

Research Article

Effect of English Reading on the Cultivation of College Students' Humanistic Spirit Based on Embedded Sensor System

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With the development of information technology in recent years, people have integrated English reading with information technology, which is conducive to improving the ability of English reading and cultivating the humanistic spirit of college students. This paper aims to study how to play the role of English reading in the cultivation of college students' humanistic spirit based on the embedded sensor system. This paper proposes an embedded speech recognition technology algorithm and a speech recognition technology algorithm based on dynamic time warping. Speech recognition technology is conducive to the improvement of English reading efficiency, as well as improving the reading interest of college students. The experimental results of this paper show that the speed of English development has become faster and faster in recent years, from 30% in 2011 to 55% in 2020. Although it fluctuates in the middle, the overall trend is upward. People pay more and more attention to English, and the proportion of English reading is gradually increasing, from about 20% in 2011 to about 41%. Therefore, it can be known that the importance of English reading is getting higher and higher, and it is necessary to cultivate the humanistic spirit of college students through English reading.

1. Introduction

With the advancement of science and technology, human beings have entered the information age. Computers and various embedded digital devices play a very important role in this prosperous digital age. Speech recognition is a technology for humans to convey information and a technology for machines to read sound signals and convert them into words and commands. After years of development, speech recognition has come a long way, showing great application possibilities.

With the development of computers, the indispensable mobile devices in people's lives continue to increase. In order to make these devices operate more conveniently and naturally, embedded application software based on speech recognition technology is required. Research in this area is becoming increasingly popular, and manual manipulations can be replaced with voice manipulations.

The innovation of this paper is as follows: (1) This paper introduces the theoretical knowledge of embedded sensor system and humanistic spirit cultivation. This paper also uses the embedded speech recognition technology to analyze how the embedded sensor system promotes the effect of English reading on the cultivation of college students' humanistic spirit. (2) This paper expounds the embedded speech recognition technology based on time warping. This paper finds that speech recognition technology can effectively promote English reading through experiments so as to effectively cultivate the humanistic spirit of college students.

2. Related Work

With the vigorous development of education in recent years, people are paying more and more attention to English reading. Shao et al. discovered an embedded high-temperature sensor for intelligent aeroengines and other intelligent mechanical

systems. This high-temperature sensor is directly constructed on the surface of aeroengine turbine blades through micro-machining technology. But sensor fabrication faces two major challenges: high-temperature electrical insulation and curved soft lithography. They conducted a series of elaborate high-temperature experiments to study the accuracy and precision of high-temperature characterization. The results show that the temperature in a high-temperature system can cause inherent errors in high-temperature measurements. The scholars conducted high-temperature experiments, but they did not list the experimental data and comparative data [1]. Bouain found that multisensor architectures are widely used to better sense the environment of intelligent vehicles. Using multiple sensors to handle perception tasks in rich environments is a natural solution. Most of the research work has focused on perception-based task implementation, and little attention has been paid to custom embedded design. He proposed a multisensor data fusion embedded design for ranging sensors for vehicle perception tasks. The scholar proposed embedded sensors to sense vehicles but did not prove the feasibility of this method [2]. Duan found that the country proposed the activity-based teaching method in English reading teaching. With the development of the times, the demand for English teachers is changing because educators attach great importance to the application of modern information technology and activity-based. Therefore, around how to use the English activity method in reading teaching, he designed three learning activities. The scholar designed three learning activities, but he did not give a specific introduction to the three activities, so the authenticity of these three activities could not be verified [3]. Wu found that, in English reading teaching, it is necessary to promote the development of students' thinking quality. This is an important part of the key competencies in the English subject. However, the current English reading teaching over-emphasizes the input of language knowledge, the extraction of basic information, and the application of reading strategies, while ignoring the cultivation of students' thinking quality. Therefore, how to cultivate students' thinking quality in English reading teaching has become an important problem to be solved urgently. Although the scholar proposed that thinking quality is an urgent problem to be solved, he did not mention how to solve this problem [4]. Zhou demonstrated the limitations of traditional English reading teaching methods. He further explored the feasibility and effectiveness of multimedia teaching in junior high school English reading teaching. It includes the design of reading teaching activities and the application and evaluation of multimedia in the classroom teaching process. He provided students with efficient learning methods. But he did not elaborate on the shortcomings of traditional English reading teaching [5]. Munandar and Srimurni's research aimed to analyze the effectiveness of embedded systems in improving students' reading comprehension. They did research on this and found that teachers face some problems in teaching reading comprehension to their students. To find out, they employed an

experimental approach to quantitative research. After statistical acquisition and interpretation of the data, they concluded that the directional reading activity method can improve students' reading comprehension ability. At the same time, studies have found that this strategy can also increase and enhance students' vocabulary and reading skills. However, the scholar's quantitative research did not describe it in detail, resulting in an unrealistic and reliable conclusion [6]. Alenezi found that reading is an essential strategic and lifelong skill necessary for learning success. His research examines foreign language students' knowledge and beliefs about strategies for reading comprehension in English. He also intended to determine whether there is a significant correlation between students' basic knowledge of English reading comprehension strategies and their beliefs about reading comprehension strategies. His research uses a quantitative approach, with data collected using a forty-item questionnaire. The scholar used a questionnaire method to study the relationship between basic knowledge and beliefs but did not reach a conclusion [7].

3. Method Based on Embedded Speech Recognition Technology

3.1. Concept of English Reading and Humanistic Spirit Cultivation. The information age that people are living in now is an age of all kinds of data and information flooding, and it is also an age full of problems. While enriching people's lives, people must constantly analyze, judge, and choose. Huge information can easily affect students' cognition. Faced with a variety of viewpoints, it is repeatedly emphasized in education that students "reject blind obedience." The key to not blind obedience is to cultivate the thinking habit of critical thinking; that is to say, students must actively cultivate the humanistic spirit [8]. The degree of emphasis that college students place on textbook knowledge and humanistic spirit is shown in Table 1.

As shown in Table 1, in 2015, 86% of college students believed that knowledge was more important, and only 14% of college students believed that the cultivation of humanistic spirit was also very important. The formation of comprehensive language ability is based on the overall development of students' learning skills, language knowledge, emotional attitudes, learning strategies, and cultural awareness. With the continuous development of modern education, humanistic spirit has become a hot topic in the field of education. As a language, English must also undertake the important task of cultivating students' humanitarian spirit in education, so as to promote students' development and cultivate students with more comprehensive and high-quality talents [9, 10]. The schematic diagram of the embedded English learning system is shown in Figure 1.

As shown in Figure 1, the 21st century is the age of knowledge and information. With the rapid development of

TABLE 1: The degree that college students attach importance to textbook knowledge and humanistic spirit.

Year	Knowledge (%)	Human spirit (%)
2015	86	14
2016	84	16
2017	80	20
2018	85	15

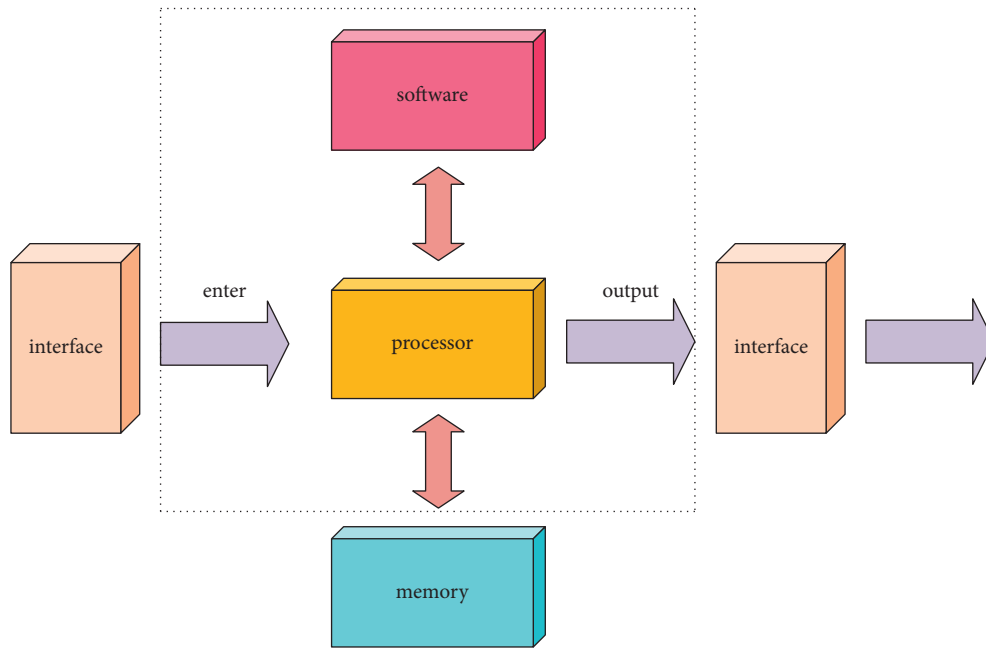


FIGURE 1: Schematic diagram of the embedded English learning system.

embedded technology, the functions of learning machines are not limited to the scope of electronic dictionaries. Learning machines can learn a variety of topics at the same time, and their functions are also more powerful [11]. A wireless sensor network is a task-oriented wireless self-organizing network composed of multiple nodes, as shown in Figure 2.

As shown in Figure 2, a wireless sensor network consists of multiple sensor nodes dispersed in high density, and each sensor node has specific functions of data collection, processing, and wireless communication [12]. Embedded generally refers to embedded systems. Embedded systems consist of hardware and software. It is a device that can operate independently. Its software content only includes the software operating environment and its operating system. The hardware content includes various aspects, including signal processor, memory, and communication module. The sensor node structure is shown in Figure 3.

As shown in Figure 3, embedded wireless sensor networks can also play a great role in the field of education. For example, a learning machine equipped with a wireless communication module can automatically form a network for the educational process, including educational interaction and resource sharing. Wireless sensor network is a distributed sensor network. At its tip are sensors that can sense and inspect the outside world. Sensors in WSN

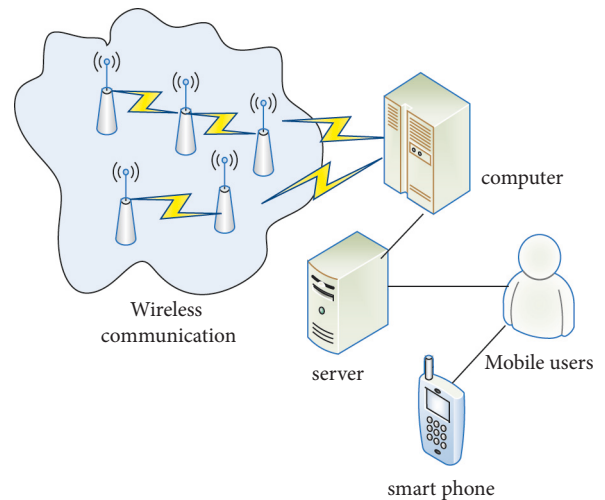


FIGURE 2: Schematic diagram of wireless sensor network and application.

communicate wirelessly. Therefore, the network settings are flexible, and the device location can be changed at any time. It can also be wired or wirelessly connected to the Internet. It is a multihop self-organizing network formed by wireless communication. In the framework of China’s core literacy,

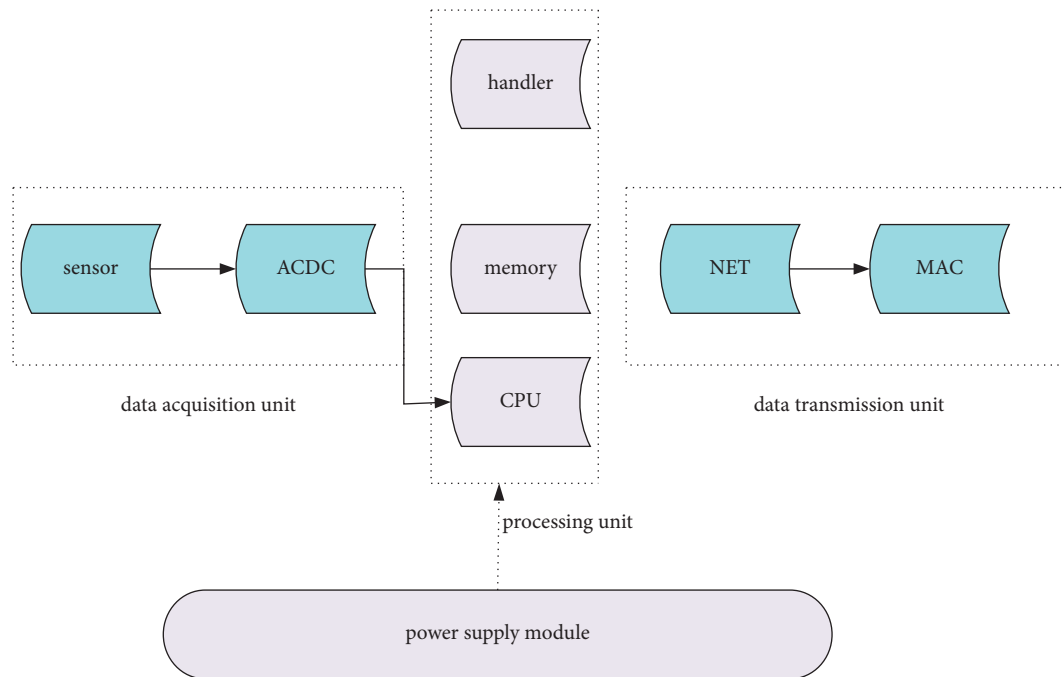


FIGURE 3: Sensor node structure.

the ability to “critical and question” is an interdisciplinary ability that requires joint efforts and implementation in all fields [13]. In the English subject, the English course will undertake the task of cultivating students’ basic English ability and developing students’ thinking ability. Regarding the reading ability students should have, the curriculum standards are students’ comprehension, prediction, judgment, and generalization of reading. Reasonable prediction, rigorous inference, and wise judgment are inseparable from the support of critical thinking [14].

The English reading process is an interaction between visual and nonvisual information. Visual information refers to everything that uses literal symbols to convey meaning through surface structures, such as basic words and interpretations of texts. Nonvisual information contains world general knowledge and specific knowledge, and it is more important than visual information [15]. English reading is shown in Figure 4.

As shown in Figure 4, English reading is a complex cognitive activity. In the process of reading, the reader does not passively accept knowledge but reorganizes the process of language based on his own understanding of knowledge, experience and the meaning of the text. Therefore, in the complete reading process, comprehension must be included. English critical reading meets the requirements of the core competence of English subjects, as well as the requirements of the development of the times and the development of students’ thinking [16]. This helps promote the development of students’ critical thinking and enhance their deep understanding of reading materials. The application of speech recognition technology is shown in Figure 5.

As shown in Figure 5, any technology can help to further expand the living space of human beings and promote the way of life of human beings. In general, the direction of

speech recognition is to serve humans better. To achieve this goal, speech recognition technology also needs to make leaps in the areas, and most speech recognition modes are based on one language. If the user inputs multiple languages such as Chinese and English, the accuracy of speech recognition will drop significantly [17]. To overcome this problem, this paper adopts a mixed language mode approach which becomes the topic of speech recognition research today [18].

3.2. Speech Recognition Algorithm Based on Dynamic Time Warping (DTW). Dynamic time warping is a nonlinear method that combines the computation of time warping and distance measurements. Its purpose is to convert the time-varying features of words into consistent time periods [19]. This algorithm is based on the concept of dynamic programming, which is an early classic algorithm for speech recognition. It is generally used to identify isolated words with a small vocabulary. Dynamic time warping is shown in Figure 6.

As shown in Figure 6, the dynamic time warping algorithm is a dynamic programming algorithm that calculates the similarity of two time series, especially series of different lengths. It is mainly used in time-series data, such as isolated word speech recognition, gesture recognition, data mining, and information retrieval. Each intersection in the grid represents the intersection between the test mode frame and the training mode frame. The goal of the DTW algorithm is to find a path through several grid points in this grid. The grid points that the path passes through are the frame numbers of the test and reference templates used for distance calculation [20]. In order to make the path not too inclined, the DTW algorithm gives the following constraints during dynamic warping, and the boundary conditions are formula (1):

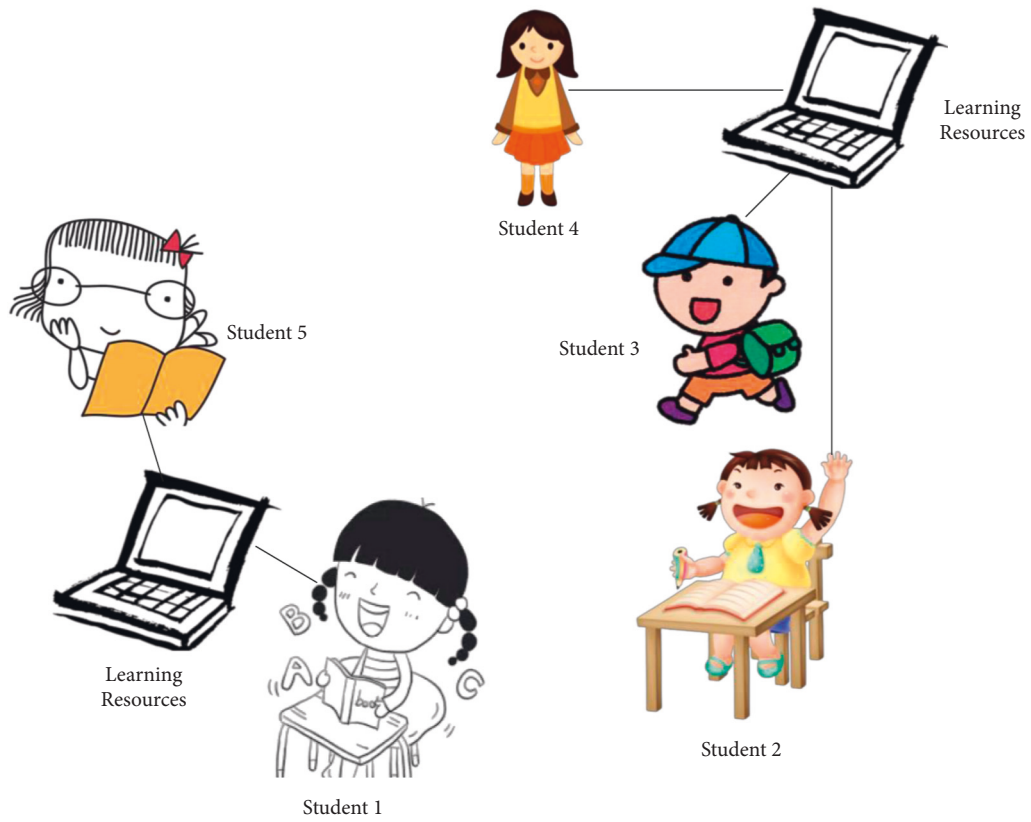


FIGURE 4: How to read in English.

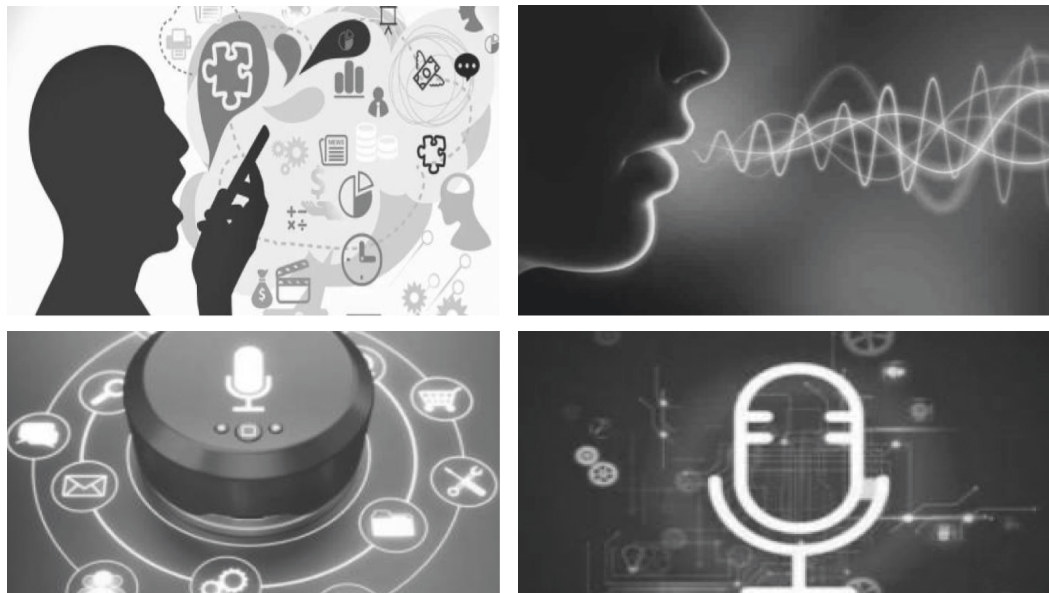


FIGURE 5: Applications of speech recognition technology.

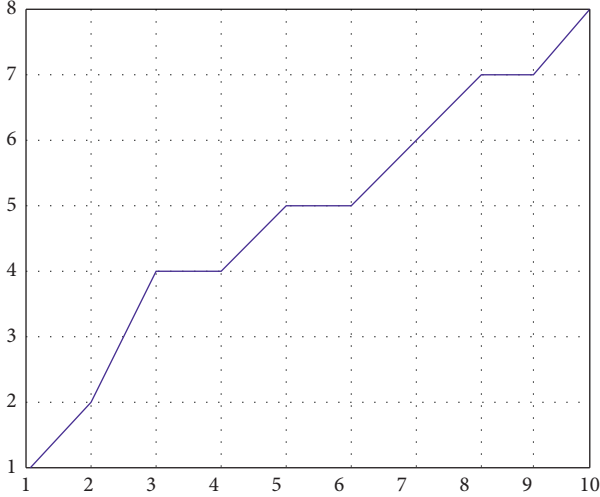


FIGURE 6: DTW algorithm search path.

$$w(1) = 1, w(N) = M. \quad (1)$$

Assuming that the reference template feature vector sequence in the template library is a_1, a_2, \dots, a_n , then the DTW algorithm satisfies formula (2):

$$D = \min \sum_{n=1}^N d[n, w, (n)]. \quad (2)$$

$d[n, w(n)]$ is the distance between the input vector of the n th frame and the reference vector of the m th frame, and D is the distance measure of the two voices. The preprocessing part of the speech signal includes normalization and preemphasis. Normalization is a way of simplifying the calculation; that is, the dimensional expression is transformed into a dimensionless expression and becomes a scalar. This method is often used in various calculations. Because the volume of speech affects the energy value of each speech frame, the energy is normalized to exclude differences in the volume of each person's speech [21]. The specific method is as formula (3):

$$b[n] = \frac{(x_{\max} - a[n])}{|X_{\max} - X_{\min}|}. \quad (3)$$

Among them, X_{\max} represents the maximum amplitude of the speech signal, and X_{\min} represents the minimum amplitude.

High-frequency loss occurs after the speech is emitted from the lips. In order to make up for these high-frequency losses, preemphasis processing is required here, the sound signal of each frame will be emphasized at high frequencies and filtered with a high-frequency filter, and the high-efficiency filter is mainly used to capture particulate dust above 0.5 μm and various suspended solids, as the end filter of various filtration systems, such as formula (4):

$$H(z) = 1 - a \times z^{-1}, \quad (4)$$

where a is between 0.9 and 1, and the preemphasized signal $S_2(n)$ is formula (5):

$$S_2(n) = S(n) - a \times s(n-1). \quad (5)$$

Spectral leakage occurs due to direct truncation of the signal (with a rectangular window). In order to improve the situation of spectral leakage, a nonrectangular window is added. It is generally a plus Hamming window. Because the amplitude-frequency characteristic of the Hamming window is that the side lobe attenuation is large, the attenuation of the main lobe peak and the first side lobe peak can reach 43 db. The specific windowing method is as follows: people set a speech signal as $S(n) = 0, 1, \dots, n$. The expression of the Hamming window is shown in formula (6):

$$W(n, a) = (1 - a) - a \cos\left(\frac{2pm}{N-1}\right). \quad (6)$$

Then after windowing (multiplied by Hamming window), the speech signal is converted into $\cos(2pm/N-1)$. The value of a is between 0 and 1. If the value of a is different, the corresponding Hamming window will also be different. Generally speaking, the larger the value of a , the flatter the shape of the Hamming window. The shape change of the Hamming window under different values is shown in Figure 7.

As shown in Figure 7, training is actually the process of extracting a common template feature from multiple input signals as training samples. Generally speaking, when there are more samples and the difference between samples is less than a critical value, the obtained template is the most reliable. That is, such a template best matches the actual standard value. The more reliable a template is, the higher the accuracy of template matching is. Template matching is one of the most primitive and basic pattern recognition methods. It studies where the pattern of a specific object is located in the image and then recognizes the object. This is a matching problem. It is the most basic and most commonly used matching method in image processing.

When performing template matching, the dynamic time warping algorithm makes the accumulated distance on the path as shown in formula (7):

$$D[T(n), R(m)] = \sum_{i=1}^p (t_i - r_i)^2. \quad (7)$$

Among them, T represents the input template, R represents the reference template, t and r are the feature coefficients of the frames corresponding to the input template and the reference template, respectively, and P is the order of the feature coefficients.

The distance matrix can be obtained by performing Euclidean operation on the corresponding frame of the input template and the reference template, and then combined with the defined forward direction, that is, the local decision function, the accumulated distance matrix can be obtained. Euclidean space is a special metric space that plays a role in the definition of manifolds that include Euclidean and non-Euclidean geometries.

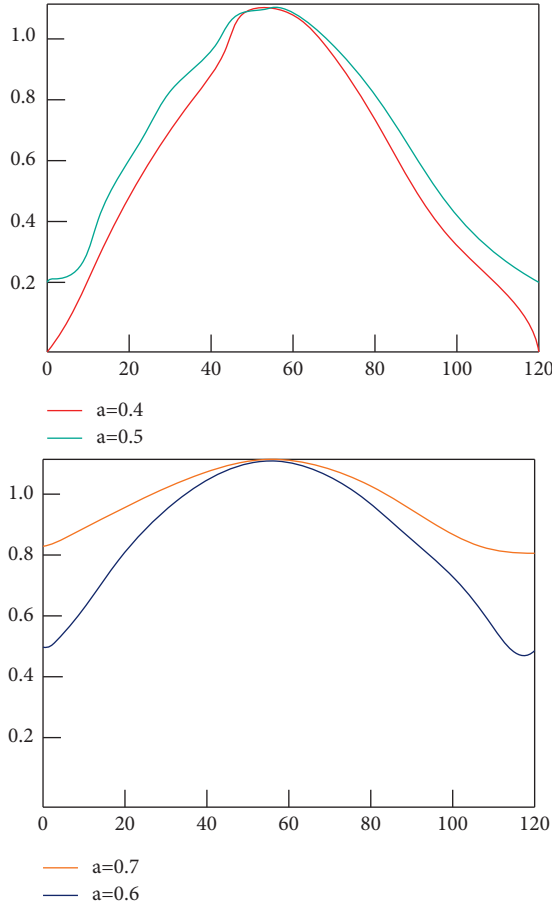


FIGURE 7: Different a values correspond to different Hamming windows.

3.3. Embedded Speech Recognition Based on Kalman Filter. Kalman filtering is a filtering method that uses the minimum mean square error prediction error as the criterion to perform linear unbiased estimation of speech signals from noise-contaminated observation signals. Kalman filtering is a method of using a linear system of state equations. It is an algorithm that optimally estimates the system state through the system input and output observation data. Since the observation data includes the influence of noise and interference in the system, the optimal estimation can also be regarded as a filtering process. The speech signal can be represented as an all-pole linear output self-recursive process driven by white noise. Under the assumption of short-term stationary, a pure speech signal can establish the L -order AR model, that is, formula (8):

$$s(n) = \sum_{i=1}^L a_i n \times s(n-i) + \omega(n), \quad (8)$$

where $a_i n$ is the linear prediction coefficient, $\omega(n)$ is the mean value of 0, the variance is δ^2 white Gaussian noise, and $S(n)$ is the clean speech signal. Based on the analysis, the mathematical model of the speech signal $b(n)$ with additive noise can be described as formula (9):

$$b(n) = s(n) + v(n), \quad (9)$$

where $s(n)$ is the clean speech signal, $v(n)$ is the additive background noise with mean 0 and variance δ^2 , and $s(n)$ and $v(n)$ are uncorrelated. In theoretical analysis, the variance δ^2 must be known, but in practical applications, δ^2 is unknown, and the usual practice is to use the first frame of the speech signal to estimate. The improved Kalman fast filtering algorithm is shown in formula (10):

$$K(n) = \frac{R_s(n)}{(R_s(n) + R_v(n))}. \quad (10)$$

Since the judgment threshold is inferred from the observation data, there is a certain error, and the forgetting factor can be used to reduce the error. Then, the judgment threshold is updated as in formula (11):

$$U = (1 - d) \times U + d \times P_v(n). \quad (11)$$

The forgetting factor is a weighting factor in the error measure function. The purpose of introducing it is to give different weights to the original data and the new data so that the algorithm has the ability to respond quickly to the change of the input process characteristics. Here, the characteristic of the forgetting factor can also be used to reduce the error. When the background noise changes from large to small, the determination threshold U can be changed from large to small.

Two signal-to-noise ratios need to be calculated for comparison. The signal-to-noise ratio of a current speech frame is such as formula (12):

$$SNRI(n) = 10 \times \log_{10} \left(\frac{\delta_r^2(n) - \delta_r^2(n)}{\delta_r^2(n)} \right). \quad (12)$$

The other is the signal-to-noise of the entire speech signal such as formula (13):

$$SNRI(n) = 10 \times \log_{10} \left(\frac{\delta_s^2(n) - \delta_s^2(n)}{\delta_s^2(n)} \right). \quad (13)$$

When $SNRI(n)$ is less than or equal to $SNR0(n)$ or $SNR(n)$ is less than 0, people can think that this speech frame is very likely to be noise.

3.4. Hidden Markov Algorithms. As a statistical model, Hidden Markov Model (HMM) originated in the 1980s. Hidden Markov Models can describe not only static random processes but also dynamic transitions between these random processes. In this way, a speech signal can be better described. Hidden Markov Model, as a statistical analysis model, was founded in the 1970s. It was spread and developed in the 1980s, and it has become an important direction of signal processing. It has been successfully used in speech recognition, behavior recognition, text recognition, and fault diagnosis. Therefore, compared to traditional template-based models, Hidden Markov Models are more widely cited in today's speech processing field. The HMM model is composed of multiple states. With the change of time, each state may change and exist in one state. Each

observation vector has an output probability corresponding to a different state. The HMM model is shown in Figure 8.

As shown in Figure 8, compared with other current recognition algorithms, the advantage of the HMM method is that it is easy to use other pieces of information such as speech and language models. It has the unique advantage of continuous speech recognition. However, the downside is the complex computation and long training sequence, namely, formula (14):

$$A = \begin{pmatrix} a_{11} & a_{1n} \\ a_{n1} & a_{nn} \end{pmatrix}, \quad (14)$$

where a_{mn} is the transition probability when transitioning from state S_i to state S_j . The set of initial state probabilities of the system $\pi = [\pi_t]$, π_t represents the probability that the initial state is S_i , that is, formula (15):

$$\pi_t = p[S_1 = S_i], \quad (1 \leq i \leq N). \quad (15)$$

Therefore, a model can be denoted as an octet model, and using this model, a sequence of observations can be generated.

The excitation source of the excitation model includes silence and sound, and the silent signal is the output of a linear system excited by a series of white noises. The voiced signal is generated by a periodic pulse generator, and the period depends on the fundamental frequency and the sampling frequency. The transfer function refers to the ratio of the Laplace transform of the linear system response to the Laplace transform of the excitation under zero initial conditions. Its transfer function is formula (16):

$$H_v(z) = G(z)V(z)R(z). \quad (16)$$

Among them, $G(z)$ is the transfer function of the glottal pulse, $V(z)$ is the transfer function of the vocal tract model generator, and $R(z)$ is the transfer function of the radiation model.

The glottal vein is a term used in linguistic research to describe the effect of the manipulation of the vocal folds on the quality of the voice during speech. From a mechanical point of view, the glottal pulse is generated by the flap of tissue in the vocal fold area and its gap, and it is collectively referred to as the glottis. In order to make the excitation signal of the voiced sound have the actual waveform of the glottal pulse, it is necessary to pass a glottal pulse model filter, which is transformed into formula (17):

$$G(z) = \frac{1}{(1 - g_1 z^{-2})(-g_2 z^{-2})}. \quad (17)$$

Among them, g_1 and g_2 are very close, so the unvoiced signal can be simulated as random white noise. $V(z)$ in the channel model is the channel transfer function, and its expression is formula (18):

$$V(z) = \frac{1}{1 - \sum_{k=1}^N a_k z^{-k}}. \quad (18)$$

In the radiation model is a first-order high-pass filter whose expression is formula (19):

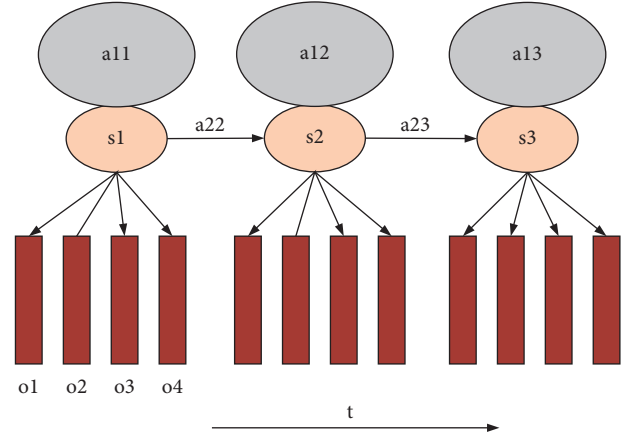


FIGURE 8: Relationship between HMM and speech parameters.

$$R(z) = R_0(1 - z^{-1}). \quad (19)$$

Voice signal is a kind of data with a large capacity. Under the premise that both identification and storage are calculated locally, the hardware resources of the embedded system are required to be configured relatively high, such as processor chip specifications, memory capacity, and peripheral circuit interface. As an analog signal carrying specific information, voice has become an important means of obtaining and disseminating information in people's social life. The purpose of speech signal processing is to extract effective speech information in a complex speech environment. The impact of environmental interference on the signal in the process of speech transmission cannot be underestimated, so the antinoise capability of speech signal processing has become an important research direction.

Today, many users enrich their lives through voice technology, using voice technology to command computers. It converts text into voice and reads aloud. However, the computer still needs a lot of training to recognize the user's speech. Aside from the influence of the speaker itself, the most important factor is ambient noise. In noisy public places, the human ear can automatically notice sound sources that require attention. However, the electronic device does not have this self-filtering function and cannot identify the effective information of the audio source. Currently, the best way to use speech recognition technology in a noisy environment is of course with an antinoise microphone, but that is not possible for most users. If an antinoise microphone is installed in the device, that will add significantly to the cost. Therefore, how to overcome this speech recognition problem is still a difficult task.

3.5. Cultivation of Humanistic Spirit and Implementation in Teaching. In modern academic circles, the spirit of humanism is formed through introspection and perception of the heart that depends on the foundations of language, literature, history, philosophy, music, art, and so on. It includes morals, feelings, attitudes, values, freedom, self-awareness, and social laws combined with real-life situations. It defines it as criticism, transcendence, judgment, and

reflection on the meaning and value of life. Humanity is a goal based on the full realization of life and full free development. It is a cultural spirit and life norm that combines the principles of ultimate concern and realistic concern for the value of life.

In the new century, China promotes innovative education in an all-round way, insists on taking quality education as the core, and insists on taking moral education and “learning to be a man” as the guiding ideology of quality education. High-quality educational content includes knowledge, ability, ideology and morality, and healthy personality. Its core is to let the people who receive education grow up healthily and harmoniously and attaches great importance to students’ learning “people-oriented.” The cultivation of humanistic spirit is regarded as the central content of humanistic education. The characteristics of the humanistic spirit are shown in Figure 9.

As shown in Figure 9, the modern humanistic spirit can be said to be a free humanistic spirit. It is a human consciousness that respects human value and dignity, safeguards human rights, and realizes human goals and ideals. But this free humanistic spirit must be built on an orderly humanistic platform, and it is a rule that everyone should follow. Therefore, the humanistic spirit emphasizes the free development of human interests and pursuits and the full development of human creativity. It emphasizes people’s own improvement and continuous self-improvement, people’s self-realization, and people’s personality independence and subjectivity.

In general, education in China is mainly based on scientific guidance, which is conducive to the transmission and development of knowledge. But because it ignores cognition and emotion, it will bring a series of problems accordingly. As a language, especially as a foreign language, English is a very practical subject. But in educational practice, people still misunderstand it. Its practicality has not attracted enough attention, mainly reflected in the following aspects.

From the perspective of educational goals, modern education regards the cultivation of high-tech and high-intelligence talents as the ultimate educational goal. Therefore, foreign language education is often the same as physics, chemistry, and mathematics education, ignoring the accumulation of students’ emotional experience.

From the perspective of teaching methods, because the importance of knowledge is overemphasized, the subjective initiative of students is ignored. The teaching method is simplified to the pure knowledge education method, and the monotonous teaching method will seriously weaken the students’ enthusiasm for learning and make the students completely become the “filler” of knowledge.

Students lack a lot of language knowledge and practical ability. To make matters worse, many students lose interest and confidence in continuing their studies. It also lacks virtue, responsibility, and affection, which is the complete opposite of what is advocated for the human spirit. Therefore, we must actively promote the cultivation of humanitarian spirit and implement emotional education in English education.

4. Experiment and Analysis on the Effect of English Reading on the Cultivation of Humanistic Spirit

4.1. Experimental Analysis Based on Time Warped Template Matching. There are 5 training samples in this experiment, and the experiment is divided into external test (A template) and internal test (B template). They refer to untrained and trained recordings, respectively. The sampling frequency of these voice signals is 16 kHz, and the sampling size is 8 bits. This paper randomly selects 10 times from the same experimenter’s training sample speech (i.e., a single sample) for matching test.

From the experimental data in Tables 2 and 3, it can be seen that, under the condition that other conditions remain unchanged, in general, the richer the speech signal participating in the training, the more accurate the template obtained so that the recognition accuracy is also relatively high.

Human society has entered the 21st century; with the economic globalization and the informatization of social life, the importance of English has become more and more significant. Many countries regard English education as an important part of basic education and place it in an important position. After more than ten years of English learning in primary and secondary schools, many students have only learned fragmented language knowledge without corresponding humanistic quality. They only have the basic knowledge of culture and no cultural background. Some have distinct personal views, but they do not have complete values and worldviews. The development trend of English and the percentage of English reading from 2011 to 2021 are shown in Figure 10.

As shown in Figure 10, economic globalization and informatization of social life have challenged traditional English education, and traditional English education has exposed many problems. Among them, the lack of humanistic spirit is a problem that cannot be ignored. At present, the tendency for examination-oriented education in many parts of China is still serious. As a pure examination-oriented tool, English subjects in senior high schools cannot give full play to the emotional education function of English subjects. If it only pays attention to the knowledge given in education and ignores the students’ feelings, attitudes, personality, interests, and other nonknowledge factors, it can only cultivate a student who cannot develop in an all-round way.

4.2. Cultivation Strategies for Students’ Humanistic Literacy in College English Reading

4.2.1. Combining with Information Technology. Language not only contains the historical and cultural background of a country but also contains the accumulation of the country’s values, ways of thinking, way of life, and spiritual levels. Therefore, it is indispensable to infiltrate humanistic education in college English reading. Careful reading is an

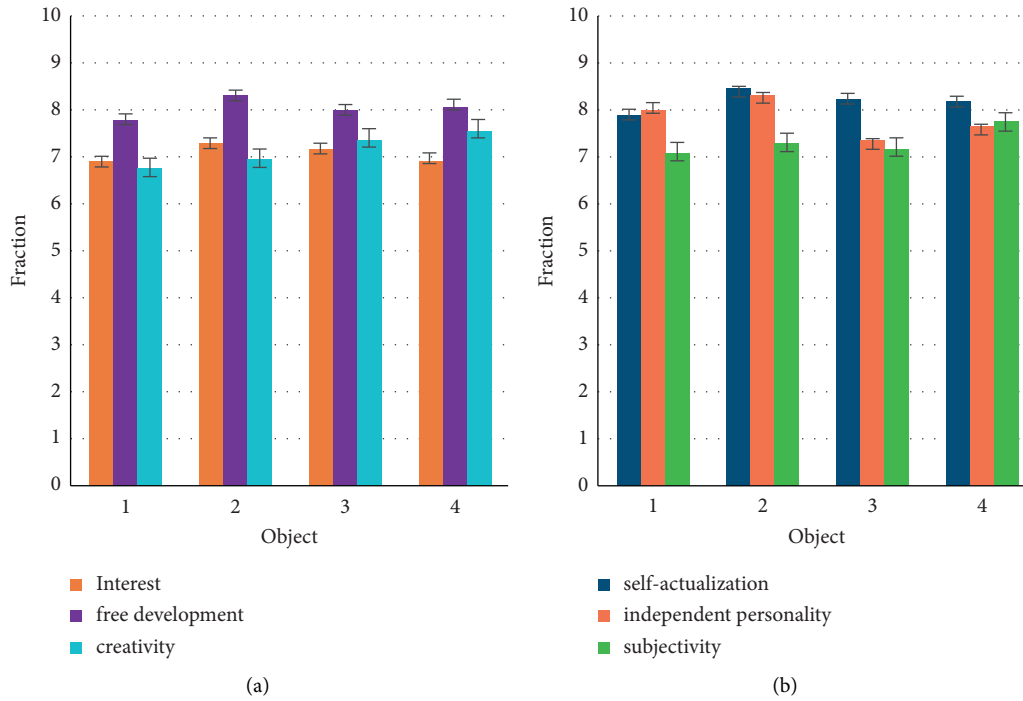


FIGURE 9: Characteristics of humanistic spirit.

TABLE 2: External test (A template) correct rate.

Experimenter	Template A correct times/total times	Total times	Correct rate (%)
a	10	10	100
b	10	10	100
c	9	10	90
d	9	10	90
e	7	10	70

TABLE 3: Internal test (B template) accuracy rate.

Experimenter	Template A correct times/total times	Total times	Correct rate (%)
a	20	20	100
b	18	20	90
c	16	20	80
d	17	20	85
e	18	20	90

important part of the reading curriculum in the classroom, allowing students to think deeply and improve cultural outcomes. Teachers guide students to pay attention to the deep meaning of words in context and guide students to explore the author’s attitudes and perspectives. Then, this paper grasps the main structure of the article and the logical relationship between paragraphs from a macroperspective and mines the text theme. On the basis of a complete understanding of the language and structure of the text, students can communicate based on their background knowledge and the text, making it conflict.

4.2.2. *Actively Changing Concepts and Improving Students’ Initiative in English Reading.* English reading is an important method to cultivate students’ humanistic spirit. Only when the teacher recognizes its importance can students love English reading, improve the quality, and promote the internalization of students. In order for students to better understand the importance of English reading, teachers should first change their concepts. It regards English reading as an important part of English education and firmly believes that extracurricular reading will directly affect the effect of English learning.

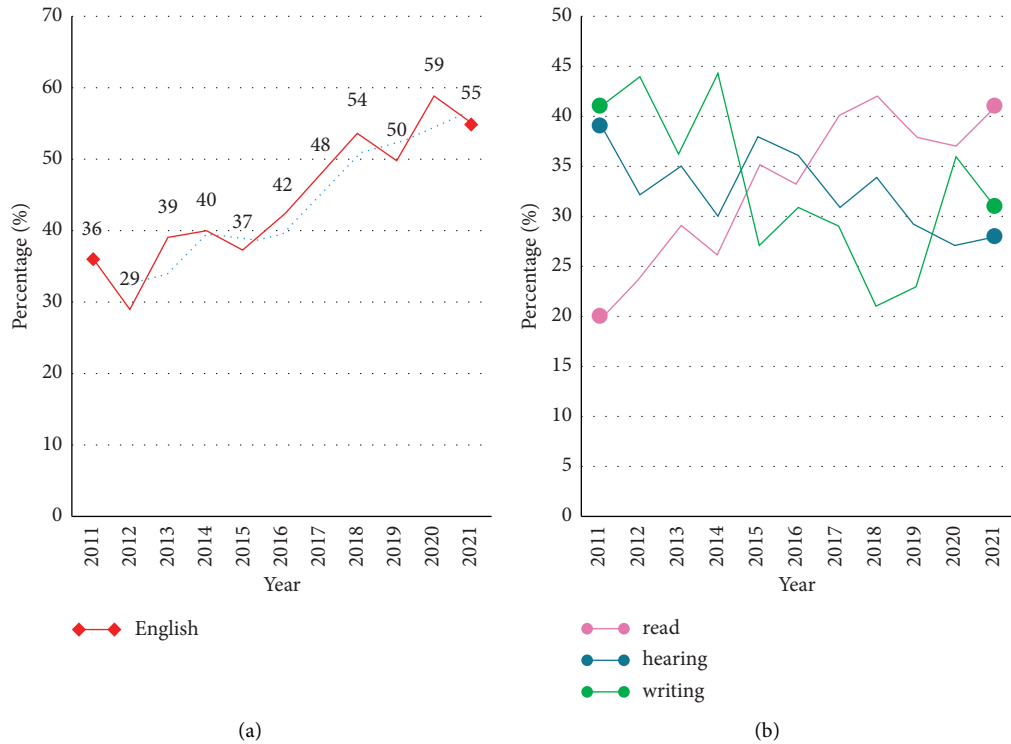


FIGURE 10: English development trends and percentage of English reading, 2011–2021: (a) 2011–2021 English development trend and (b) 2011–2021 percentage of English reading.

4.2.3. *Enriching the Content of Extracurricular Reading, Recommending Necessary Reading Lists, and Corresponding Reading Resources.* It is necessary to practice instruction on students’ reading outside the classroom. Teachers must include extracurricular readings each semester in their educational plan. It provides students with a specific reading list and selects English newspapers, magazines, online resources, original literary works, original rewriting, and other extracurricular reading materials for students. For extracurricular reading, it should let students divide into categories, or let students read some touching quotations, and so on. Second, students can arrange extracurricular reading content according to the actual situation and go to the library or bookstore to find their favorite books. In English education, teachers must pay great attention to the subject status of each student, give full play to their abilities, and improve the students’ overall English proficiency.

5. Conclusion

The concept of humanistic education has a great influence on modern education, and the cultivation of humanistic spirit helps to improve the comprehensive quality of English majors. At present, the lack of humanistic spirit education is the real problem faced by college English majors. It seriously hinders the overall growth of students. Therefore, this paper mainly focuses on how to use the embedded system to improve the effect of English reading on the cultivation of humanistic spirit. This paper gives a detailed explanation of the embedded system and the theoretical knowledge of

humanistic spirit cultivation so as to achieve the purpose of echoing the topic. In the method part, based on speech recognition technology, this paper proposes a speech recognition technology algorithm based on dynamic time warping (DTW) and embedded speech recognition based on the Kalman filter. As we all know, English reading is achieved by learning machines and various tools to achieve higher reading efficiency. Therefore, speech recognition has also become very important. This paper also summarizes the problems existing in the cultivation of humanistic spirit. In the experimental part, this paper analyzes the development trend of English in recent years and the proportion of English reading in English. This paper finds that people are paying more and more attention to English and paying more and more attention to English reading. At the end of the experiment, some suggestions are given for the cultivation of humanistic literacy of college English reading middle school students. All in all, it is very meaningful to improve the cultivation of humanistic spirit through English reading.

Data Availability

The experimental 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 conflicts of interest to report regarding the present study.

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