Research Article

Construction of an Intelligent Evaluation Model of Mental Health Based on Big Data

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In this paper, mental health data were used to evaluate the educational effects, in which the high and low scorers of three emotions, autism, positivity, and anxiety, are compared separately to explore the subtle differences in the long-term trends of the sensing traits of people with opposite characteristics. Based on the fusion of multiple kinds of sensing traits, the differences in physical and mental health assessment of positive and negative emotions by different fusion trait approaches are explored, and speech and behavioural traits are fused to build a physical and mental health assessment system for positive and negative emotions. Energy gravity uses physical distance to estimate the residual energy of nodes and considers the energy distribution of downstream nodes. The main work is to combine the data of mental health of higher education students using data mining techniques, to analyze the feasibility study of mental health education of college students. Relevant definitions, classifications, tasks, processes, and application areas of data mining techniques are introduced, and the basic principles of data mining are analyzed in detail. Taking the mental health assessment data of new students as the research object, the decision tree algorithm is used to construct a decision tree model for students with depressive symptoms, and an association rule algorithm is used to data mine the relationship between factors of psychological dimensions. Finally, it can find out the hidden laws and knowledge behind the data information and analyze the relationship that exists between psychological problems and students.

1. Introduction

However, at present, the psychological crisis early warning means in most universities are still relatively traditional and the effect of early warning is limited. On the one hand, the widely used psychological crisis prevention measures include SCL psychological scale screening at the early stage of new students, holding general psychological knowledge lectures and courses, and opening psychological counseling rooms with low penetration rates. However, to a certain extent, these practices do not enable student managers to grasp students' psychological conditions in a timely and effective manner, to make timely interventions for possible crises [1]. The evaluation process and methods should also be simple and practical. Through the research on the construction model of college students' psychological quality and the analytic hierarchy process, the basic process of psychological evaluation of college students based on the ana-lytic hierarchy process can be obtained. On the other hand, with the rapid development of Internet technology, "Internet Education" has made great achievements in the process of modernizing education, and major universities have basically realized the informatization of student management, but the current informatization mostly stays in simple collection, storage, and management of student information by using basic information technology means, combined with literature. It is found that there are relatively few research applications in the screening and early warning of psychological crisis using the precise, real, timely, and effective data brought by informatization to deeply dig the hidden correlation relationship behind. Some of the student data samples most encountered by student managers in their daily work are collected, a psychological crisis early warning model is constructed through data mining related methods, and a related application system is designed and developed with the early warning model as the centre [2]. The

application of this system to student management at the grassroots level can not only make up for some of the missing links in the current electronic office, but more importantly, student managers can use the system to combine several scattered and fragmented student attribute behaviour data to achieve dynamic screening of the list of students who may have psychological crisis from the objective data of daily management informatization and to carry out targeted psychological crisis intervention in combination with the warning rules based on psychological crisis intervention, providing certain decision support and reference for grassroots student management.

Mental health problems are not as easy to detect as physical illnesses, and some people are not subjectively aware of mental illnesses, especially in younger children; some adults are too shy to seek psychological treatment for their abnormal mental conditions, which can seriously affect their quality of life. Secondly, it has been found in studies that people with long-term negative emotions have lower immunity [3]. Further improve the generalization ability of the decision tree model. The system management module is used for administrators to manage the roles, users, and classes in the system; the information collection module is used to collect and manage the basic personal attribute data of students; the performance management module is divided into two parts: course performance and extracurricular activity quantitative score. For some people suffering from chronic diseases, such as hypertension and hyperlipidaemia, long-term negative emotions can accelerate the development of these chronic diseases and lead to more complications. These negative effects due to mental illness may make people more negative and form a negative cycle. That is why physical and mental health conditions need to be identified and treated promptly. Not only have wearable devices been developed, but the high speed of the Internet has made transmission faster. In recent years, based on the Internet, the Internet of Things (IoT) has been birthed, expanding the original network functions as well as developing more functions to be used in more scenarios, bringing interoperability between people and things one step closer. The IoT refers to the interconnection of various sensing devices with sensors and communication with the Internet and telecommunication networks to build a unified network system for the interconnection of everything [4]. Currently, most wearable devices transmit data through Bluetooth, which collects a single type of data and a small amount of data. If wearable devices can be made to combine with IoT technology with longer transmission distance and faster connection to build an online physical and mental health assessment system, it can solve the problem of insufficient real-time questionnaire-based psychological assessment methods.

At present, mental health education has been taken as an indispensable part of higher vocational quality education. As a base for cultivating skilled talents, schools take the comprehensive promotion of quality education as an important work goal, and mental health education is not only the foundation and premise of quality education but also the result of quality education [5]. The interaction of the main functions of each module is analyzed in the form of sequence diagram.

The main function points of the score management module include the administrator downloading the course score template and the single quantitative score template and uploading the course score sheet and the single quantitative score sheet, and the head teacher downloads the course score sheet and automatically generates the quantitative total score sheet. Cultivating the health level of higher vocational students is an important guarantee for them to adapt to the market economy and face the future. Institutions have incorporated mental health education into the moral education curriculum system, established special mental health counseling centres, and opened mental health education courses, as well as counseling and psychological census activities for school students. Most schools conduct mental health assessments for students every year, collect psychological questionnaires online through the Internet, store the results in the database, and use school mental health assessment software to conduct a simple situation analysis and result statistics on college students' psychological problems. However, these traditional data analysis methods can only obtain superficial psychological information, not scientific and important knowledge, resulting in low accuracy of prediction. In this paper, we attempt to apply data mining techniques to the study and analysis of student mental health data. Through the application of data mining technology, valuable knowledge hidden in students' psychological problems is unearthed, and this important knowledge is used to predict the mental health status of college students, providing a scientific basis for the prevention and solution of mental health problems, making mental health education work more targeted and effective, and improving the level of mental health education workability.

2. Related Works

After more than a century of development, school mental health education has formed a more complete theoretical system and operational system, and it plays an active and important role in the education system. As a discipline with vitality and practical value, school mental health education has received wide attention and developed rapidly in developed countries. With this attention, mental health education has a good environment for development and has formed a complete system structure in theory and practice. Mental health education is a compulsory subject for students, as an important part of their learning, and its purpose is to adapt to the diversity, differences, and comprehensive development of students through mental health education [6]. The evaluation-related data is derived from the higher vocational student mental health evaluation system. The processing operation depends on the amount of data. If the data to be processed is relatively small, you can fill in the empty value according to the law; if the data to be processed is relatively large, you can find a value to fill in the empty value. Mental health educators play six main roles: counsellors of academic life, health care providers of mental health, guides of moral thinking, discoverers of psychological potential, facilitators of psychological development, and guides of career selection and employment. Mental health counseling

institutions in universities are equipped with special funds to ensure the effective implementation of activities, and a strong team of psychological educators has been formed, with the cooperation of medical staff and student administrators, which has a great influence and high status in Japanese university education [7]. Mental health education has become an important part of moral education in schools, and the psychological study of students has become an important task for educators [8].

Most of the institutions have started to conduct psychological screening activities for students at the early stage of their enrolment and have established mental health records for students, established mental health counseling centres to provide psychological counseling services for students at school, and offered mental health education courses to cultivate and improve the psychological quality of students [9]. The students must make the transition from high school to college, from adolescence to adulthood, to build up an independent and mature personality structure, and step by step to break away from financial and psychological dependence on their parents [10]. In the process of such transition, they face various difficulties and frustrations and opportunities and face competitive pressure. A considerable number of higher vocational students are unable to handle the difficulties they encounter correctly, making them feel lost and confused, and some of them even develop psychological disorders. To make students develop comprehensively, they must first have a good and healthy mind to form a stable and healthy personality [11]. With a healthy mind, we can face difficulties and setbacks in life, learning, and emotions; actively cope with challenges and competition and other pressures; face success and failure optimistically; and face gains and losses frankly. The reality shows that due to objective factors such as parental pampering and spoiling, a large proportion of higher vocational students are not capable of solving problems independently. If they cannot solve their confusion and perplexity in time, they will develop psychological disorders overall [12].

Then, realize the function of collaborative sensing, with key technologies such as context-aware technology, massive information processing technology, task-driven large-scale autonomous networking technology, and multiple communication network fusion technologies, with distributed, cross-level, and self-learning collaborative processing capabilities to provide intelligent, accurate, and diversified information services. It has some support for the selected data set. The function of the algorithm is to extract a set of items with a high degree of support and to extract a rule higher than the minimum confidence level from the generated rule. The algorithm's strategy is to repeatedly reduce the minimum support until a specified number of rules are found within the minimum confidence range. Finally, the purpose of ubiquitous aggregation is to realize the aggregation of massive information with information aggregation theory, fuzzy control technology, ubiquitous heterogeneous network, artificial intelligence, bionic sensors, nanomaterials, biochips, and other technologies to produce new information with application value; to realize the interconnection of anyone, any object, any time, and any place; and to trigger innovation of application and service modes. Thus, the purpose of ubiquitous aggregation is ultimately achieved.

3. Mental Health Data Collection and Analysis

3.1. Design of Mental Health Data Collection. A wireless sensor network (WSN) is a distributed sensor network that senses the state of an object and forms a data-based information collection using smart sensors connected to it and uses wireless communication to form a dynamic and secure full-volume transmission of information data. Its connection includes both wired and wireless and is a network that is flexibly organized according to needs and site conditions. The organization form has the ability of intelligent multi-path hopping transmission and has good self-organization in functional characteristics [13]. The intelligent wireless sensor network is the product of the integration of computers, information processing, embedded computing, communication, and sensor technology, which is a new method of information acquisition and processing. Smart wireless sensor networks have many advantages such as high flexibility, low maintenance cost, high detection accuracy, high fault tolerance, and a large amount of processed information, which are widely used in national defense and security, infrastructure operation and maintenance, ecological and environmental monitoring, health management, etc. Decision support system generally consists of interactive language system, problem system, database, model library, method library, and knowledge base management system. Through the storage and processing of a large amount of information and data in the database, it can assist decision-makers to achieve a higher-level and more scientific decision-making capabilities. Increase the relevant model base and the corresponding model base management system to effectively organize and store the models, can realize the database and model base. It is different from Msl data processing. Therefore, the development and application of this system have played a very good early warning role in promoting the mental health of vocational students and provided effective technical support for the informatization of mental health management. Through the analysis and mining of the evaluation information, we have obtained many objective factors that affect the mental health of college students.

The first stage is the preparation for the long-term physical and mental health experiment, which is guided by researchers specializing in mental health, who select participants from their usual contacts and determine their suitability for the experiment through an initial questionnaire and other tests. We also sign an ethical agreement with the participant before the start of the experiment to ensure that the data is used only for this study. A common heart rate sensor is the pulse sensor, which converts the detected pressure change in the pulsating artery into a more visually observable electrical signal. There is also a noncontact heart rate sensor—an optical heart rate sensor. Light waves are first shone inside the skin through a light emitter consisting of two light-emitting diodes; then, the light frequencies refracted by the wearer are captured, and finally, these analogy signals are converted into digital signals for calculating heart rate data, as shown in Figure 1.
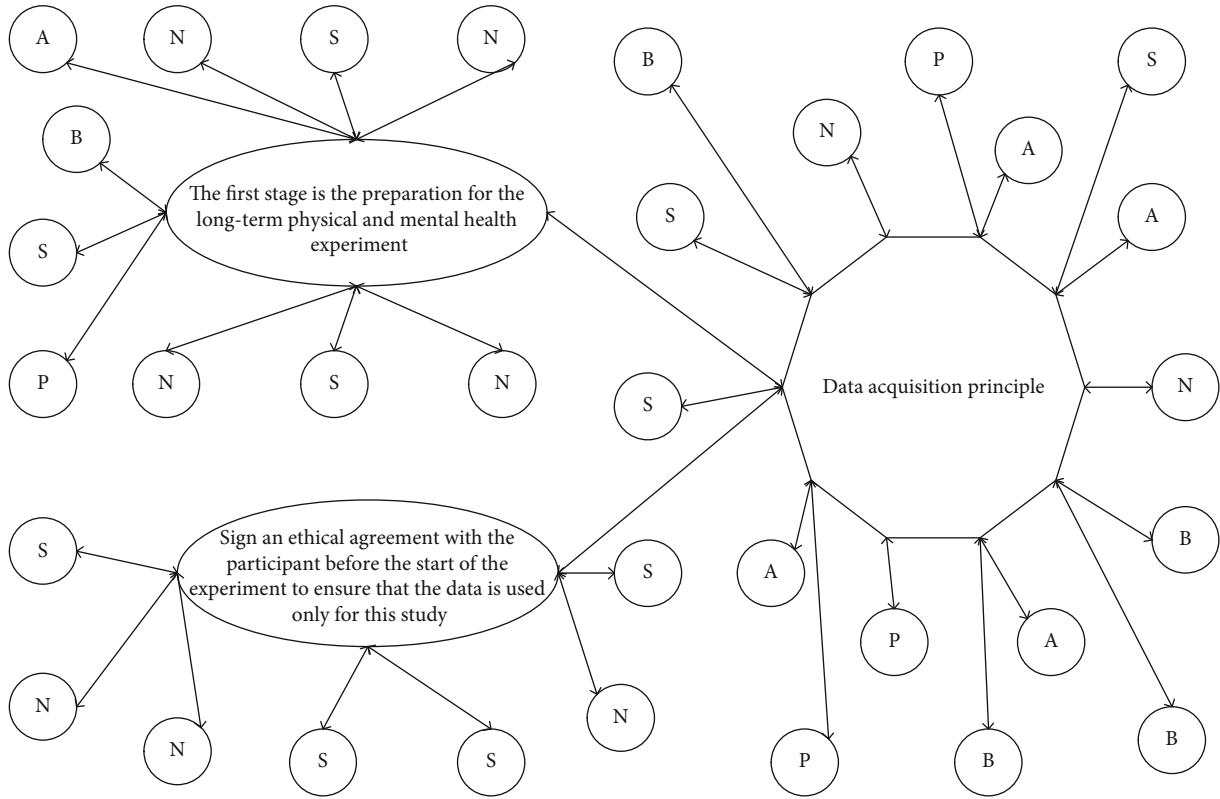
FIGURE 1: Data acquisition principle of 5G wireless sensor network.

In the long production process, the physical state of workers will change with the duration of work, such as relaxation or tension, energy fatigue, or fullness. These changes of workers will have a direct impact on construction safety and efficiency, so scientific means of collecting and analyzing physiological and psychological data are necessary [14]. A timely grasp of workers' status not only can better understand their work habits, reasonable adjustment of work arrangements, to achieve personalized production management. Combined with correlation analysis, people with autistic tendencies will not only close themselves psychologically but also manifest themselves in daily life activities and are often unwilling to participate in activities. It can also adjust the workers' state in time to help enterprises to do a good job in the management of workers' psychological and physical training and timely regulation of workers' emotions. To maximize the output efficiency of the production line at the lowest cost, key workstations should be managed first, because the efficiency of key workstations is directly related to the overall efficiency of the production system. In the case of sufficient funds, it can be gradually applied to the whole production line to prevent serious problems in some common workstations and bottlenecks in production, which will affect the work of subsequent lines. Based on this, neural industrial management is based on traditional industrial engineering, combined with workers' psychological and physiological data collection equipment and physical state analysis algorithms to control the overall situation and effectively achieve a more humane production and intelligent manufacturing.

The database used in this case is MySQL, which has good performance even in the case of millions of data and has a good fault-tolerant recovery mechanism with multiple levels of isolation mode. All the sensing data collected by this wearable device is uploaded to the cloud server side, and the server stores the data in the database [15]. This time, SD card is also used to persist the data considering data redundancy backup. Since each person has about 3 million sensed data per day, the data is handled in a split table, with a new data table for each person per day, and the data table naming is implemented using a combination of user number and date, as shown in Table 1.

Caching design is an important part of the server side. Data is usually stored in relational databases, and the overhead associated with each request to the database is very high because the data is persisted in the disk and frequent requests inevitably bring performance degradation. Most people request the same data for a short period, and these data are called hot data. For hot data, it can be kept in the place where the requests are faster, that is, the importance of caching; this time, Redis is used as a cache. Redis is an open-source in-memory data structure store that supports data structures like strings, hashes, lists, collections, and sorted collections with range queries. The main data structures used for this data are strings, which are used to cache user account information, and lists, which are used to cache user data for the last few days, which are bidirectional and can add or remove data left or right. For hot data in the cache, when the data in the database is updated, the cache needs to be updated at the same time, and the consistency of the data in the cache and database needs to be ensured.

Field	Type	Field description
id	Int	User id student number
Time_date	Int	Data generation time
Panas	Int	PANAS scale score
neo_ffi	Int	NEO_ FFI scale score
bdi	Int	BDI scale score
stai	Int	STAI scale score

That is, the attributes are closely related to each other, and a change in one or more of them leads to a change in the others. The purpose of the analysis is to find hidden relationships in large data sets and to uncover unfamiliar knowledge [16]. The analysis of association rules is to find the pattern of events that occur and lead to the occurrence of other events in time or sequence. It is mainly used to discover unknown object classes in large amounts of data. It requires the process of directly confronting the source data and classifying it into different classes so that there is a similarity between similar objects and a difference between different classes of objects. Cluster analysis is the process of dividing the data into categories based on some similarity and analyzing these constituent classes. By looking in the data set to find data that has incongruities with other classes, these small patterns of anomalous results are generally the result of problems with the information itself or execution errors. Usually, the isolated points found are generally discarded as noise or anomalous data. However, in fraud monitoring of unusual responses to unusual credit cards or disease treatments, isolated point data analysis is very important. The design of the collection device is done in terms of two parts: the energy collection antenna and the energy conditioning circuit. The specific composition and structure of the antenna model and the conditioning circuit are determined.

3.2. Evaluation of Mental Health Effectiveness. The algorithm optimal test attribute is based on the choice of information first. The selection of the test attribute is determined by the attribute with the highest value of information gain. The sample-set partitioning is determined by the values determined by the test attributes, and different values are taken to divide the sample set into multiple subsample sets [17]. Also, the nodes corresponding to the sample set on the decision tree generate new child nodes. According to the principle of decision tree algorithm, for the instability of the sample set after partitioning to distinguish the quality, if the information gain value is low, the measurement uncertainty will be large; on the contrary, the information gain value is high, the measurement uncertainty will become small. So, the decision tree algorithm generally determines the test attribute by selecting the attribute with the maximum information gain at any nonleaf node; in such an environment, we can obtain a smaller decision tree by partitioning technique operation. Major colleges and universities have basically realized student management informati-

zation, but most of the current informatization only stays in the simple collection, storage, and management of student information using basic information technology. Combined with literature surveys, it has been found that in the screening and early warning of psychological crisis, there are relatively few research on using the accurate, true, timely and effective data brought by informatization to deeply mine the implicit relationship.

$$
\begin{aligned}
I\left(s_1^2, s_2^2, \cdots, s_n^2\right) &= \sum_{i=1}^n P_i \ln \left(P_i^2\right), \\
E(A) &= \sum_{i=1}^n \frac{s_1 + s_2 +, \cdots, + s_n^2}{S} I\left(s_1, s_2, \cdots, s_n^2\right).
\end{aligned}
\tag{1}
$$

The above process is recursively invoked for all but the selected attributes, producing other attributes as subnodes and branches when used as nodes, which in turn produces a complete decision tree model. As a more typical learning algorithm in decision trees, the focus of the algorithm is to use the information gain of the nodes to determine the measurement attributes, allowing the classification gain of the largest category to be obtained when computing all nonleaf nodes, which in turn makes the data set full after classification to be the smallest. The general depth of the tree is reduced by this solution, allowing for a reasonable increase in classification efficiency [18]. The use of hierarchical analysis as a method of psychological assessment of college students is to stratify college students' psychology from the perspective of hierarchical analysis; firstly, in order to ensure the validity of the model establishment, it is required that the logic between college students' psychological hierarchical criteria and the principle of consistency test of hierarchical analysis should be the same; secondly, the establishment of psychological quality assessment model should be based on the practical application of college student's education and training. The purpose of the psychological assessment model of college students is to provide strong data support for the psychological health assessment of trainees and ultimately serve the education and training of military colleges and universities, so the collected psychological quality data of trainees should be real and effective, and the assessment process and method should be simple and practical. Through the study of college students' psychological quality construction model and hierarchical analysis method, the basic process of college students' psychological assessment based on the hierarchical analysis method can be obtained, as shown in Figure 2. More importantly, student administrators can use the system to combine several scattered and fragmented student attribute behaviour data to dynamically screen out the list of students who may be in psychological crisis from the objective data of daily management informatization and combine it with the basis; the early warning rules carry out targeted psychological crisis intervention to provide certain decision-making support and reference for the management of grassroots students. Seventeen relevant attributes were selected as research data to further explore the mental health status of students as reflected by these attributes
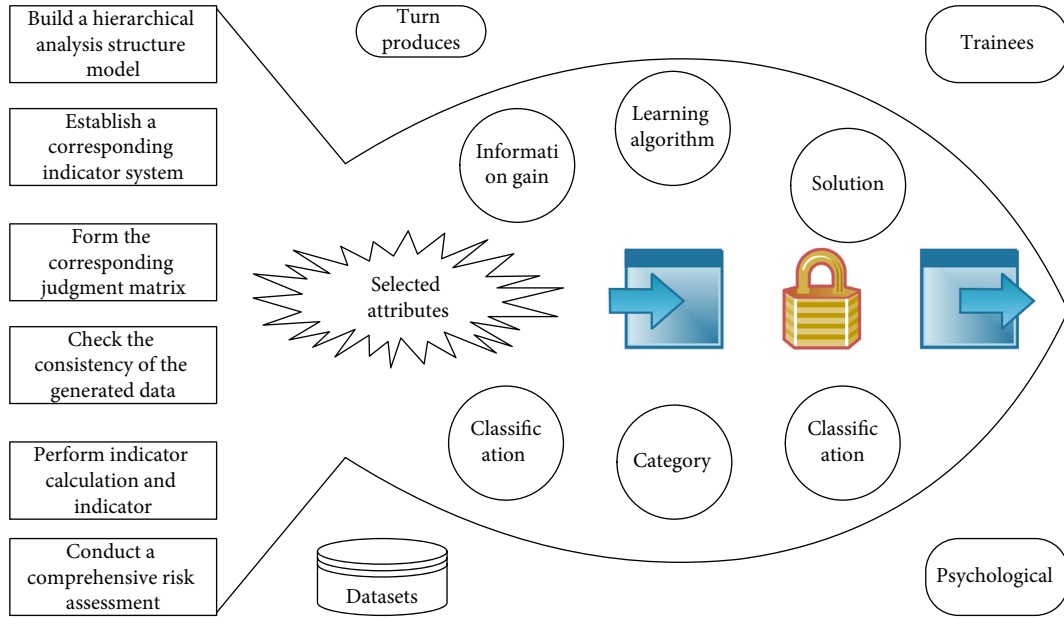
Figure 2: Basic process of psychological assessment of military cadets based on hierarchical analysis.

under different combinations of values. To ensure the accuracy of the research results, this paper simulates the data acquisition in actual student work, and 863 undergraduate students were collected as the research sample to obtain new, respondent-approved research data [19].

The data collection was conducted utilizing an online questionnaire, and the self-administered scale was used to understand students' personal information, such as gender, grade level, academic status, participation in extracurricular activities, and family situation; the results of the Family Closeness Scale were used to obtain information about the student's family of origin, which led to data related to the type of family relationships; and the scores of the Psychological Crisis Signs Checklist were used to assess whether students had a psychological crisis. Since there were some errors and missing data in the collected sample data after the data were sorted, cleaned, and integrated, a total of 847 complete records were finally obtained for the study.

$$ACC = \frac{TP - TN}{TP + TN + FN + TN},$$

$$Precision = \frac{TP}{TP + TN + TN},$$

(2)

which indicates the ratio of the number of correctly classified positive samples to the total number of samples whose true class is positive.

$$Recall = \frac{TP}{TP + TN},$$

$$I(s_1, s_2, \cdots, s_n) = -\sum_{i=1}^{n} P_i \ln \left(P_i^2 \right)$$

(3)

When applied to more scenarios, the intercommunication between people and things is one step closer. The Internet of Things means that various sensing devices with sensors are connected to each other and communicate with the Internet and telecommunication networks to construct a unified network system that connects everything. The crisis warning module is the core function of the system, which extracts the data information required for the psychological crisis warning model from the data collected and stored by the above-mentioned functional modules to carry out dynamic warning of students' psychological crisis; the article publishing module is mainly used by the administrator to issue targeted notices and articles of mental health education for student users according to the status of crisis warning, as shown in Figure 3.

After logging into the system as a super administrator, you enter the psychological crisis early warning module. To increase the extensibility of the system, considering that the training set data may be expanded to optimize the model in later work, the model update interface is set to leave a good implementation channel for future updates of the psychological crisis warning model. If the model does not need to be updated, the current model can be applied to filter the warning list of existing student users in the system through the one-click warning function, and the list will be displayed on the interface; the specific information displayed in the list includes class, student number, name, contact number, and warning rule; and the administrator can pay attention to the real state of these students who may have a psychological crisis in a timely and targeted manner according to the content of the warning rule prompt. The main functional modules of the application system centred on the early warning model include the system management module, information collection module, grade management module, leave approval module, psychological crisis early warning module, and article publishing module. It also includes psychological counseling and psychological survey activities for school students. Most schools conduct mental health assessments
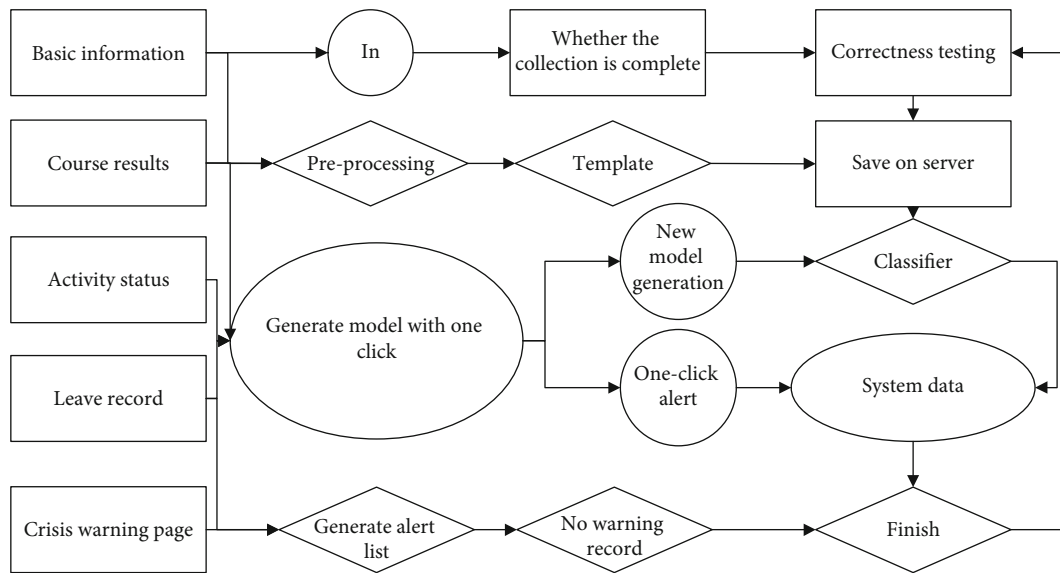
FIGURE 3: Flow chart of the psychological crisis warning module.

of students every year, collect psychological survey questionnaires online through the Internet, and store the results in a database. Through the school mental health assessment software, simple status analysis and result statistics of college students' psychological problems can be carried out. This subsection analyzes the process interaction of the main function points of each module in the form of a time sequence diagram. The main function points of the grade management module include downloading course grade templates and single quantitative score templates by administrators, uploading course grade sheets and single quantitative score sheets, downloading course grade sheets by classroom teachers, and automatically generating total quantitative score sheets. The main functions of the leave approval module include students initiating leave requests, class teachers, and super administrators reviewing whether the leave requests within their authority are reasonable according to the actual situation and then choosing to approve or reject the leave approval after making judgments.

The preprocessing mainly includes frame splitting and windowing operations. To ensure the effectiveness of the acquisition and the power consumption, the frequency of the voice acquisition is set to 8 KHz; i.e., there are 8000 acquisition points per second, and the original voice data is not stored in the terminal. For the voice signal, it is not suitable to process 8000 data at one time, so the data needs to be divided into 512 points for one frame, that is, 64 milliseconds, and the voice is continuous, so there will be a 25% overlap between each frame, which improves the continuity and smoothness after data processing. The change in heart rate also reflects the psychological change of people, and the calculation of heart rate is especially critical. The common methods of heart rate calculation are ECG, PPG, bioimpedance, etc. This time, the heart rate is calculated using the photoelectric volume pulse wave tracing method PPG optical signal; this method uses a small size of hardware that is easy to wear on a bracelet. Using PPG to calculate the

heart rate, the signal is converted by converting the optical signal into an electrical signal and the electrical signal into a digital signal. The specific principle is that when light hits the skin tissue, the reflected light will be attenuated. The degree of attenuation varies depending on the site of irradiation; e.g., the absorption of light by skeletal veins and connecting tissues remains almost constant, corresponding to equal light irradiation, returning similar light values. Through the storage and processing of a large amount of information and data in the database, it can achieve a higher level and more scientific decision-making ability to assist decision-makers, increase the relevant model library and the corresponding model library management system, effectively organize and store the model, and make the database realize organic integration with model library. This is not the case with arterial irradiation, where there is blood flow and changes in blood flow can affect the absorption of light.

4. Results and Analysis

4.1. Results of Mental Health Data Collection in Multimodal. Data selection is a common data processing method for data analysis and mining, and it is the first step of data preprocessing operation. Due to the large size of the original data set, mining and analyzing all the data sets will take a lot of computing resources and computing cycles, so the data selection operation of the data set is needed to reduce the impact on the results. Based on the objective of the mining project, the information records in the data set can be assembled and found out, which can make the data content be streamlined, and the internal connection between the attributes and the law hidden behind the data can be discovered. If the data to be processed are relatively small, the null values can be filled according to the rules; if the data to be processed are relatively large, a value can be found to fill the null values. In this case, 48 students who did not participate in the assessment were removed, and the psychometric

information of the students who participated in the assessment met the research specification. Students' basic information data came from the school academic affairs management system because some students did not improve their personal information in time after enrolment, resulting in the absence of some family status, whether single parents and other information, of which 86 students with more missing items were no longer used as research subjects. There is also a non-contact heart rate sensor, that is optical heart rate sensor. First, the light wave is irradiated into the skin through a light emitter composed of two light emitting diodes, and then, the light frequency refracted by the wearer is captured, and finally, these analogy signals are converted into digital signals for calculating heart rate data. After the cleaning process of the data, a total of 1820 records can be used for data mining operations.

The filtering rules are filtered based on the support, which is the number of instances found that meet the rules. Confidence is the ratio of instances determined by the conclusion, and support is the number of instances that satisfy the rule. Rules with high support/confidence are found, but usually, the confidence is not set to 100% to find all rules; even if there are hundreds of rules, many of them have very low support. Typically, the minimum confidence is set to a minimum to find the maximum support at the minimum confidence level. An item set is a combination of attribute-value pairs, which has some support for the selected data set. The function of the algorithm is to extract the high support item set from the generated rules and extract the rules above the minimum confidence level. The strategy of the algorithm is to iteratively reduce the minimum support until a specified number of rules are found within the minimum confidence range. Association rules and classification rules require different skills when used, the former being significantly larger than the latter. So, support and confidence are two important metrics for association rules, as shown in Figure 4. With sufficient funds, it will be gradually applied to the entire production line to prevent serious problems in some ordinary stations and production bottlenecks, which will affect the subsequent work of the assembly line.

The algorithm energy balance is poor as it does not consider energy balance and uses the shortest path which makes the network energy consumption concentrated in important nodes, resulting in overburdening the energy consumption of important nodes too fast. The node mortality rate of the GCAR algorithm in this section ranges from 0.4% to 4.4%, and the average increase rate after 100 rounds of simulation is only 26%, which is lower than that of the MOPC algorithm and CCOR algorithm. The energy gravity introduced by the GCAR algorithm integrates the node residual energy, node forward energy density, and the sending energy consumption directly related to the distance, which can ensure the energy consumption is at a low level and make the energy consumption more evenly distributed among the nodes. When it senses that the energy consumption rate of important nodes is too large, the algorithm adaptively adopts alternative routes to temporarily protect important nodes and make full use of other nodes to slow down the death of the first node of the network and extend the network survival time, as shown in Figure 5.
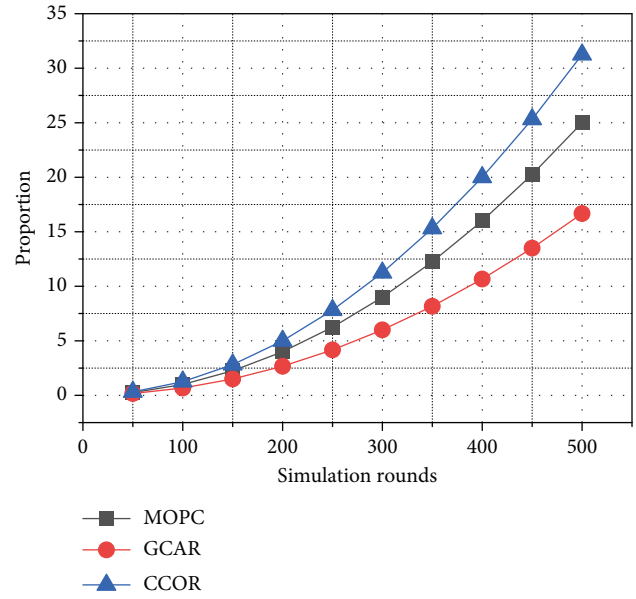

Figure 4: Comparison of the percentage of node deaths.

Figure 5 gives the variation of the average packet energy consumption with simulation time. From the beginning of the simulation to 200 seconds, the average energy consumption of all three algorithms increases, but GRCS has the fastest growth rate, up to 8.56%; the maximum growth rate of GRCS is 6.67%, and the maximum growth rate of TADR algorithm in this paper is the lowest, only 5.33%. And there are differences between objects of different types. Cluster analysis divides and categorizes data based on a certain similarity and analyzes the process of forming these categories. After 200 seconds, the average packet energy consumption of the GRCS algorithm increases slowly with time, while TADR and VFTR remain essentially the same. The reason for this is that the TADR and VFTR algorithms consider traffic balancing in routing decisions, which results in energy balancing of the nodes. Since the node queue length can effectively measure the load of nodes, the network load is balanced to a certain extent by constructing a virtual potential energy field in the TADR algorithm, which makes the average energy consumption of packets relatively low. And the contour external force is established in the VFTR algorithm based on the load difference between the current node and neighboring nodes and dynamically adjusts its occupied weight, which more effectively avoids congestion and finally makes the packet average energy consumption index benefit from the improvement of transmission success rate.

5. Results of the Evaluation of Mental Health Effectiveness

Data mining techniques were applied to the mental health data of senior students by using basic student information and SCL90 psychometric scale data as the training set. The results obtained from the analysis of mental health problems of higher vocational students were compared with the data mining results in the mental health assessment system, and
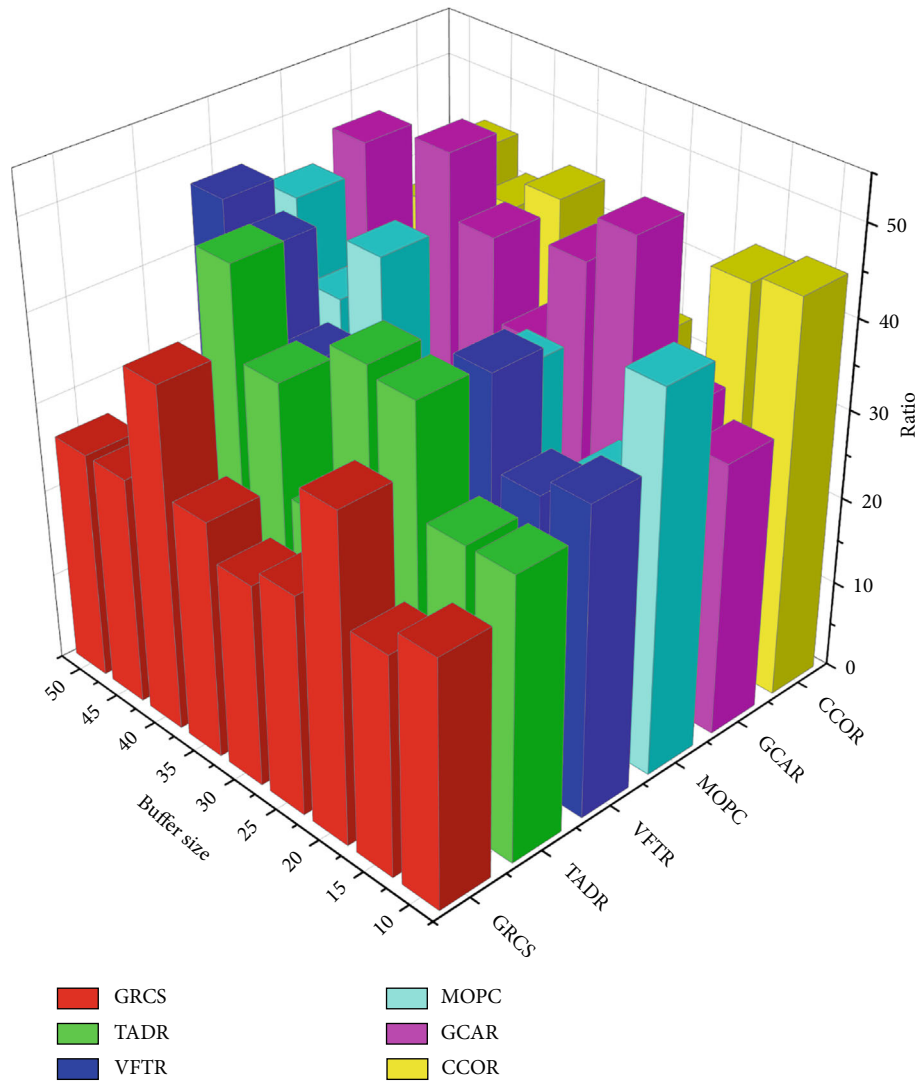
FIGURE 5: Network throughput rate versus node cache queue.

the analysis rules obtained from the system mining were consistent with the experience and psychological perceptions in psychological counseling, which confirmed that the data mining techniques applied to the research and analysis of mental health data of higher vocational students are implementable. Therefore, the development and application of this system play a good early warning role in promoting the mental health of higher vocational students and provide effective technical support for the informatization of mental health management. Through the analysis and excavation of the assessment information, we obtain that many objective factors are affecting the mental health of college students. Therefore, in the future mental health consultation work of college students, we target to improve the awareness of college students' mental health through many ways and help them solve the problems in psychological aspects, as shown in Figure 6.

Both TADR and VFTR are characterized by finding idle or less congested you-back paths based on node queue length, which reduces the occurrence of congestion to some
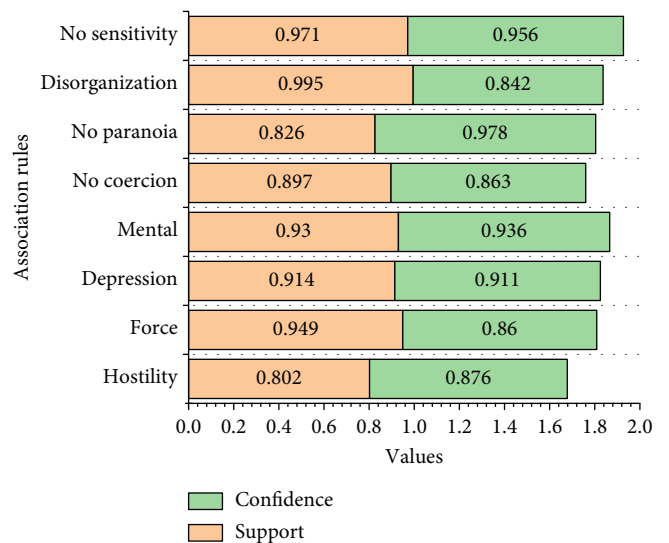

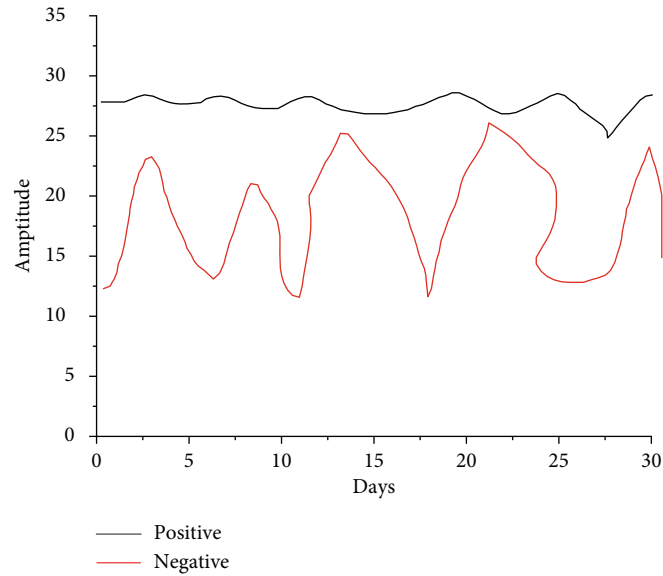FIGURE 6: Generating association rules.

Figure 7: Comparison of the characteristics of positive and negative emotional.

extent but causes an increase in the number of packet transmission hops, so both have relatively the highest average delay. Moreover, since the potential field of TADR based on node hops only ensures that the route satisfies the minimum number of hops and avoids route backhaul, while in VFTR routing, decisions need to be made based on the geographical location of the nodes and route backhaul is avoided by defining forward transmission nodes; the average delay of VFTR is 181 ms, which is slightly lower than that of TADR at 192 ms. The experimental participants will be subjected to testing; the purpose of conducting preexperimental testing is to test whether the participants' are honest, useful for long-term drug use, and have bad habits, which will ensure that the selected participants will be able to complete the whole experiment properly. In addition, all participants are selected after an initial assessment by a psychological professional. All selected volunteers will sign an experimental informed agreement before conducting the experiment, which describes the detailed experimental steps, the use of the equipment and instructions for the use of the IoT platform. In addition, ethics are included in the experimental informed agreement to ensure that this collected experiment is not disclosed and all data used are for this study, as shown in Figure 7.

Figure 7 shows the curves of the average sum of the acceleration characteristic frequency domain amplitudes and the maximum value of the acceleration shape characteristic variance for the two experimenters with high and low scores, respectively. As can be seen in the left panel, except for the high scorer who has a large rise and fall (probably due to interference from high frequencies), the amplitude of up to several days is below that of the low scorer, and the high scorer has a much flatter rise and fall of data variation. In the right panel, the high scorers are slightly below or equal to the low scorers for some time but contain a few days where the high scorers have low values. Combined with the correlation analysis, people with autistic tendencies not only close themselves off psychologically but also show it in their daily life activities, often being reluctant to participate in them.

In most cases, the luminance minima for the positive emotion participants were greater than those for the negative emotion participants. The classification gain of the largest category can be obtained, so that the data set is the smallest after classification. The general depth of the tree is reduced by this solution, so that the classification efficiency is reasonably increased. In the left panel, which shows the speech feature energy maxima, the data for the positive emotion participants are also largely larger than the negative emotion participants in the graph, and the fluctuations are more pronounced for the negative emotion participants. This is also consistent with the usual life perception that optimistic people speak loudly and are more communicative in their daily speech. The negative mood group, on the other hand, was more passive and would appear rushed when communicating and speaking, and their voices appeared low.

6. Conclusion

The wearable bracelet with integrated multisensors is designed, and based on IoT technology, the system number of physical and mental health characteristics with high correlation with sensor features was as high as 20, which further provides a basis for using multiple features to assess multiple physical and mental health conditions. The application system was designed and implemented with the psychological crisis early warning model in mind. The detailed requirement analysis, general design, and detailed design of the system were carried out in conjunction with the actual work of the users. It was determined that the system users are divided into three roles: students, class teachers, and super administrators, and contain six functional modules, namely, system management module, information collection module, grade management module, leave approval module, psychological crisis warning module, and article publishing

module. The system is developed with Spring MVC as the back-end framework, JSP as the front-end language, and MySQL as the database, which realizes all the functions required by users. The system provides a good platform for the effective application of the psychological crisis early warning model. In addition to providing data support for the early warning model, the basic module also optimizes the module functions after the actual user demand research, which enhances the practicality of the system and provides some assistance for the electronic office of student managers and the dynamic monitoring of student psychology.

Data Availability

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

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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