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*Research Article*

# Internet of Things Based Korean Cross-Cultural Communication Interactive Talent Training Model under Curriculum, Ideology, and Politics

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With the development of society, the exchanges between various countries have become increasingly close, and this open communication mode also affects and changes the communication culture of each country. In the context of globalization, cross-cultural communication is increasing day by day, and cross-cultural communication ability has become a necessary quality for modern talents, so it is imperative to cultivate cross-cultural communication talents. However, the development level of informatization is insufficient, especially since the development of Internet of Things technology is lagging behind, the application level is low, and there are fracture characteristics in the application of each link. Information exchange cannot be effectively realized, information is incomplete, and asymmetry is obvious, and there is no effective information exchange platform. Following the trend of internationalization, scholars are paying more and more attention to the combination of cross-cultural communication and IoT technology. The combination of the two is to realize the real-time monitoring of personnel training. The acquisition and transmission of personnel training information is the primary problem to be solved in the realization of Korean cross-cultural communication. The wireless sensor network (WSN) has the characteristics of wide distribution of nodes, strong self-organization ability of routing, and good adaptability to dynamic changes in topology structure. WSN is used to solve this problem and is a good choice. Therefore, this paper used random forest algorithm and GBDT algorithm to apply WSN technology to the process of interactive talent training and established a network information service (NIS) system for interactive talent training. The experimental results have shown that the random forest algorithm and the GBDT algorithm can further simplify the input feature quantity and both can achieve good prediction results, while the GBDT model of the two models has relatively better prediction performance. The models obtained by the two methods meet the needs of detection parameter optimization, which realizes the real-time development of interactive talent training and realizes the intelligence and high efficiency of interactive talent training.

## 1. Introduction

Complying with the trend of international development, the process of studying Korean cross-cultural communication and interactive talent training is a gradual process. From the initial "cultivation of communicative competence" to today's "cultivation of cross-cultural communication and interactive talents," the research of this discipline is gradually in-depth and gradually improved through exploration. Under the background of economic globalization, the government, famous enterprises, human resources experts, college teachers, and scholars of higher education theory are increasingly calling for the cultivation of international talents. Internationalization has become a research content that cannot be ignored in the field of education theory and practice. The "interactive" talent training mode refers to the participation of enterprises as talent demanders in the whole process of talent training. During the training process, enterprises, students, and universities will understand each other and communicate in a timely manner to ensure seamless communication between schools, enterprises, and students, and improve the quality and efficiency of talent training. Through this “interactive” talent training, students’ practical ability and engineering awareness are greatly improved, and they can be directly used by enterprises after graduation, which effectively improves the training efficiency and training effect of talents.

Using the theory of “doing” and the theory of “constructivism,” a “student center” suitable for students’ learning and development is constructed. The interaction between teachers and students, the exchange of information between teachers’ technical level and students’ carrier as a learner.

“Internet of Things” is a buzzword describing the new era of computing. In a nutshell, IoT can be defined as the interaction between smart objects connected to the internet. These objects can sense, share and process information, upload it to the cloud, and make it available to users through a multitude of different applications. IoT, like other technologies, faces multiple security challenges.

On the one hand, the construction of the Internet of Things model in the training of Korean cross-cultural communication interactive talents is helpful to improve the informatization level of cross-cultural communication and adjust the structure of cross-cultural communication, which improves the quality and added value of talent training and is of great significance to the cultivation of cross-cultural communication talents. On the other hand, it expands the application of the Internet of Things in cross-cultural communication to a certain extent and provides a certain theoretical reference for improving the application level of the Internet of Things in Korean and other languages.

The innovation of this paper is to study and solve the problem of automatic collection of information standardization in personnel training in cross-cultural communication, the lack of application of Korean cross-cultural communication personnel training management system in the NIS system, and the connection between the Internet of Things technology and the current NIS system. Through the application of new technologies, various kinds of information are highly integrated to form a comprehensive and high-efficiency NIS system. It satisfies the real-time control function of e-books on the whole process of talent training and the intelligent learning function of Korean, so as to achieve the goal of Korean cross-cultural communication management and realize the interactive talent training of Korean cross-cultural communication.

## 2. Related Work

Scholars in related fields have always attached great importance to cross-cultural communication, so this is also a research topic that researchers from various countries pay more attention to. Many scholars in the teaching field have carried out research on cross-cultural communication and achieved certain results. Kelm and Orlando have argued that we face two major challenges in teaching and training cross-cultural dialogue. The first is to develop the ability to observe and pay attention to cross-cultural patterns that differ from our own. Second, these observations become more important when they are linked to some context, model, theory, or application [1]. Yujong used the method of conversation analysis to study the rising tone of words used by Korean non-native speakers in English cross-cultural communication [2]. Jun et al. have translated the lack of coping scale into a Korean work stress scale and examined its psychometric characteristics in the Korean labor force. Translation of the lack of coping scale according to scientific guidelines for intercultural adaptation [3]. Exploratory research by Lee has examined the potential links between informal digital learning of English (doing nothing), cross-cultural dialogue strategy competence, and perceptions of English diversity [4]. It can be seen that the research on Korean cross-cultural communication by various researchers has gradually diversified, but they are basically based on theoretical research and lack practical feasibility.

The Internet of Things technology is also gradually emerging, and more and more researchers use the Internet of Things technology in various fields. Kshetri has assessed the role of blockchain in strengthening IoT security. The key basic mechanisms related to blockchain security relationships are covered [5]. Pikul and Ning analyzed that Internet-connected devices are limited by the performance of the micro batteries that drive them [6]. Lindqvist and Neumann have studied the potential risks that can be overcome if the trustworthiness of the system is pursued, which can be ubiquitous in the world [7]. Valdes Pena et al. once believed that the Internet of Things will transform the Internet from a human-centric to a machine-intensive platform [8]. To sum up, the application research technology of the Internet of Things in the field of cross-cultural communication is still relatively small. At present, it is mostly used in a few fields such as the circulation system and supply chain. On the whole, its application scope is relatively narrow, the application degree is shallow, and there is a lack of in-depth research.

## 3. Korean Cross-Cultural Communication and Interactive Talent Training Based on the Internet of Things

*3.1. Function and Technical Architecture of the Internet of Things.* In order to upgrade the architecture of the traditional Internet of Things, it is an inevitable trend to introduce a new type of Internet of Things at the network layer or expand the existing functions of the Internet of Things [9]. The Internet of Things will play an increasingly important role in the entire Internet of Things application system architecture. Moreover, with the vigorous development of the electronics industry, the hardware performance of the Internet of Things has been greatly improved, which also promotes the gateway’s support for more Internet of Things applications and forms a new Internet of Things architecture system [10]. In the Internet of Things interactive talent training mode technology studied in this paper, the combination of Internet of Things and traditional gateways should have the following four functions: the access authentication function of the perception layer device, the heterogeneous network protocol conversion function, the data storage and policy management function, and the resource abstract release function are shown in Figure 1.

As can be seen from the figure, the implementation of its technical architecture needs to be divided into four layers, namely, the adapter layer, the conversion control layer, the middleware layer, and the application layer. The application layer mainly includes modules such as resource abstraction, service publishing, and information synchronization with the cloud platform. The middleware layer mainly includes modules such as policy management, data cache, instruction mapping, and data storage. The conversion control layer mainly includes modules such as access authentication, protocol conversion, data verification, and data analysis. The adapter layer mainly completes the data reception of various sensing layer devices, such as ZigBee, Bluetooth, WiFi, RFID, 4G, and so on.

*3.2. Radio Frequency Technology (RFID).* Radio frequency identification (RFID), its working principle is that the target object can be automatically identified through the radio frequency signal, and its related data can be obtained [11, 12]. Its identification work does not require our manual intervention and can work in a variety of harsh environments. Figure 2 shows the structure of a complete RFID system as follows:

As can be seen from the figure, a complete RFID system consists of electronic tags, readers, and computer application systems. Based on the RFID system, this paper establishes a network information service system for interactive talent training.

*3.3. Design and Implementation of Gateway Multi-Process Scheduling Algorithm.* This paper adopts the working steps of the MPSA system. First, define the three rotation time slices involved.

*3.3.1. Monitoring Threshold Period $T_1$.* Combined with multiple specific application scenarios in the laboratory, according to a large number of different types of underlying node equipment access experiments and the current access specifications of other IoT cloud platforms [13], it is concluded that $T_1$ is 400 seconds, which is reasonable. That is, the period for all sensor node devices to send data shall not be greater than 400 seconds, that is, $T_1 = 400$, and assuming that the period is $T$, then:

$$10 \leq T \leq 100. \tag{1}$$

In addition, the default factory default time interval of the underlying node device is 80 seconds, that is, when the device accesses the gateway for the first time, the sending time interval is 80 seconds. This prevents data blocking and loss from the first access of node data, resulting in the platform layer not being able to identify the device thereafter. And it meets the needs of users in most cases while reducing the blocking rate of data as much as possible. It stipulates that the user-defined node data sending interval needs to be a multiple of 10 [14].

*3.3.2. The Suspension Time Interval $T_2$ of the Access Node Queue.* According to the abovementioned restrictions on the monitoring threshold period $T_1$ and the period $T$ of the data sent by the access node, the probability density of the actual data period sent by the node can be regarded as a skewed distribution, as shown in Figure 3.

Since the default factory-set upload period $T$ of the sensor node is 80 seconds, although the user-defined upload data period is supported, most of the devices' upload data period should be distributed in 80 seconds. According to the definition of a skew function, the function curve is a positive skew curve. Its formula is given as follows:

$$\delta = \frac{K_3}{K_2\sqrt{K_2}},$$

$$K_2 = \frac{\sum (X - \hat{X})^2}{n-1} - \frac{1}{12}, \tag{2}$$

$$K_3 = \frac{n\sum (X - \hat{X})^3}{(n-1)(n-2)}.$$

In addition, according to the properties of the skewed distribution function, for a positively skewed distribution, its deviation coefficient is greater than zero, that is, $\delta > 0$. And the mean of the positively skewed distribution is $M$, the median is Me, and the mode is Mo, then the relationship between the three is given as follows:

$$M > \mathrm{Me} > \mathrm{Mo}. \tag{3}$$

But for this application system, in order to facilitate the calculation, after verification, when the number of samples is large enough, the skewed distribution can be approximated as a normal distribution with $\mu = 60$, $\sigma^2$ unknown. In order to facilitate the management, it is hoped that the time interval for sending data of most devices is within 100 seconds. Therefore, according to the characteristics of the normal distribution probability function [15], the calculation formula of $T_2$ can be obtained as follows:

$$T_2 = \frac{(1 - P(\mu - \sigma, \mu + \sigma)) * T1}{\sqrt[N]{T_1 T_2 \cdots T_N}}. \tag{4}$$

Then the suspension time interval $T_2$ of the ZigBee access node queue can be obtained from the abovementioned formula as follows:

$$T_2 \approx \frac{(1 - 0.625) * 300}{\sqrt[N]{T_1 T_2 \cdots T_N}}. \tag{5}$$

According to the description of the specific working steps in the previous section, it can be concluded that the startup time $T_3$ of the gateway's own health status monitoring information module is actually twice as long as $T_1$, namely:


Figure 1: IoT technology architecture.

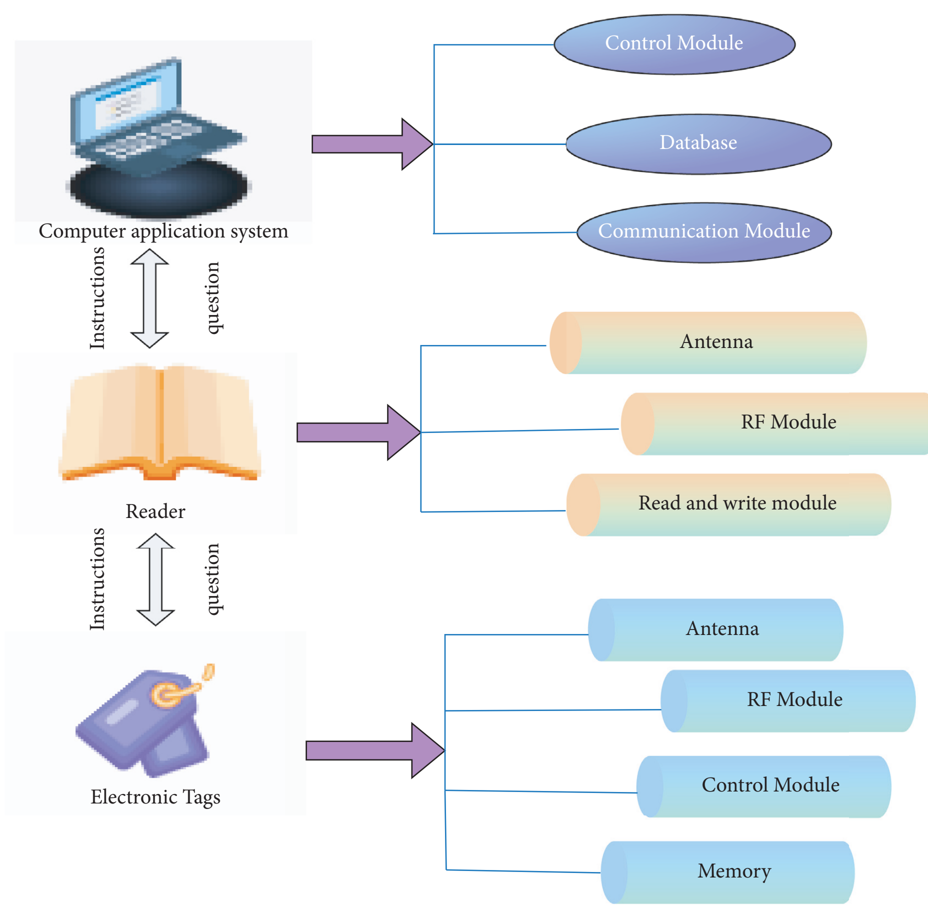


Figure 2: RFID system structure.

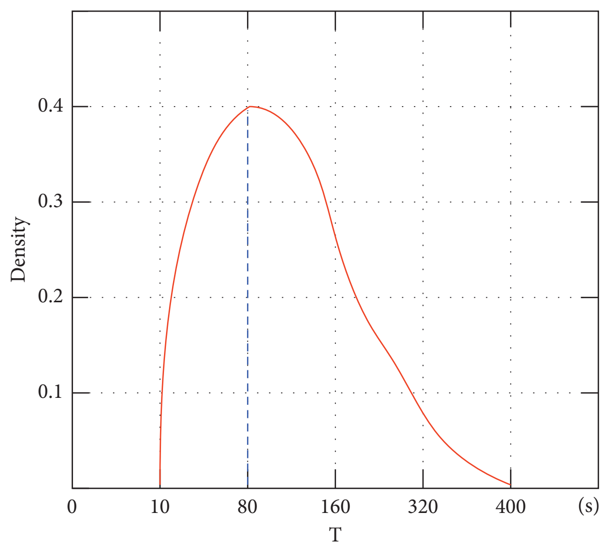

Figure 3: Skewed distribution probability density plot.

$$T_3 = 2 * T_1. \tag{6}$$

Convergence of all node data reception is completed within the time of the second $T_1$, after which the gateway enters a fully stable state. In this way, it is equivalent to sacrificing the convergence time of a $T_1$ in exchange for the reliability of the IoT to receive data from all nodes.

*3.4. GBDT Algorithm.* The GBDT algorithm is an iterative decision tree algorithm based on the ensemble learning boosting algorithm. In recent years, the GBDT algorithm has been widely used in engineering applications and library management [16, 17]. There are two reasons, the first is the high accuracy of regression fitting; the second is the ability to filter features. The key process of the GBDT algorithm used in this paper is given as follows:

The input is a training set sample:

$$T = \{(x_{1,} y_1), (x_{2,} y_2), \ldots, (x_{m,} y_m)\}. \tag{7}$$

The output is the final prediction function $f(x)$, initializing the weak learner:

$$f_0(x) = \text{argmin} \sum_{i=1}^{m} L(y_i, c). \tag{8}$$

Among them, $T$ is the maximum number of iterations, and $L$ is the loss function.

For iteration rounds $t = 1,2, \ldots, T$ with samples $i = 1,2, \ldots, m$, compute the negative gradient.

$$r_t = -\left[\frac{L(y_i f(x_i))}{f(x_i)}\right]_{f(x)=f_t-1(x)}. \tag{9}$$

Use

$$(x_i, r_i)\,(i = 1, 2, \ldots m), \tag{10}$$

to fit a CART regression tree model and obtain the $t$-th regression tree. Calculate the best fit value for the leaf regions of $j = 1, 2, \ldots, J$:

$$c_i = \text{argmin} \sum_{x_{i\epsilon r}} L(y_i, f_t - 1(x_i) + c). \tag{11}$$

Let the mutual information of training dataset $N$ and feature $M$ be. Suppose this training data set is $N$, indicating the number of samples. There are $K$ classes:

$$C_{k,} k = 1, 2, \ldots K, |C_k|. \tag{12}$$

The abovementioned formula is the number of samples belonging to class $C_k$, which are

$$\sum_k |C_k| = |N|. \tag{13}$$

Assuming that the feature $M$ has $n$ different values of $m_1, m_2, \ldots, m_n$, according to the value of the feature $M$, $N$ is divided into $n$ subsets $N_1, N_2, \ldots, |N_i|$ as for the number of samples of samples, there are

$$\sum_i |N_i| = |N|. \tag{14}$$

The set of samples belonging to class $C_k$ in subset $N_i$ is $N_{ik}$, and the number of samples whose $|N_{ik}|$ is $N_{ik}$ is used to calculate the empirical entropy $H(N)$ of data set $N$:

$$H(N) = -\sum_{k=1}^{K} \frac{|C_k|}{|N|} \log \frac{|C_k|}{|N|}. \tag{15}$$

Update the strong learner, then

$$f_t(x) = f_{t-1}(x) + \sum_{j=1}^{J} c_j I(x \in R_j). \tag{16}$$

The expression to get the prediction function $f(x)$ is given as follows:

$$f(x) = f_T(x) = f_0(x) + \sum_{t=1}^{T} \sum_{j}^{J} c_j I(x \in R_j). \tag{17}$$

GBDT default criterion is FRIEDMAN_MSE. For the convenience of comparison, its criterion is also set to MSE. This paper also supplements the evaluation of the average relative error, the minimum relative error, and the maximum relative error for the model performance. The MSE and $R^2$ calculation formulas are formulas (18) and (19), respectively.

$$MSE = \frac{\sum_{i=1}^{n} (y - y_1)^2}{n}, \tag{18}$$

$$R^2 = 1 - \frac{MSE}{\sigma_y^2}. \tag{19}$$

*3.5. Consequences of Intercultural Communication Barriers in Korean.* There are various factors that affect cross-cultural communication, both linguistic and pragmatic, both nonlinguistic and nonpragmatic; both customs and ways of thinking [18, 19]. The analysis of the results of Korean cross-cultural communication barriers is shown in Figure 4.

As can be seen from Figure 4, the main causes of cross-cultural communication barriers among Korean international students are roughly divided into four categories: language use, psychological behavior, social etiquette, and thinking patterns. Among them, the reason for Korean pronunciation is the biggest obstacle to the cross-cultural communication of international students in South Korea. These international students generally do not have enough understanding of Korean communication rules, values, customs, and communication styles. Only one-fifth of the international students are familiar with Korean politics, economy, history, and culture. These students have one thing in common. Most of them are Korean majors, and they have been in Korea for a long time, and they have come into contact with and understand more Korean culture. When most of the respondents encounter obstacles in cross-cultural communication, they will choose to compromise and cooperate, use a positive communication attitude to deal with cultural conflicts, and voluntarily change their words and deeds to conform to the other party's culture [20]. They are willing to open their minds to understand and accept different cultures, but in the practice of communication, they will feel nervous and afraid, and will not dare to open their mouths for fear of making mistakes.

College students have a limited understanding of Korean culture. Most of the students have a "slight understanding" of different cultural knowledge. In comparison, their knowledge of "Korean history, geography, and politics" is better than other cultural knowledge, as in Table 1.

It can be seen from the table that the relevant results of the survey show that the main purpose of the students participating in the survey is to learn Korean for employment, and the study of Korean is still at the stage of improving their language ability; most of the students have average interest in learning Korean; there are few ways for students to contact and experience Korean culture, and the ways to improve their Korean proficiency are limited; there are few opportunities for Korean communication practice, and the methods are relatively simple; the breadth and depth of foreign cultural knowledge are average.

## 4. Interactive Talent Training Experiment

*4.1. Investigation and Results of the Construction of Interactive Talent Training Model.* The survey on the construction of talent training mode is mainly in the form of a questionnaire, and the Korean international students in colleges and universities are taken as the research object of this paper. The purpose is to explore the main issues of cross-cultural communication ability of Korean students in colleges and universities, so as to promote the foreign language learning of Korean students. Through the survey, it was found that more than half of the respondents of the questionnaire were women and most of the students studied Korean or Korean-related majors. Through data analysis, it can be seen that the reasons for Korean international students to learn Chinese are mainly concentrated in three major areas: professional needs, work needs, and parental requirements. Although personal hobbies and travel needs are also one of the motivations for learning Chinese, the most powerful motivations are study, work, and family. These motivations are closely related to their lives, indicating that learning Korean plays a crucial role in their future studies, work, and life.

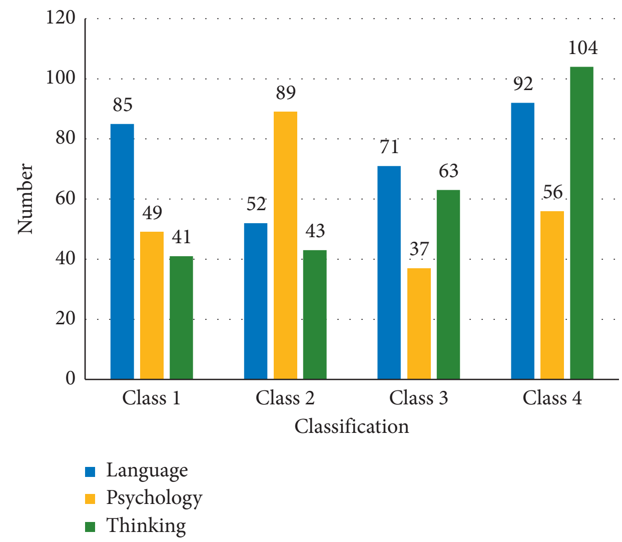


Figure 4: Statistical results of the causes of cross-cultural communication barriers for international students in Korea.

Figures 5–7 are graphs of relationship data obtained through data analysis by extracting 5 people from each level of the Korean oral proficiency level in the survey, totaling 30 people (each value on the $x$-axis represents 2 levels, and each value on the $y$-axis represents 2 error rates).

By analyzing Figure 5, it can be found that the higher the Korean proficiency of Korean international students, the smoother they will be in cross-cultural communication, and the lower their cross-cultural communication barrier value will be. Therefore, there is a negative correlation between the Korean proficiency of international students and the value of cross-cultural communication barriers.

By analyzing Figure 6, it can be found that the longer the overseas students in South Korea study Korean, the more they will be exposed to Korean culture, and the higher their Korean proficiency will be. On the contrary, there is a positive correlation between the Korean cultural contact time and Korean language proficiency of all international students.

By analyzing Figure 7, it can be found that the longer the overseas students in Korea stay in Korea, the smoother they will be in cross-cultural communication, and the lower their cross-cultural communication barrier value will be. Therefore, there is a negative correlation between the Korean proficiency of international students and the value of cross-cultural communication barriers.

*4.2. Feature Selection and Interactive Model Parameter Testing of Cross-Cultural Communicative Competence.* Feature selection is very important for data analysis [21]. Good feature

Table 1: University students' understanding of Korean culture.

| Category | Degree | | | |
|---|---|---|---|---|
| | Very well (%) | Basic understanding (%) | A little bit (%) | Not at all (%) |
| Custom | 0.1 | 20 | 75 | 3 |
| History | 2.4 | 33 | 59 | 5.6 |
| Values | 1 | 29 | 63 | 9 |
| Literature | 0 | 22 | 75 | 3 |
| Education | 1.5 | 14 | 74 | 10.5 |

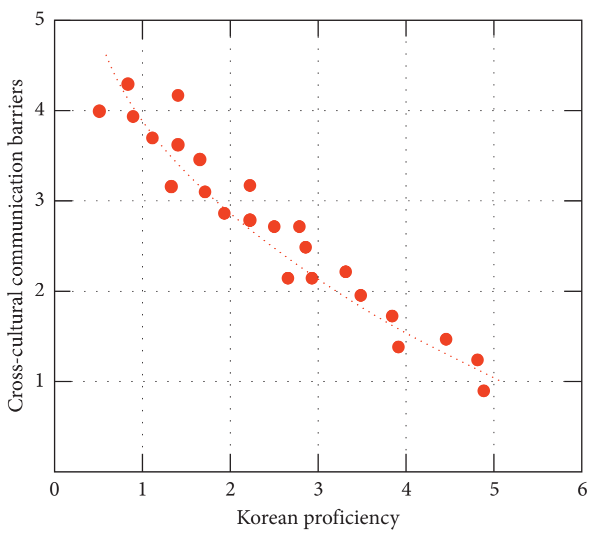


Figure 5: Data graph of the relationship between Korean proficiency and cross-cultural communication barriers.

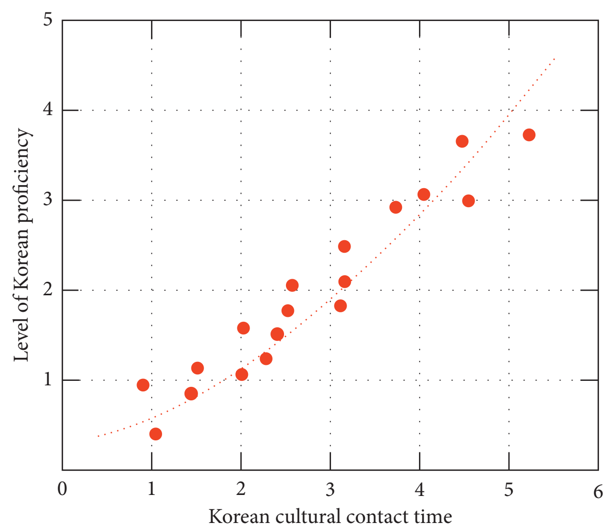


Figure 6: Data graph of the relationship between Korean culture contact time and Korean proficiency.

selection can improve model performance, and can also help understand the underlying structure and data characteristics, which plays an important role in further improving algorithms and models. Both random forest and GBDT have the feature importance evaluation function [22]. In Anaconda, the feature_importances attribute of the model can be used to obtain the feature importance evaluation. The feature importance analysis results are shown in Figures 8 and 9.

In this paper, the default value of feature quantity and sample size can be used, that is, all feature numbers are considered and the depth of the decision tree is not limited. The search range of the final model parameters and the optimal parameters selected are shown in Tables 2 and 3.

The evaluation model in the table uses mean squared error (MSE), which is a more convenient method to measure the "average error," and is used to reflect the degree of deviation between the actual value and the predicted value and to evaluate the reliability of the model, and the closer its value is to 100%, the more reliable it is to use the model to predict than to use the average value directly. The table also adds the minimum, maximum, and average relative errors that can more intuitively reflect the prediction effect. From the perspective of MSE, the degree of model deviation is low. The performance of $R^2$ is above 80%, the model has high reliability [23], and the relative error index is also within the acceptable range. It can also be seen from the table that the random forest and GBDT models have good prediction

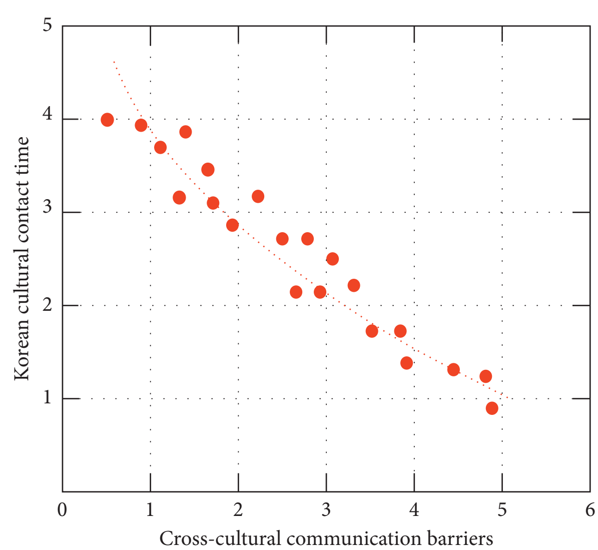


Figure 7: Data graph of the relationship between Korean cultural contact time and cross-cultural communication barrier value.

effects in the training set and validation set, the model has good generalization ability, and both simplify the input feature combination. From the perspective of MSE, and relative error indicators, the GBDT model is overall better than the random forest.

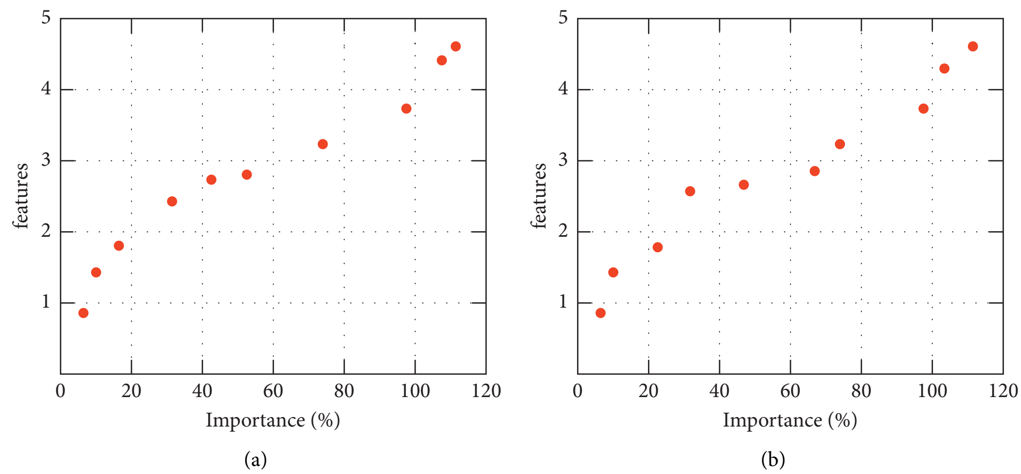


Figure 8: Random forest and GBDT knowledge and skills model feature importance.

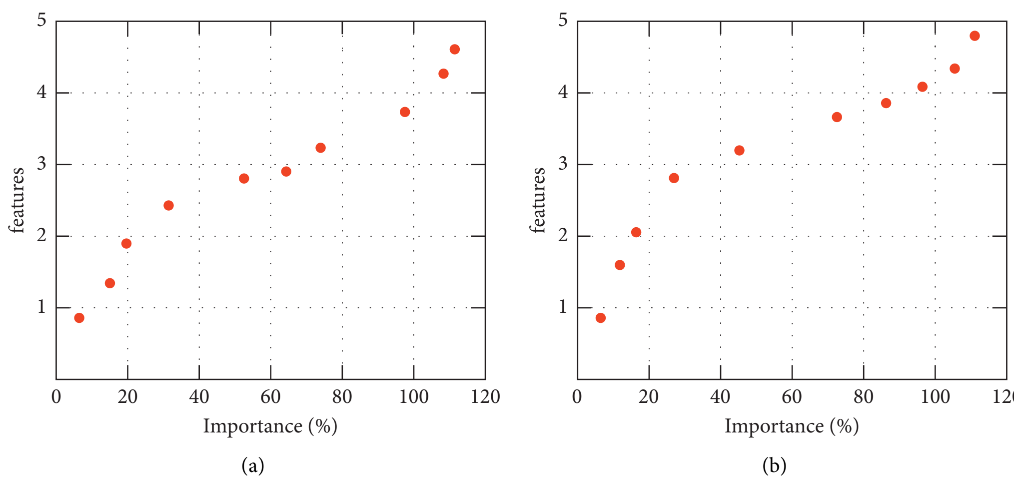


Figure 9: Feature importance of random forest and GBDT values model.

Table 2: The selection process of knowledge and skill model feature combination.

| Characteristic combination | Random forest (MSE/10^(−5)) | GBDT ($R^2$) |
|---|---|---|
| 1445 | 1341 | 77.3 |
| 1264 | 1082 | 81.4 |
| 1075 | 935 | 83.1 |
| 989 | 770 | 86.7 |
| 847 | 852 | 85.4 |
| 918 | 883 | 85.1 |
| 991 | 935 | 84.2 |

Table 3: Value model features a combination selection process.

| Characteristic combination | Random forest (MSE/10^(−5)) | GBDT ($R^2$) |
|---|---|---|
| 1407 | 1447 | 72.3 |
| 1194 | 1241 | 76.8 |
| 974 | 1074 | 81.9 |
| 829 | 915 | 83.7 |
| 875 | 954 | 82.4 |
| 904 | 1014 | 82.1 |
| 940 | 1053 | 81.3 |

Due to space limitations, this chapter only shows the analysis results of some of the actual and predicted values of the validation set. In the high, moderate, and low ranges, four sets of measured values and their corresponding predicted values are taken to show the model performance, as shown in Table 4.

Summarizing the table, the prediction model obtained by using random forest and GBDT algorithm provides interactive talent training with students' knowledge and skills, process and method, emotion, attitude, and value learning method prediction method. Success of a rapid predictive model for Korean intercultural communicative competence tests obtained through ensemble learning.

The evaluation of the Korean cross-cultural communication ability based on the information management level of the Internet of Things information system is based on the score between 0 and 5 of each index in the index layer and the weight of each level in the system [24]. Therefore, its value range is [0, 5]. Combined with the actual situation, the

Table 4: Model effect display.

| Measured value | Stochastic forest model | | GBDT model | |
|---|---|---|---|---|
| | Predicted value | RE/% | Predicted value | RE/% |
| 2.452 | 2.314 | 10.3 | 0.221 | 14.5 |
| 2.146 | 2.245 | 9.32 | 0.201 | 11.6 |
| 1.512 | 1.629 | 13.5 | 0.134 | 12.5 |
| 0.134 | 0.236 | 12.4 | 0.043 | 14.3 |

Table 5: Evaluation results of the Internet of Things information system for Korean cross-cultural communicative competence.

| System layer | Score | Criterion layer | Score | The project layer | Score | Index layer | Score |
|---|---|---|---|---|---|---|---|
| $A$ | 0.532 | $A_1$ | 0.458 | $A_2$ | 0.614 | $A_3$ | 0.577 |
| $B$ | 0.334 | $B_1$ | 0.662 | $B_2$ | 0.415 | $B_3$ | 0.347 |
| $C$ | 0.251 | $C_1$ | 0.586 | $C_2$ | 0.596 | $C_3$ | 0.652 |

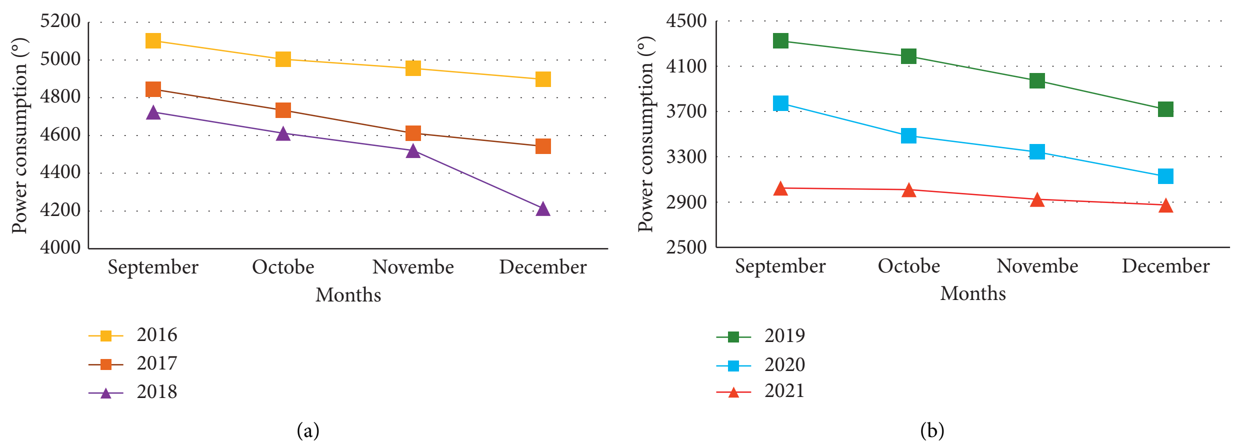


Figure 10: Comparison of power consumption before and after system installation. (a) Power consumption before and after system installation in 2016–2017. (b) Power consumption before and after system installation in 2019–2021.

level of Korean cross-cultural communicative competence IoT information management level is determined. The results are shown in Table 5:

Combining with Table 5, it can be seen that the research shows that the overall level of IoT information management of Korean cross-cultural communicative competence is relatively low, and it is only in the initial stage of development. Through the evaluation of the Korean cross-cultural communication ability Internet of Things information system, the combined score is 1.117. It is closely related to factors such as the late start of the informatization development of cross-cultural communication skills, the lack of investment in informatization equipment such as the Internet of Things, and the lack of relevant technical talents.

*4.3. Interactive Talent Training Ad Hoc Network Performance Test.* To test the performance of the wireless sensor network ad hoc network is mainly to test whether the transmission path of the ad hoc network method can change adaptively without affecting the data transmission when the network topology changes. The most typical changes in network topology in learning Korean cross-cultural communication skills are the addition of new nodes and the failure of network nodes [25]. This topic collected the power consumption, that is, the power consumption before and after the installation of the system, as shown in Figure 10:

It can be seen from the figure that the power consumption after the installation of the system is significantly lower than that of the month before the installation of the system, which can illustrate the energy saving and efficiency of the control strategy designed in this paper. It verifies the self-organizing network transmission technology and control effect proposed in this paper, including the self-organizing routing algorithm, and the control effect test. The test has achieved good results, and it has also preliminarily proved the scientific, effective, and energy-saving design of the key technology of the network information service system for interactive talent training in this paper.

## 5. Conclusions

This paper aimed at the deficiencies of flexibility, scalability, and single application scenarios in the traditional IoT architecture. The challenges faced by IoT devices are difficult to interconnect and interoperate, and there is no unified device management system model. It has completed the research work on IoT device discovery and management technology and implemented a new type of IoT architecture at the network layer and platform level, respectively. The platform layer is decoupled according to different application scenarios and distributed in the IoT gateway of the network layer. This strengthens the function of the IoT gateway, making the entire IoT application system easier to expand, more flexible, and faster and safer to access real-time sensing data. At the same time, the cloud platform layer can also be focused on scheduling management, authority authentication, and data storage for multiple application scenarios. In learning Korean intercultural communication skills through the use of various online resources and digital libraries and multimedia teaching methods. It carried out teaching and learning in a more flexible and diverse form so that "teaching" and "learning" can no longer be limited to the classroom, but become closer to reality, resulting in in-depth, beneficial, and continuously positive teaching practice effects. The establishment of a network information service system for interactive personnel training proposed in this paper can realize the real-time development of interactive personnel training, and realize the intelligence and high efficiency of interactive personnel training. This paper expanded on the existing Internet of Things application system, a new type of Internet of Things information discovery and management application system for interactive talent cultivation is realized, and the expected effect is achieved. However, in the actual Korean cross-cultural communication application, the technology involved in the entire IoT architecture is very broad. Due to limited personal capabilities and development time, there are still many details that need to be improved.

## Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

## Conflicts of Interest

The author declares that there are no conflicts of interest

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