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Design and Implementation of College Students' Physical Health Data Analysis System Based on Multiple Computing Big Data

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Abstract:

Personal comprehensive quality has always been the main goal of higher education. The rational use of all kinds of data in Colleges and universities can enhance students' macro and micro understanding, and make their group characteristics include individual characteristics. Based on the health data of college students, this paper designs and implements a data collection, management and application integrated student physical health data system. Based on the analysis of the necessity of applying big data to the management of students' physical health information, this paper explores the design of students' physical health information management system under the environment of big data. In this paper, multi computing big data technology is used to improve the previous data clustering algorithm, which is more efficient. The experimental results show that the data accuracy of the method used in this paper is better, and the data proficiency is faster. This method has a certain reference value for the research of students' physical health data system.

Keywords: Big data; health information management; data mining; physical health

1. INTRODUCTION

After the reform and opening up, the college entrance examination system has been further implemented. With the pursuit of knowledge, the enrollment rate of colleges and universities is increasing with the times, which makes our country's reform and opening up process full of talents, which is conducive to further promote the development of the country.Since ancient times, the teaching mode of students in our country has been relatively single. Whether it is primary school or university, the score of cultural theory course has always been the key content of teaching. However, it is difficult to further cultivate students' personal physical health [1].

However, the importance of physical health in students has not been highlighted.Therefore, with the opening of people's minds, students' physical health has become the core content of the country's main research in education.As a result, a series of measures are taken for students' physical health. With the continuous implementation of the Department, the data of College Students' physical health is also changing with the times. Therefore, we can not only rely on the methods of entrance examination or physical examination once a semester to observe the physical health of college students. We should fully understand, take measures and intervene [2].

Automation and instrumentation (No. 4, No. 222 in total) will be presented in one step. However, the core of physical health is inseparable from students [3-5]. At present, the management of College Students' physical health is closely connected with the infirmary, University Hospital and sports department.The initial physical examination has become the starting point of physical health management. However, the sampling of later data sources has not been carried out continuously, so it lacks authority.Although some colleges and universities carry out physical health management on students through annual physical examination, with the help of a variety of instruments to detect all aspects of students' physical conditions, which is conducive to data sampling in all aspects. Although students can learn a lot of scientific and cultural knowledge in Colleges and universities, the development of students' physique also plays a very important role in the all-round development of students.

2. INEVITABILITY OF BIG DATA APPLICATION IN STUDENTS' PHYSICAL HEALTH INFORMATION MANAGEMENT

In modern society, knowledge explosion has become the norm of our life. In the process of information management in Colleges and universities, a lot of data are mixed together. The management of it can not do

without the reference of big data. The strategic planning of a school can not do without a lot of information of its own campus. The curriculum arrangement and operation prescription of students are also inseparable from the regularity and discussability of massive data [6].

In the statistics of big data, on-site collection and data entry are indeed conducive to the management of students' physical information data. However, with the continuous emergence of College Students' physical health crisis and the repeated occurrence of sudden death in college physical education, students' physical health has become the object of daily concern in Colleges and universities.Although students' learning pressure occupies a large share in students' health problems, how to make the school pay close attention to the students' physical health condition has certain reference significance for the development of students.Educational administration system, school work system, campus card system, SMS platform, etc. are all in the school information management division, mutual assistance, the formation of the school data center. Through different data models, the problems left by students are divided into different types, which is conducive to further observation of the main dynamics of students with weakened physique [7].

And the school continuously improves its own infrastructure construction, which is conducive to the accuracy and diversity of school big data collection. For example, the collection of students' physical health information within the class is conducive to students' attention and clear their own physical quality. By comparing the expert model diagram, students can continuously cherish their own body.

3. DESIGN OF INFORMATION MANAGEMENT SYSTEM FOR STUDENTS' PHYSICAL HEALTH MEASUREMENT IN BIG DATA ENVIRONMENT

3.1 DEVELOPMENT MODE

Generally speaking, the mixed development of C / s and B / S is conducive to the formation of comprehensive management system of College Students' physical health test.For now, this is the best way to meet the times. Through different structures, we can learn from each other and make use of computers to manage them. This is conducive to bringing the role of digital central database into full play and promoting the better combination of educational administration management and other systems.C / S mode plays a very important role in the internal system, the number of internal changes with the different management authority; B / S mode plays a significant role in the external system, which is conducive to further clarify the harmonious relationship between students and management departments [8-9]. The system structure topology is shown in Figure 1.

Intranet (C / S mode) is an indispensable part of the system manager's office. Through the interaction with the database, the persistent data can be achieved to meet the actual needs. The system setup and management depend on the intranet mode, (B / s)The mode belongs to the external network mode. In the process of students' own performance inquiry, the external network mode is an indispensable main link, which can be queried and browsed at any time according to the needs.In addition, although with the help of campus network, the system mode can be formed.However, in the process of management and query, the VPN virtual private network support platform outside the campus network can also play a very important role.Users' information authentication, encryption, security and other issues are inseparable from the full support of VPN network system.

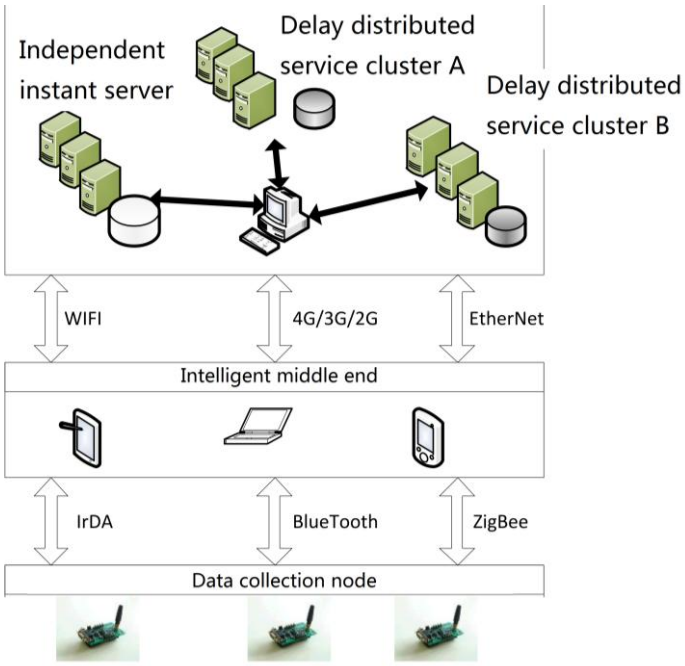

Fig. 1. Network architecture of user oriented health services.

3.2 BASIC ALGORITHM

Time series modeling methods include unitary time series, multivariate time series, discrete time series and continuous time series based on time classification.Through time series analysis, we can compare the influencing factors of College Students' Physique in different seasons, different grades and other stages, and obtain suggestions on Improving College Students' physical health through big data platform.

The basic equation of key algorithm is shown as the equation (1):

$$(N, sk) \leftarrow Key(1^k) \quad (1)$$

This formula is used to generate file checksum parameter which is denoted by:

$$\begin{aligned} &r \leftarrow \{0,1\}^k; sk \leftarrow \{e, d, r\}; \\ &Output\{N, sk\}; \end{aligned} \quad (2)$$

The Euler function is:

$$\phi(N) = (p-1)(q-1) \quad (3)$$

Then choose an integer e to satisfy the following equation 4:

$$\begin{cases} 1<e<\phi(N) \\ \gcd(e, \phi(N))=1 \end{cases} \quad (4)$$

Then finally export (N, sk) in Tag algorithm, we can get the optimization equation (5):

$$(T_0, T_2, \ldots T_{n-1}) \leftarrow Tag(pk, sk, m) \quad (5)$$

The formula generates labels for each file block.

$$for(j = 0; j \le n-1; j++); \quad (6)$$

$$\{W_j = r*(j+1); T_i = [h(W_j)*m_j]^c \bmod N\}; \quad (7)$$

$$Output(T_0, T_2, ...T_{n-1}); \quad (8)$$

And local fractional integral of $f(x)$ defined by Eq.9.

$$ {}_aI_b^{(\alpha)} f(t) = \frac{1}{\Gamma(1+\alpha)} \int_a^b f(t)(dt)^{\alpha} = \frac{1}{\Gamma(1+\alpha)} \lim_{\Delta t \to 0} \sum_{j=0}^{j=N-1} f(t_j)(\Delta t_j)^{\alpha} \quad (9)$$

The above examples illustrate the general idea of big data analysis of College Students' physical health. Generally speaking, it is necessary to select an appropriate algorithm model for big data analysis.Model builders or algorithm selectors not only need to have a general understanding of data analysis methods or algorithms, master the ideas expressed by each algorithm model, but also require relevant personnel to select appropriate methods to solve business requirements according to business requirements, so as to select or reconstruct models pertinently.Therefore, relevant personnel should understand the commonly used algorithms of big data analysis and the advantages and disadvantages of algorithms to solve problems.There is no best algorithm, only a more suitable algorithm. Logical architecture of big data analysis and processing platform is shown in Figure 2.

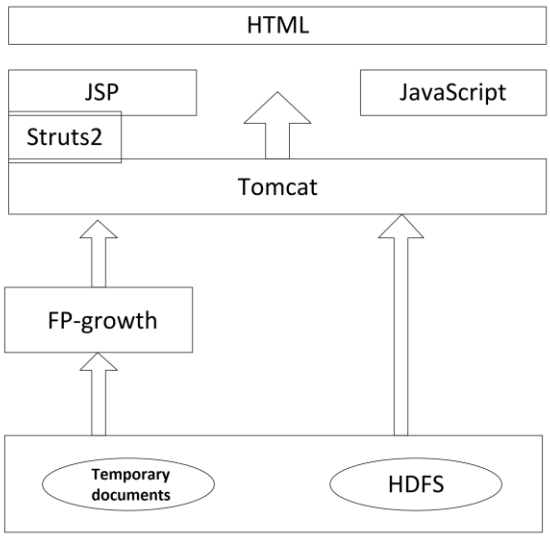

Fig. 2. Logical architecture of big data analysis and processing platform.

3.3 FUNCTIONAL MODULE

(1) System Management

The orderly operation of the system is inseparable from the control of system management. In the system management, there are four basic categories of directory management: users, new school year management, system settings and password modification.Different management categories bear different responsibilities. User management is mainly to manage the addition, modification or deletion of users. In addition, the division of user rights is also inseparable from user management. The new school year setting function must further manage its data and implement the operations of adding, modifying or deleting in the data;Password modification mainly changes different passwords and retrieve passwords.

(2) Basic Data Setting

There are specific setting categories in the basic data setting system, among which items, standards, evaluation indicators and personnel free from testing are the main categories in the basic data.These categories are further divided. In project setting, type and test setting are the main links; in standard setting, scoring standard and evaluation grade standard are the main links; scoring standard cannot be separated from the standard score data standard;According to the relevant provisions of the standard, the test free personnel should pay special attention to the students who are difficult to carry out the test due to illness or disability. As long as they have the hospital certificate, they can apply for exemption from the test in writing.

(3) Query And Statistics System

The query and statistics system is designed to query different statistical data. In this system, the query, statistics and graduation score statistics of students are indispensable.Students' score query is directly linked with their information query, and different levels are carried out according to different test items.

Section of the query; and student achievement statistics column on all aspects of students are centralized statistics; graduation score is a comprehensive arrangement for the relevant situation of students' physical examination.

(4) Curriculum

The curriculum will be the university public physical education, class teachers, class management and student selection and course information for a comprehensive introduction and setting, unique in the system, has a very important role.The centralized management of university physical education curriculum and teachers is indispensable for the educational administration department of the university to better implement the function of course selection of its own educational administration system.Generally speaking, the academic affairs office manages all courses, whether it is a public elective course or a systematic course selection, it is inseparable from the educational administration management system.

(5) Data Management of Mobile Terminal

Through further understanding of the outstanding characteristics of Public Physical Education in Colleges and universities, the diversification of Public Physical Education location and teaching time has become an inevitable important link in the data entry of mobile terminal handset.The basic functions of the module are attendance record, test record and test item.After students swipe cards, teachers and testers can keep relevant test records.Once the test is finished, the system administrator collects and saves the data imported from the handset, which is conducive to the improvement of the accuracy.The handset (mobile terminal) contains all the data information of students, which is of great significance as a micro mobile storage device.

(6) Generate Report Documents

"Standard" clearly requires that schools must upload their students' physical fitness test data in each academic year.Therefore, the system administrator must find out the required ID card number, student status and other relevant information according to the classification in the database, and then form the prescribed data format through the form software, and finally upload it to the national physical health center to complete its own upload and reporting work.

3.4 QUERY FUNCTION

The understanding of students' testing situation is inseparable from the feedback and grasp of their physical health test information, which is conducive to the school to better formulate the relevant physical exercise curriculum, in line with the students' personal physique.In this system, the combination of C / s and campus network B / S is conducive to further improve the basic functions of students' account number, password query of physical health test information and other basic functions. At the same time, with the opening of the physical health test message board, the interaction between students and the school is greatly strengthened, which is conducive to the school to find and solve problems in time.In addition, VPN virtual private network technology access and comprehensive use of campus network is conducive to further strengthen the query function. After successful login, the user can enter the main interface of the big data analysis and processing platform, as shown

in Figure 3 below.

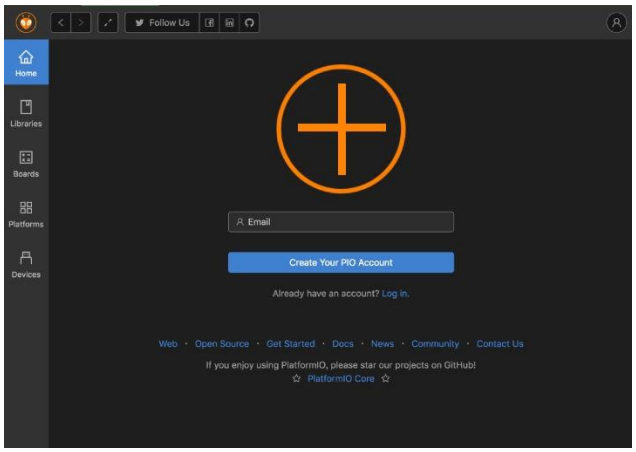

Fig. 3. The main interface.

4. CONCLUSION

With the continuous optimization and upgrading of data, the arrival of the era of big data has become a reality, so many favorable experiments follow. In this paper, in-depth discussion and analysis of students' physical health information in the collation and collection of the important role. This paper designs and implements a health management information system for college students. The results are helpful for the further development of the comprehensive management system of College Students' physical health.

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