Hindawi
Journal of Mathematics
Volume 2023, Article ID 9760547, 1 page
https://doi.org/10.1155/2023/9760547

Retraction

Retracted: Computational Intelligence and Things Technology-Based Collection and Design of Inheritance Characteristics of Tea Product Packaging Art Form

Journal of Mathematics

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Manipulated or compromised peer review

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] S. Wu and K. Mojtahe, "Computational Intelligence and Things Technology-Based Collection and Design of Inheritance Characteristics of Tea Product Packaging Art Form," *Journal of Mathematics*, vol. 2022, Article ID 3578831, 10 pages, 2022.

Hindawi
Journal of Mathematics
Volume 2022, Article ID 3578831, 10 pages
https://doi.org/10.1155/2022/3578831

Research Article

Computational Intelligence and Things Technology-Based Collection and Design of Inheritance Characteristics of Tea Product Packaging Art Form

Shilin Wu[1] and Kaza Mojtahe[2]

[1]*School of Fine Arts & Design, Guangzhou University, Guangzhou, Guangdong, China*
[2]*Department of Computer Engineering, Kyrgyz-Turkish Manas University, Bishkek, Kyrgyzstan*

Correspondence should be addressed to Kaza Mojtahe; kaza.mojtahe@mail.cu.edu.kg

Received 17 December 2021; Revised 7 January 2022; Accepted 7 February 2022; Published 10 March 2022

Academic Editor: Naeem Jan

In view of the core process data such as temperature and humidity of the tea product packaging process and the automatic control operation parameters of the production line, this paper designs a smart tea product packaging 5G Internet of Things gateway system, which realizes the 5G Internet of Things onsite monitoring and remote monitoring of the tea product packaging production line equipment. The design and implementation of the 5G Internet of Things gateway system are divided into three aspects, namely, 5G Internet of Things gateway configuration design, data communication protocol conversion. First, the 5G Internet of Things gateway configuration is to design the relevant control information of the tea processing production line equipment and complete the configuration storage of the PLC controller; secondly, the data communication protocol conversion is to pass the Modbus/TCP OPC standard to transfer the collected 5G Internet of Things. The sensor data undergoes unified standardized conversion, and then the standardized converted data is sent to the database and server using the MQTT protocol; the data processing of the 5G Internet of Things gateway system is the design of the internal data of the 5G Internet of Things gateway. Finally, the test was carried out and the results were obtained, which proved that the designed 5G Internet of Things gateway system is useable, reliable, has good stability and scalability, and provides an important solution for the construction of smart tea product packaging in the industry. The tea product packaging system based on 5G Internet of Things technology compiles electronic production management files for tea garden production, tea picking, tea processing, tea packaging and other links in accordance with the requirements of the national agricultural product quality and safety related systems and industry standards, and has become the traceability of tea quality The recorded important production management information provides important information support for the traceability of the whole process of tea.

1. Introduction

In recent years, 5G Internet of Things technology has been widely used in agriculture, and its advantages such as advancement and intelligence have played an important role in promoting agricultural modernization [1]. In the construction of the tea quality traceability system, 5G Internet of Things technologies such as sensors, RFID, QR codes, and wireless sensor networks are integrated and applied to tea planting, processing, storage, packaging, sales and other links to realize intelligent traceability information collection and processing can effectively improve the credibility and efficiency of traceability, which greatly promotes the quality of famous and high-quality tea in tea enterprises, and is of great significance to the expansion of the brand influence of tea enterprises [2–4]. Smart tea product packaging is the intelligent development direction of the tea processing industry and an important part of the Industry 4.0 smart factory. At present, most tea product packaging is still based on the construction of automated production lines, using the PC-PLC system, that is, using the PC in the control room of the tea product packaging to realize the PLC control system

and the collection and storage of sensor data through configuration software And monitoring has not realized the true 5G Internet of Things and cloud data storage and computing services [5–7].

The packaging process of tea products is very demanding on the environment. The existing tea product packaging factories are generally PC-PLC systems, which collect and upload real-time data through PLC chips or other types of chips, and store them in the local area network, which is not convenient for the staff to understand the tea. The product packaging environment can be viewed in real time and remotely monitored. Therefore, the application of 5G Internet of Things systems to tea product packaging will also become a trend in our research. As a bridge between sensing devices and traditional network transmission, 5G Internet of Things gateways play a very important role in 5G Internet of Things systems [8]. The 5G Internet of Things gateway for smart tea product packaging obtains sensor data such as temperature and humidity and control data such as forward rotation and reverse rotation in the tea product packaging equipment, and then uploads them to the local database and network server. At the same time, the 5G Internet of Things gateway can monitor various data on the packaging of smart tea products and play a key role in the subscription and publishing process. This is of great significance for improving the quality of tea, the total amount of processing, reducing the cost of tea production, and building a smart tea processing plant [9].

This article introduces 5G Internet of Things technology to agriculture, realizes the integration of 5G Internet of Things technology and agricultural technology, and specifically applies it to agricultural production, operation, management and services, thus forming the 5G Internet of Things for agriculture. It uses various sensors, sensor networks, and the Internet to collect and transmit agricultural production, processing, and circulation information, and then uses a back-end software platform to process massive agricultural information, so as to realize the entire process of agricultural production monitoring and scientific management, thereby achieving intensive agricultural production, goals of high quality, high yield, ecology and safety. Based on the assessment of the current platform design approaches, a simulation platform was constructed. The platform utilises an event scheduling system to realize the operation of the complete simulation process, and has the features of high simulation accuracy. At the same time, the platform employs script configuration files and text output files, which can accomplish easy creation of simulation scenarios and quick verification of simulation results, and has the benefits of excellent scalability and high repeatability. The agricultural product quality traceability system uses 5G Internet of Things technology to collect real-time information data about agricultural product planting, processing, warehousing, packaging and other environments and transmits it to the Internet traceability information management platform through the network. Massive data transmission and sharing are available for consumers, enterprises, and consumers. The government provides support for product traceability.

2. Related Work

The 5G Internet of Things uses RFID, various sensors, 5S technology (remote sensing technology, global positioning system, geographic information system, expert system, decision support system) and other sensing devices to connect objects with the Internet and process the collected data Analysis to achieve a high degree of integration of things and things, people and things, in order to achieve the purpose of precise management and real-time control [10].

Ding [11] takes Nongken tea as the research object, conducts research on the quality traceability system of tea, and applies 5G Internet of Things technology to tea growth, tea product packaging and tea sales. Users can query product information through the terminal. Based on the perception layer, transmission layer, and control layer of the 5G Internet of Things system, Vu [12] realized the traceability, planting, environment, tea processing and sales management monitoring of the tea platform, and explored and analyzed the network protocols, Issues such as interactive interfaces. Nasrallah [13] takes Anhui tea as the research object, using 5G Internet of Things, wireless communication and big data technologies to design a unified platform based on SOA architecture to achieve comprehensive monitoring and management of tea, effectively improving the production level of related companies and marketing capabilities. Aiming at the problems of the 5G Internet of Things gateway system not reaching the unified standard and the easy construction of the wireless sensor network, communicates through multiple remote communication modes such as GPRS, Wi Fi, and Ethernet, and uses the python integrated Sqlite3 as the embedded database. Indrawan [14] lowered network maintenance costs by using FPGAs to simulate and evaluate the frame format conversion and address mapping between Ethernet and FC in order to establish a smooth connection and protocol conversion between FC and Gigabit Ethernet. Wan [15] extends the multi-network information architecture using software-defined approaches. Hierarchical 5G Internet of Things software-defined controllers in the feedback intermediate device can not only reduce link congestion, realize the scheduling of various business flows, but also improve the current network operating conditions and algorithm performance to achieve full optimization of the network's performance. Additionally, two distributed energy management research and development systems that are suited for smart city scenarios have been developed. The platform has a wide range of use, supports a large scale of network business, and can realize resource sharing and complete the interaction between heterogeneous Internet of Things devices.

Some scholars have integrated 5G Internet of Things technologies such as RFID, sensors, ZigBee wireless sensor network, GPS, distributed data storage and processing based on cloud computing, data mining and knowledge discovery, artificial intelligence, through the breeding and transportation of pigs. The collection, storage, processing and application of all information from slaughter, processing to sales can provide consumers, corporate customers and the government with product tracking, information query, departmental

supervision, industry early warning and other services [16]. At the same time, it implements refined management of agricultural products and livestock products from the source of production to the consumer market, records the quality and safety information of growers and farmers throughout the process, provides effective agricultural product quality and safety supervision and management mechanisms and methods for the agricultural and animal husbandry departments, and provides a variety of traceability information inquiries to facilitate consumers' inquiries. With the help of RFID technology, the researcher has carried out the development of information transmission carrier, information recording and exchange equipment, as well as the construction of information exchange and transmission platform, and has developed and established the traceability code, traceability carrier, and traceability equipment "Trinity" of agricultural product quality and safety traceability system. They introduced a differential algorithm to solve the minimum life cycle, so that the routing node selects the cluster with the longest life cycle to communicate, and through GAThe PSO method uses cluster nodes to identify the best route. Due to its role as part of the 5G Internet of Things, a 5G Internet of Things gateway takes on a role of merging perception networks and communication networks, allowing for smooth connections between the perception layer and network layer [17, 18]. An effective security system must be built for 5G Internet of Things gateways, which must have comprehensive access capabilities for detecting networks and nodes as well as extensive administration capabilities. Increasing user privacy is simply one aspect of the widening reach of information perception, which is closely linked to environmental monitoring, production, and life safety. The above improvements aimed at energy consumption have made ZigBee wireless communication technology a big step forward. For today's society where resources are scarce and green development is emphasized, it has high research value [19, 20].

3. Collection of Inheritance Characteristics and Design Model Construction of Tea Product Packaging Art Form Based on 5G Internet of Things Technology

3.1. 5G Internet of Things Technology Level Nesting. The 5G Internet of Things technology is an important part of the information age, and is a carrier of information based on the Internet and traditional communication networks. With the rapid development of sensor technology, communication technology, "Internet +" information technology, and the perfect integration of Internet of Things technology, it is applied to tea product packaging to strengthen the information management, control and lean production process in the tea product packaging process. A high-efficiency and high-quality smart tea product packaging has been established, and its structure is shown in Figure 1.

The 5G Internet of Things gateway transfers the collected data information through the MQTT proxy message, realizes the conversion of Modbus to MQTT protocol, and transmits the data of the wireless sensor network to the server on the Internet, so that users can monitor the unified format of different device modules. The human-computer interaction equipment provides a simple and efficient human-machine interface. By obtaining data from the server and transmitting the user's operating instructions to the server, the user's real-time and remote query and operation functions are realized.

$$p(x(1), x(2), \ldots, x(n)) = \prod_{i=1}^{n} p\{x(n)|x(n-i+1)\},$$
$$C = \frac{2 * (p(x) * p(n))^{1/2}}{(p(x) + p(n))}. \tag{1}$$

The tea product packaging tea machine equipment is equipped with a mechanical sensing layer that is made up of sensor equipment and PLC modules. The tea machine's environmental sensor data must be classified and sent to the higher 5G Internet of Things gateway system before it can be used. The sensor is in charge of gathering the information. The PLC module is in charge of translating data into the standards needed by 5G Internet of Things gateways, and it makes use of multi-threaded data processing to assure data transmission consistency and dependability.

$$f(x) = x(i) + \frac{x(i) * x(j)}{x(i) + x(j)},$$
$$U(x) = (I - C)^{-1} * C^{T} - \sum_{i=1}^{n} p(x) * C(i) \sum_{i=1}^{n} p(x) * Z(i). \tag{2}$$

The sensor network information includes the network topology information of the sensor node, the energy information of the node, etc., which is convenient for making judgments on the status of the sensor network. At the same time, it can also introduce rapid network diagnosis according to the actual deployment in the future to provide users with instruction. Specific application information is the information captured by various sensors installed on nodes according to specific application fields, such as soil temperature and pH value in precision agriculture.

$$Z(x, y) = \begin{bmatrix} x(i) \\ x(j) \end{bmatrix} \begin{bmatrix} \dfrac{\exp(x(i) + x(j))}{y(i) + y(j) + y(k)} & 1 \\ -1 & -\dfrac{\exp(x(i) + x(j))}{y(i) + y(j) + y(k)} \end{bmatrix}. \tag{3}$$

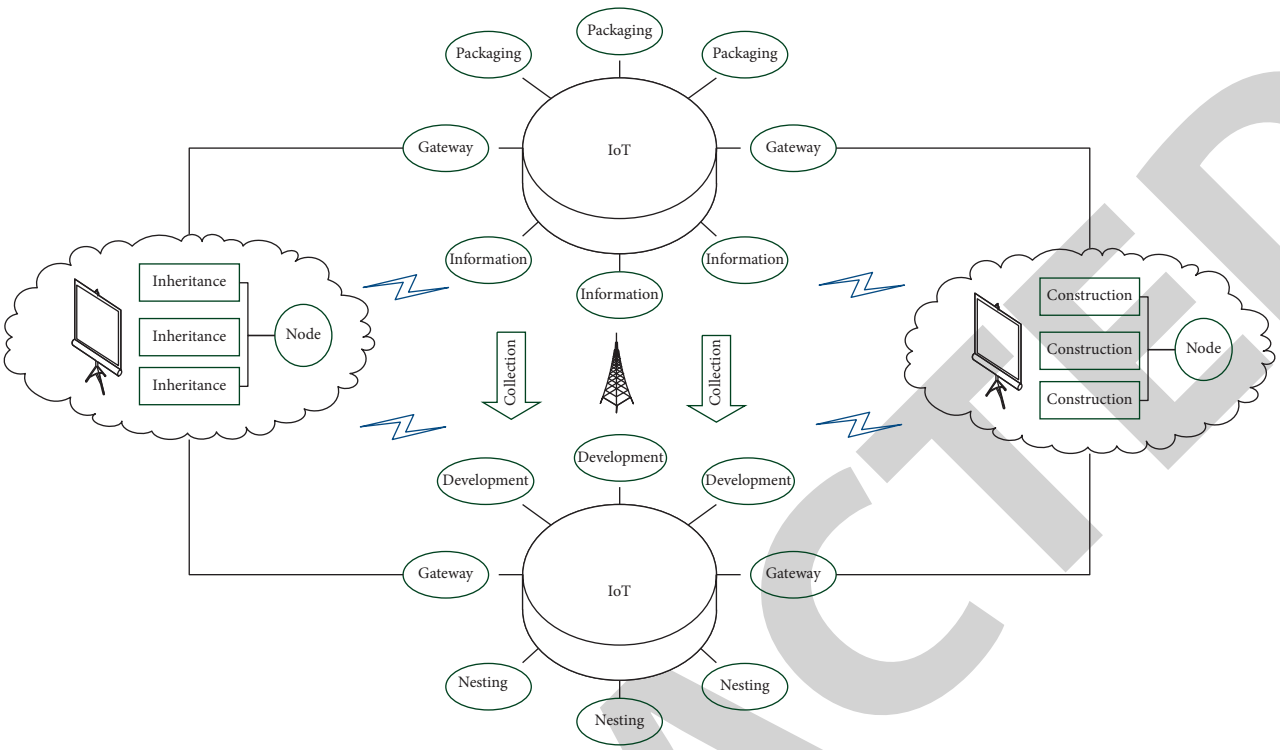

Figure 1: Hierarchical structure of 5G Internet of Things technology.

The 5G Internet of Things gateway communication layer is responsible for collecting the data transmitted by the sensor terminal, and converting the wired and wireless transmission signals into unified computer binary data according to the MQTT protocol, which is composed of DCS field workstations or 5G Internet of Things gateways. The data resource layer reads and stores the collected data. Different servers correspond to different data. Data storage is realized through programs and data query and call are realized through user commands.

3.2. Tea Product Packaging Process. Smart tea product packaging is the intelligentization of the whole process, integrating sensor technology, industrial wireless sensors, long-distance wireless communication technology, international open field bus, information fusion and intelligent processing technology into all links of production, according to the existing factory. The specific conditions and actual needs of the complex industrial site are intelligently processed for data information collection, real-time monitoring, tea product quality tracking and tracing, equipment operation and maintenance and diagnosis. The essence of the tea quality traceability system is the recording and transmission system of tea information, including the tea quality traceability system, data centers (national, local, and enterprise), system specifications, and work team composition, covering all aspects of tea production, processing, and marketing, thus forming a highly reliable traceability system. The software of the smart tea garden collection management system belongs to the top application layer of the 5G Internet of Things structure model. Data presentation, storage, and administration are all handled by this layer, which is a combination of the 5G Internet of Things and consumer and industrial demands. Scalability, complexity of development, workload, and visual page aesthetics of the software system are all influenced by the software framework and development methodology. The smart tea garden collection management system's software architecture is intended to satisfy as many of the aforementioned needs as feasible. It plays a role by correctly identifying, truthfully recording and effectively transmitting information throughout the entire process of tea planting, processing, and sales, so as to solve the problem of tea quality and safety.

Figure 2 is the convergence curve of the features of the Internet of Things. Tea packaging is mainly divided into small bag packaging and gift box packaging. Small bags of tea are commonly found in hotels and hotels, and gift box packaging of tea is usually directly facing consumers. In the case of tea packaged in small bags, the hygienic quality problems of the packaging bags may occur; in the process of packaging tea products, quality problems such as unqualified packaging materials or improper use of oxygen scavengers and preservatives may occur. Therefore, it is necessary to set up packaging information collection points to record tea packaging information. With the implementation of an electronic file tracking system, it is feasible to minimise the mixing of goods between batches; separate storage facilities for raw materials and finished tea are established, stacked in operating areas, and processed products are united and kept in a single location. Different network connection techniques should be used in the development of the enterprise local area network in accordance with the various needs for the collection of information in tea growing, processing,

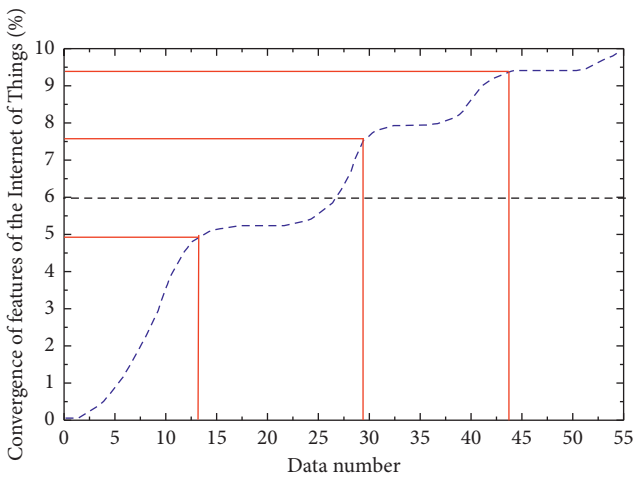

Figure 2: Convergence curve of Internet of Things features.

storage, packaging, and sales, for example. As part of the traceability database server's wireless network is connected to the tea garden's temperature sensors and PH sensors; the factory's RFID tag readers, QR code printers, and other equipment are connected to the traceability database server via the factory's wired or wireless network.

3.3. Information Feature Collection. The working method adopted in the Internet of Things is to wait for commands, and the difference between the PLC and the Internet of Things is the working method of cyclic scanning. The CPU of the PLC starts with the first command to collect sensor data, collects data, and returns to the first command after encountering the terminator, continuously looping, and continuously real-time collecting information is transmitted to the upper layer. If there is no termination instruction and jump instruction, the program is executed in order. The server application layer includes a multi-function server in the cloud that provides users with human-computer interaction functions and a data server that stores the entire 5G Internet of Things system. The function server performs the data calling function, reads the sensor data from the 5G Internet of Things gateway, and displays it in the human-computer interaction device used by the user. At the same time, it also packages and encapsulates the user's operation instructions to the 5G Internet of Things gateway system. The data server stores various data required for the normal operation of the 5G Internet of Things system, including part of the configuration information, user data, and device data of the 5G Internet of Things gateway. The user management layer is for different people and has different authority settings, so the data information obtained is also different. Figure 3 is the distribution of the characteristic indicators of the Internet of Things information.

PLC is the abbreviation of Programmable Logic Controller. It is a kind of programmable memory. It is widely used in electromechanical automatic control systems and assembly line automatic control systems in various fields. PLC is mainly composed of user program memory, central processing unit (CPU), power supply, I/O module, system program memory and communication interface. PLC has a series of advanced functions, such as PID control, high-speed counting, terminal counting and so on. Each server will only process part of the data, and the processing efficiency will be greatly improved. Column-oriented means that the data in the database is stored in a column, and the data of a column is stored as a part. Compared with JSX, it is more natural and easy to understand in reading and writing. Compared with Angular, the API and documentation provided by Vue are more flexible and comprehensive. Learn-to-use costs are decreased, and the application's speed improves. Benefits like two-way data binding, componentization, support for the integration of numerous UI frameworks, and simplicity of use provided by Vue are exactly what this software system requires in terms of easy expansion, simple development, and visually appealing pages. Vue. To summarise, we've decided to work with Vue as our front-end framework of choice. The row-oriented database will query each row of data if you query certain fields of the real data. It is an alternative technique to use columns. The efficiency of queries will be considerably increased since just the columns that are required will be queried. With the continuous updating and upgrading of products, various functions and processing speed have been greatly improved.

3.4. Design Model Factor Fusion. When the Internet of Things network is established by the coordinator, it first becomes the cluster head of the first cluster. After the first cluster is established, the depth of the router is calculated. The 5G Internet of Things gateway node of the first cluster will gain. The node with the most even and connected child nodes is selected as the cluster head of the next cluster, and finally the node with the odd depth and the terminal node are divided into the cluster where the parent node is located. The ISO/OSI model has 7 layers, namely the physical layer, data link layer, network layer, transport layer, session layer, presentation layer and application layer. ModBus is a protocol for text transmission at the application layer of the seventh layer of the model, including three message types: ASCII, RTU, and TCP. The powerful functional modules of PLC give it the advantages of good stability, strong anti-interference ability, high compatibility, wide expansion ability, and simple operation of programming software, making PLC unique in engineering applications. Smart tea product packaging uses PLC to collect data. First, the calculation speed is fast, which can reflect the changes in the tea-making environment in a timely manner; the second is the storage capacity is relatively large, and developers can write various programs according to their own needs.

Sensors are connected to one other through wireless communication to establish a network system that transmits data gathered by the sensors to a fusion processing application system. Figure 4 depicts a framework for integrating design model factors. Wireless sensor network technology combines wireless communication, embedded system technology, sensor technology, and distributed information processing to provide real-time monitoring of monitored

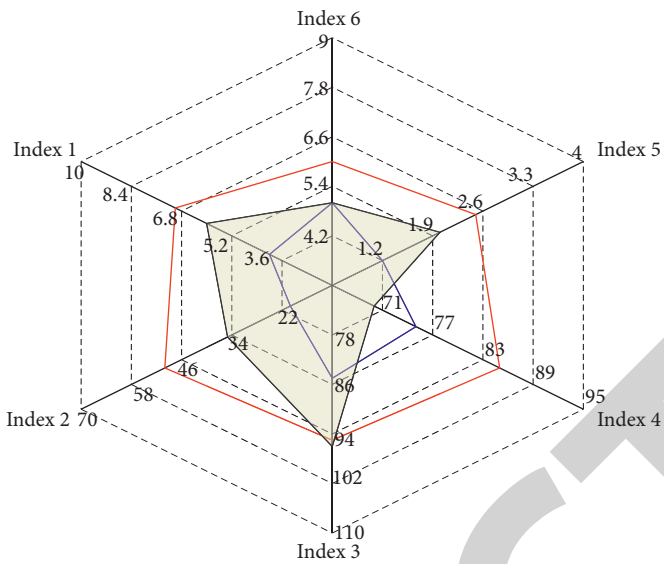

Figure 3: The distribution of Internet of Things information characteristic indicators.

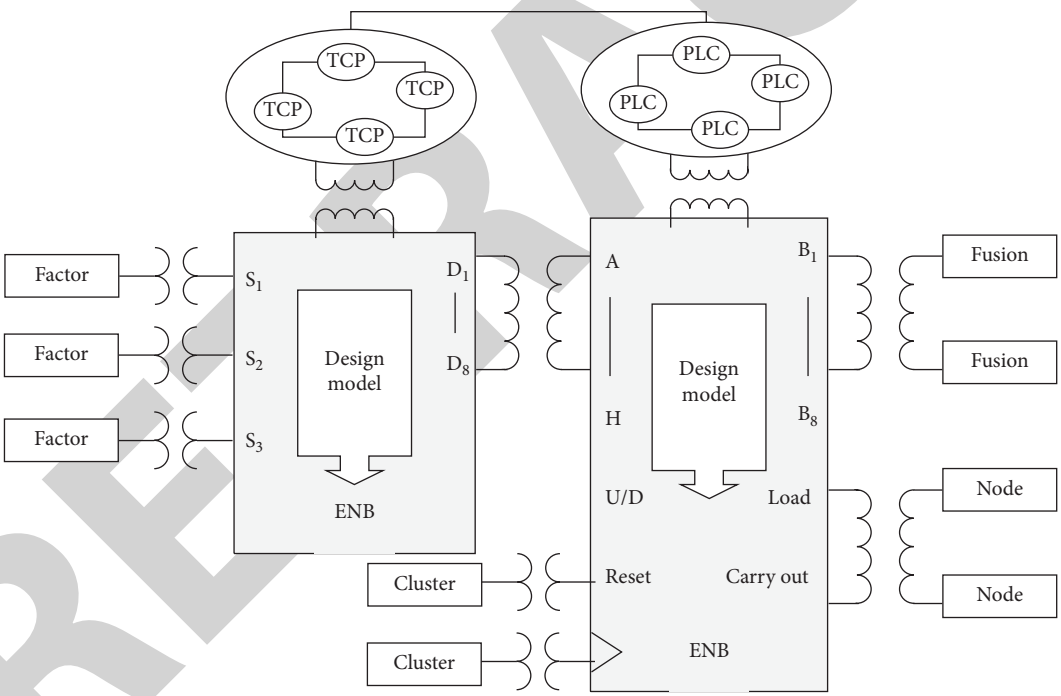

Figure 4: Design model factor fusion framework.

items in the coverage area. The Internet of Things is used in the food safety and quality monitoring system to track the production, processing, distribution, and consumption of agricultural goods, resulting in a chain of agricultural product safety and quality monitoring that spans the whole industry. To assure the safety of agricultural goods on the market, the whole process is open and accessible. A distributed database that employs key-value pairs instead of relational tables stores data in a nonrelational format. Nonrelational databases do not need to go through the analysis of the SQL layer to read and write data, and have high read and write performance; based on key-value pair storage, the data is not coupled and easy to expand; the format is flexible, and the data can be stored in the database in multiple forms, as opposed to relational items. There are not many restricted format requirements for the type

database. Compared with relational databases, nonrelational databases are more efficient in reading and writing large amounts of data.

4. Application and Analysis of Collection and Design Model Inheritance Characteristics of Tea Product Packaging Art Form Based on 5G Internet of Things Technology

4.1. 5G Internet of Things Data Screening. The number of 5G Internet of Things base stations is set to 16, the transmission power is set to 24 dBm, and the fixed coordinates are evenly distributed in the simulation area. During the simulation, the number of terminals gradually increased from 3200 to 3200, and the transmit power was set to 20 dBm. At the same time, in order to ensure that the number of access terminals for each base station in the two platforms is the same, and to ensure that the location distribution of the terminals in each base station is roughly the same, we divide the number of terminals into 16 groups in each simulation, and each group of terminals adopts a uniform distribution method. They are respectively distributed in the coverage area centered on each base station. Non-real-time services report the operation of the network by sending fixed-length short packets to the system periodically and at a low rate, which are used for remote status monitoring and automatic control; real-time services are composed of fixed bytes. First, the base station transmits the collected information to it. The concentrator is then transferred by the concentrator and sent to the terminal equipment, and then the current system situation is reflected to the monitoring system by means of information feedback.

Figure 5 is a comparison of the transmission power convergence of Internet of Things base stations. The transmission accuracy rate of OPC to MQTT is distributed between 98% and 99%, which fails to reach 100%. This is a short-term data lag problem caused by the use of half-duplex communication in the data protocol conversion. In addition, there are also data in multi-threaded communication. It is necessary to employ buffer stack technology to increase transmission success rates because of this overflow. Interpolation processing should be done using one of three methods: adjacent-point interpolation, linear interpolation, or spline interpolation. Because it provides the smoothest results, spline interpolation is often utilised in processing applications. Interpolation for the sine wave's terminal is used in all four interpolation techniques. First 64 data points may be utilised for FFT transformation if you do not add a significant content rate for each harmonic (usually, the total content rate of each harmonic of a channel is 20 percent). Some simple amplitude processing is done before FFT transformation. After some processing, the result of FFT transformation can get up to 32 harmonics. The content rate meets the requirements of the 2nd to 19th harmonics in the statute and is compared with the standard table in the experiment, and the error does not exceed 0.2%.

4.2. Product Form Feature Collection Simulation. The simulation in this article uses NS.2 Simulation platform, this simulation platform comes with the protocol modules of the

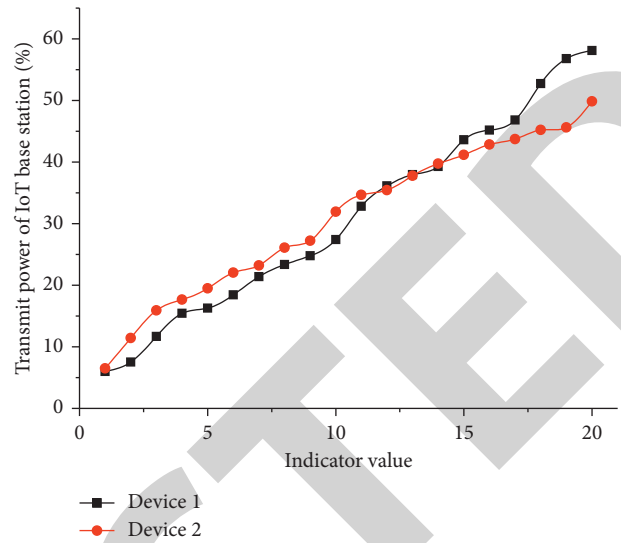

Figure 5: Comparison of transmission power integration of Internet of Things base stations.

media access layer and the physical layer defined by IEEE 802.15.4, and only the protocol module of the network layer algorithm needs to be written during simulation. We use AWK to process and analyze the results of the simulation, and then draw the graphs. In this paper, the ZBR algorithm and the improved ZBR algorithm are simulated and compared in different scenarios with the number of nodes ranging from 10 to 100. The data is the average value of 20 runs. During the simulation, the nodes are randomly distributed, and 8 data streams are randomly concurrent. The speed is 0.5 packets/s. In order to achieve the design goals of the above traceability system, the tea quality traceability system adopts a hybrid mode combining B/S architecture and C/S architecture. The internal information collection and processing of tea product packaging companies mainly adopt C/S architecture design, and each information collection accesses the local traceability database server through the client system; the consumer information query adopts the B/S architecture design, and each user accesses the traceability database that has been audited by the Ministry of Agriculture through the Web page.

In order to verify the usability and rationality of the smart tea product packaging 5G Internet of Things gateway system, this chapter conducts operational tests on the 5G Internet of Things gateway, including module operation test, system operation test and performance test, and analyzes the test results. Figure 6 is the distribution of the amount of information in the Internet of Things database. The test environment consists of a PLC embedded control system, a Windows host operating system, a Mosquitto proxy server, a Web server, a MySQL database, and so on and so forth. The human-computer interface device may be used to query and operate the smart tea product packaging server when the system is operating and testing. Analysis is done on the three metrics of average delay, remaining energy and packet delivery rate once the simulation experiment is completed. To limit the quantity of communication, the clustering method

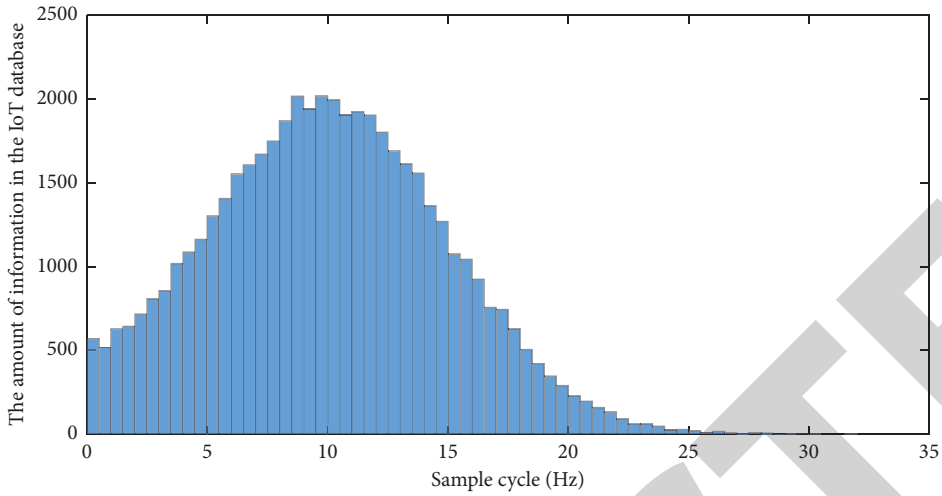

Figure 6: Information distribution of Internet of Things database.

uses a data fusion process, which lowers the time delay between data transfers. From the picture, it is clear that the revised algorithm's latency has been decreased by 12.4% when compared to that of its predecessor. An energy percentage is a metric for determining how much of the network's original energy remains after it has been exhausted. It is able to accurately monitor the algorithm's energy consumption. The higher the remaining energy percentage is, the better the energy saving effect is. It can be seen that the remaining energy ratio of the improved algorithm is higher than that of the improved money algorithm. As the number of nodes increases, the percentage of remaining energy decreases, and as time goes by, the decrease is more gentle. This is also in line with the actual situation. The unnecessary forwarding of RREQ packets reduces the overall energy consumption of the network.

4.3. Example Application and Analysis. The system is responsible for the collection of tea garden production environmental information data, and then collects the data through the ZigBee-based wireless sensor network for summary, and finally transmits the information data to the remote control center through the 3G/4G wireless communication network and the Internet. The server side of the control center realizes the monitoring and management of the production process and data analysis and decision-making through application software. The number of transmitters gradually increased from 5 to 200, and they were distributed in the simulation area in a random manner. The listening signal range of each terminal is set to 550 m, the receiving signal range is set to 220 m, and the MAC layer selects the CSMA protocol as the access layer protocol standard. The parameters of the simulation configuration mainly include the following categories: simulation area, simulation time, simulation service type, terminal attribute value, wireless channel propagation model, etc. An increase in packet loss rates and a drop in throughput may be seen when using event scheduling to process data packets in a network with increasing numbers of terminals, according to experimental studies. There is zero packet loss when there are just a few terminals using the channel, since the channel is generally inactive while only a few devices are using it. A higher throughput is achieved as a result of increased channel use as more terminals contact the channel to deliver data packets. Data from the Internet of Things database is shown in Figure 7 at a glance.

Power allocation is a core component of wireless resource management. Under the condition of ensuring the respective communication quality requirements of the terminal, this technology reduces the impact on other users by reducing its transmission power value and improves the system capacity. This technology sets different reuse factors in different areas of the cell, divides the total resources into multiple frequency bands according to the total amount of system resources and the setting of simulation scenarios, and divides the coverage area of each cell from the inside to the outside. Multiple circular areas allow users in different circles to use frequency bands alternately, so as to reduce interference at the edge of the cell, improve the fairness of each user in the cell, and improve the experience of edge users. When the channel is saturated, if you continue to increase the number of terminals, the channel collision will intensify, and the packet loss rate will increase and approach 1. At the same time, multiple terminals will collide with each other, resulting in a sudden decrease in the total number of packets sent by the system and a decrease in throughput. After comparison, the trend of the packet loss rate and throughput measured by the two platforms with the number of terminals is roughly the same as that of NS2. Therefore, the event scheduling method designed by the platform is basically accurate and can be used for simulation of common scenarios.

Figure 8 is a comparison of the data latency of the Internet of Things database channel. The packet delivery rate is a key indicator for detecting network transmission performance. It can reflect the stability and reliability of the network. The packet delivery rate is the ratio of the number of data packets received to the number of data packets sent, which is directly proportional to network performance. The

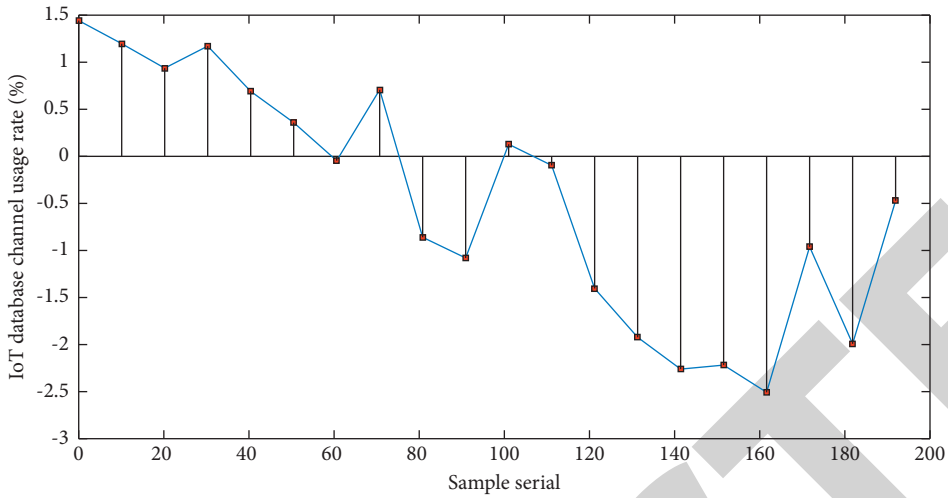

Figure 7: Channel utilization rate of Internet of Things database.

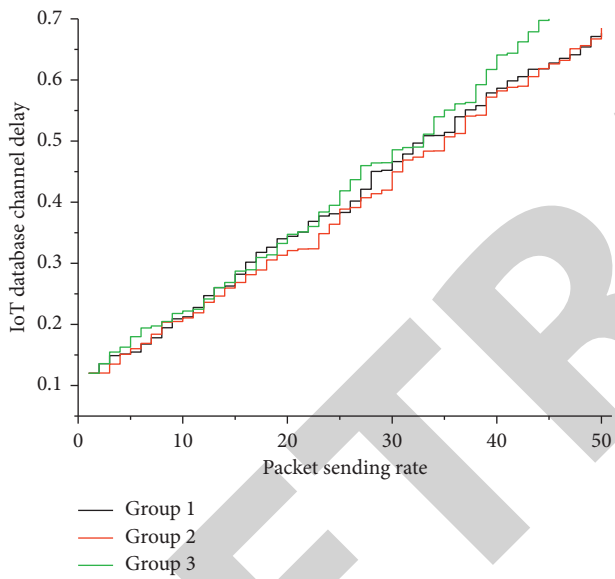

Figure 8: Comparison of data latency of Internet of Things database channel.

MQTT client mqtt-client-NW09wrg calls the publish interface to publish a message to the Mosquitto server. The message subject is test and the size is 62 bytes. The Mosquitto server temporarily caches the message locally on the server and publishes the response. When the client receives the response, it will do it again Initiate a request to release the message to the Mosquitto server, and finally the server returns a response that the message was successfully published and deletes the local cache. The 5G Internet of Things gateway system transmits data to the server, and manages the equipment through the entire 5G Internet of Things front-end system, which can display terminal sensor data in real time, and perform certain analysis, processing and visualization. For the different functional interfaces of the front-end system, when the 5G Internet of Things gateway system is running normally, the interface can receive and display the local and overall information and status of the tea product packaging, and can also perform reverse command operations. And through the running test graph, we can roughly understand that the network I/O read and write speed is 4.8 M/s when data is written from MySQL to HDFS cluster on different servers. The writing speed of HDFS is 9.5 M/s, and the files of HDFS are stored on the disk, and the writing speed of the disk is 9.5 M/s–19 M/s. It can be seen that the packet delivery rate of the improved algorithm is higher than that of the previous algorithm. Because the improved algorithm discards unnecessary RREQ control packets, the packet delivery rate is higher and the network transmission performance is better.

5. Conclusion

This paper arranges Internet of Things sensors in the packaging process of tea products, collects environmental data related to the growth of tea, visualizes it in the software system, alarms the environment that is not conducive to the growth of tea, and uniformly manages the agricultural operations of tea farmers. On this basis, the energy consumption of the sensor and the overall performance of the system are optimized. First, according to the principles and requirements of the tea quality traceability system and the production practice of it and its affiliated tea product packaging enterprises, nine technical steps for the traceability of the tea quality traceability system are designed. Then, based on the agricultural product quality traceability system of the Ministry of Agriculture, the introduction of 5G Internet of Things technologies such as sensors, RFID, QR codes, and wireless sensor networks, the overall framework of a tea quality traceability system based on the 5G Internet of Things was constructed, and user information and coding management were designed. Tea plantation production and information collection, tea processing and information collection, quality monitoring management, tea sales management, data collection, information query and system maintenance and other eight system function modules and related databases, develop a special website and user query terminal, users through the user The terminal queries the

traceability information of the product. The system integrates 5G Internet of Things technology into the tea quality traceability system, realizes the intelligent collection and processing of tea traceability information, and effectively improves the efficiency and credibility of traceability. At the same time, the system carries out the functional module design according to the tea garden production, tea processing, tea storage, tea sales and other tea "production plus sales" one-stop chain, database design specifications, comprehensive functions, convenient operation, and friendly interface.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

This research was partially supported by the Ministry of Education of Humanities and Social Science Project 2021 (21YJA760091 and 21YJC760042) and Guangzhou Social Sciences Planning Project 2019 (2019GZGJ244).

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