ser. 1915 032004)

Published 9 September 2022

This article has been retracted by IOP Publishing following an allegation that raises concerns this article may have been created, manipulated, and/or sold by a commercial entity. In addition, IOP Publishing has seen no evidence that reliable peer review was conducted on this article, despite the clear standards expected of and communicated to conference organisers.

The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

Retraction published: 9 September 2022
Research on New Path of Internet of Things Data Mining Based on Cloud Computing Platform

Yu Wang¹,*

¹Department of Mathematics and Computer science, Fuzhou Preschool Education College, 344000, Fuzhou, China

*Corresponding author e-mail: wy1817943@fzpec.cn

Abstract. In this era of Internet of everything, no one has ever thought that the global cloud computing 3A pattern has continued to the Internet of Things market. As we all know, the Internet of Things is now the focus of the development of Internet technology. Belongs to high and new technology development in the field of Internet of things, big data and cloud computing, there is a thing I don't open the connection between artificial intelligence, as one cannot leave the technical support for other, especially when the ground application, in different scenarios, the several different ways to cooperate between technology, high-tech form today. In such a relationship, this paper discusses a new path of data mining for the Internet of Things based on cloud computing platform.

Keywords: Cloud Computing Platform, Internet of Things, Data Mining

1. Introduction

As IoT devices collect large amounts of structured and unstructured data from sensors, they will face the challenge of processing and mapping that data in real time, which is where big data comes in. Big data and the Internet of Things are symbiotic. In this symbiotic relationship, seamless IoT connectivity and the consequent big data acquisition and analysis can help companies gain a higher understanding of their future growth. The Internet of Things is one of the most innovative developments of the last decade, successfully merging technology and data to develop more constructive strategies. With the proliferation of sensors and smart devices over the last decade, it is critical for organizations to process large amounts of high-frequency data accurately. In this interconnected world, an IoT data mining path that absorbs, analyzes, and captures business insights is the need and the right strategy right now.

2. Key Issues of Internet of Things Data Mining

2.1. Characteristics of data in the Internet of things system
Large amount of data
Highly dynamic
Complex data types
Space-time characteristics
Data is heterogeneous
Imperfection

Figure 1. Characteristics of data

Each Internet of things system has thousands or more sensing devices that continuously transmit collected data to the data center. The data center not only needs to store the collected data, but also needs to save the historical data to support the state tracking, data statistical analysis and data mining of the object. Therefore, the first key problem of data mining task in Internet of things system is the large amount of data.

The Internet of things system monitors a wide variety of objects, including transportation, biology, forest, architecture and so on. The information collected by different monitoring objects is different, for example, video information needs to be collected in traffic system, medical monitoring system needs to collect physiological information such as pulse, blood pressure and medical stereoscopic influence information. It can be seen that the data types collected by the Internet of things system are complex, including text type, image type, video type and so on.

The data are heterogeneous. The Internet of things system contains a variety of sensing terminals, such as GPS sensing terminals, RFID sensing terminals, video sensing terminals, wireless sensors and so on. From different sensing terminals

The format and semantics of the data are different. The heterogeneity of data increases the difficulty of data storage and mining. Highly dynamic. Different sensing terminals are added to or removed from the Internet of things at each moment. As the sensor node increases, the collected data is inserted into the database. Similarly, when a sensor node is removed from the Internet of things, the database should no longer record the data collected by the sensor node. A iot system contains a large number of sensing nodes, and each sensing node changes frequently dynamically, so the data in iot system is highly dynamic.

Temporal and spatial characteristics. The sensor terminals of the Internet of things system are distributed in different regions, and the data collected by each sensor terminal should monitor the state and other information of the object at all times. Perceived data is meaningful at a particular time and space, and if it is not in or over this time, the meaning of the data may be small. Therefore, the complex spatiotemporal characteristics are a significant feature of data in the Internet of things system.

Incomplete. The sensing terminal of the Internet of things system works in the state of no artificial monitoring. Each sensing terminal may be attacked by natural or human factors at any time, including lightning damage, artificial malicious damage and so on, which leads to incomplete data reception of
the sensing terminal. On the other hand, although sensor terminals can be widely deployed in different geographical locations, they still cannot cover every corner, so incomplete spatial data collection is also one of the characteristics of Internet of things system data.

2.2. Internet of things requirements for data mining

Real-time and efficient data mining [5]. Any control end of the Internet of things system needs to analyze the environment in real time and make the correct decision. Therefore, real-time and efficient is one of the most critical requirements for data mining in the Internet of things system.

Distributed data mining [6]. Internet of things computing equipment and data natural distribution, have to use distributed parallel data mining.

Data quality control. The storage and management of multi-source, multi-modal, multimedia and multi-format data is an important guarantee to control the quality of data and obtain real results.

Decision control. mined patterns, rules, feature indicators for prediction, decision making, and control.

Mining tasks. It mainly includes data extraction, classification prediction, clustering, association rule discovery and so on.

2.3. Challenges of Internet of Things Environmental Data Mining

Select the appropriate algorithm and adopt the appropriate parallel strategy before the parallel efficiency can be improved. Therefore, the design of the algorithm becomes very important, the adjustment of parameters becomes essential, and the adjustment of parameters directly affects the final results.

Uncertainty. Firstly, the description of data mining task is uncertain, and data acquisition and preprocessing are also uncertain. The second is the uncertainty of data mining methods and results. Finally, due to the different final mining objectives that each user pays attention to, this leads to uncertainty in the evaluation of mining results. Uncertainty is the biggest challenge for data mining in the Internet of things system.

Credibility and security. Data mining in cloud computing environment will lead to the credibility of data mining cloud service software. The first is the correctness of the service and the security of the service; the second is the quality of the service, which is measured by three aspects: availability, reliability and high performance.
3. Internet of things data mining model based on cloud computing

The data mining model architecture based on cloud computing is divided into five layers: Internet of things data access layer, data integration layer, data mining platform layer, business control layer and interaction layer.

Internet of things data access layer module sea computing module: sea computing module contains a large number of sea computing nodes. It is mainly used to store all kinds of data collected by sensor terminal and preprocess the data, including removing noise data and repeating data, processing incomplete data, identifying and extracting key data, and unifying data format. Finally, the preprocessed key data is transmitted to the data integration layer. The preprocessing of data in the Internet of things data access layer is beneficial to save network bandwidth and to store and further apply the data integration layer.

Parallel data mining algorithm module: provides parallel algorithms for various tasks of data mining. As a data mining engine, it includes a library that can provide various parallel data mining algorithms based on cloud computing, which can be used to complete various data mining tasks.

Parallel ETL module: preprocessing the data. The input data comes from the distributed spatio-temporal database and data warehouse oriented to the Internet of things, which cleans, extracts, converts and loads the data for the data mining process.

Model evaluation module: evaluate the generated model. The results that meet the requirements of users are stored in the domain knowledge base, which can assist the business control logic to guide the data mining process.

Data extraction module: according to the different mining tasks, the relevant data is extracted from the spatiotemporal database or data warehouse facing the Internet of things.

Task scheduling control module: in response to the upper business module, the sub-business required to complete the business is called, managed, and the business is completed by calling the underlying module.

Workflow control module: monitor and manage the business status. The specific information parameters can be returned to the task scheduling control module of this layer.

User management module: the identification of user identity and the setting of corresponding permissions, but also including user login or logout and other commonly used management.

Business module: to achieve fine-grained user business requirements submission. The various services submitted by the user are obtained through the business module.

Results display module: to achieve users to view, analyze and save business results and other functions. Used to deliver the return of the system to the user.

4. Conclusion
Big data, cloud computing and Internet of Things can be said to be the hottest "three carriages" in the IT field. Since the birth of the concept, the three have maintained a subtle relationship, which can not be separated from each other, but are not the same. Cloud computing has the advantages of flexible architecture, low cost and enhanced security, and there will be more new technological achievements in the future, which is the inevitable result of the development of the Internet of Things technology on the cloud computing platform. Therefore, it is a promising thing to devote to the technology research and development of the Internet of Things.

References

[1] An Improved Internet of Things Data Mining Algorithm Based on Cloud Platform [J]. Journal of Anqing Normal University: Natural Science Edition, 2014, 7(2):37-40

[2] Cao Jianchun, Zeng Yun. Design of Data Mining Pattern for Cloud Computing Internet of things System [J]. 1 Ship Science and Technology, 2015, (06):228-231.

[3] Chen Dafeng's Research on the key Technology of Internet of things data Mining based on Cloud Computing [J]. 13

[4] Construction of Internet of things data Mining Model based on Cloud Computing [J] Information and computer, 1 (6): 122-123

[5] Construction of Zhang Hu's Internet of things data Mining Model based on Cloud Computing [J] Wireless Internet Technology, 2(20):30-51

[6] Li Zhining. Advances [J.] in Internet of Things Technology Computer Measurement and Control, 2012, 20(6): 1445-1448.

[7] New Technologies and New Products in China, 2014, 5(23):20

[8] Qin Yongbo, Chen Yanglin Energy Analysis of Internet of things data Mining algorithm based on Cloud platform [and Journal of Chengdu Institute of Information Engineering, 2 Tian 0 9(6):569-572

[9] Tang Yongfeng. A Study on Internet of Things Data Mining Based on Cloud Computing Platform [J.]; and Computer Knowledge and Technology, 2017, 13(07):218-219.

[10] Wang Ruigang. J. on Main Features and Basic Theory of Internet of things Computer Science, 2012, 3(6 A):201-203.

[11] Wang Youxi. Discussion on Data Mining of Internet of things based on Cloud Computing platform [J.]; and China New Communications, 20(02):57.

[12] Xu Shaofu, Yao Xiang. Data Mining of the Internet of things under Cloud Computing platform [J.]; and Electronic Technology and Software Engineering, 2017, 24(24):153-154.