

# **Analysis of Intelligent Detection Technology for Pronunciation Errors in English Speaking Test System**

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**Abstract:** Oral English proficiency may have an important impact on people's future career development. Therefore, in order to make people's spoken English pronunciation more accurate test and rating, it is necessary to use some algorithms and instruments to ensure the test results. With the development of information technology, intelligence Detection technology should be developed, and the wrong pronunciation of spoken language can be effectively detected and corrected by means of speech signal processing technology.

## **1. Introduction**

The intelligent technology detection realized in the evaluation of spoken English can ensure people's pronunciation is more accurate. At the same time, with the continuous updating of detection technology, the addition of intelligent technology improves the accuracy of speech detection. In design, intelligent spoken English Detection technology can be combined with speech signal processing technology to make false pronunciations more accurately detected.

## **2. Overview of detection methods for speech signal spectrum detection technology**

The gradual penetration of computer technology in people's lives has been widely used in various industries. The computer technology in the speech recognition system also makes the system more efficient, especially the speech intelligent detection system in spoken English. The function of the detection system is to calculate and evaluate the pronunciation quality of people's spoken English, and then to identify the wrong pronunciation directly in the process of signal analysis. There are many algorithms in western developed countries that can accurately detect speech and Calculation,

This method of using speech algorithm to carry out speech recognition detection has more advantages. However, in the process of actual speech recognition, there are also confusions, data information interference, etc. These problems are relatively difficult to deal with, and in general, It is difficult to eliminate the method of pronunciation quality evaluation calculation. Therefore, this problem must be solved by using a specific algorithm at this time. When the interference signal is eliminated, the entire extraction process may have a reference feature due to the unique characteristics of the audio attribute. Work cannot be carried out effectively, and even affects the process of speech recognition.

So far, an English spoken language test system pronunciation error intelligent detection method developed on the basis of the speech signal spectrum detection technology is generated. This method can collect the speech signals of the spoken language test system and filter the speech signals. The matching process is performed to remove the interfering sounds, and then the adaptive beam focusing method is used to purify the English speech signal to enhance the intensity of the speech signal. The related spectrum detection method can be used to pronounce the speech signal of the speech oral test system. The spectrum is extracted, and then the errors caused by the pronunciation of the language are more accurate anti-interference and error correction capabilities have thrately detected according to the spectral difference. Finally, the simulation results show that the English speaking test using this method has a good effect on the intelligent detection of

pronunciation errors, and is accurate. The sex is also higher, and the noise in those voice strips can be eliminated, and the advantage of being detached.

### **3. English spoken pronunciation signal acquisition and preprocessing**

Most English pronunciation detection methods use the pronunciation pronunciation system to compare and correct the original pronunciation, so that the speech signals and motion features in these speech strips are extracted, and the vocal organ motion attributes are directly compared, according to different speech People carry out differential feature differentiation. The purpose of this is to accurately identify the motion characteristics of the inclusions, and then analyze the semantic pronunciation standardization mode, and directly construct a system, which is a standardized pattern recognition system for speech pronunciation. The system can analyze the spectrum of the speech signal as a detection method for identifying the standard of the pronunciation of the English speech.

When the original signal is entered into the middle system, the system will pre-process the speech strip. In general, the most important point of the preprocessing method of the speech signal is the starting point of the speech strip from the output speech signal. The end point is accurately divided. At this time, the speech signal endpoint detection technology is used, which can directly clean the interference between the noise segment and the silent segment, and shorten the time for processing the problem, so that the data collection amount is reduced, and unnecessary data is reduced. Time occupation. After the noise part of the speech coding is reduced by the volume of the sound, the bit rate of the mute section is also relatively low, and the efficiency of the speech coding can be improved a lot.

The amplitude segment of the speech signal is generated during the speech acquisition process, so that the acquisition sequence can be stably transmitted in the digital channel, and the operation processing signal is stored in the digital memory. The completion of these steps requires computational techniques. With the help of this, the quantized data represented by the finite symbol set is converted into the amplitude value of the finite amplitude set. In speech recognition, the signal needs to be digitized, and the analog signal is converted into a digital signal, and then the signal is modeled.

#### **3.1 Signal modeling**

The purpose of signal modeling is to make the pronunciation detection error in the English spoken language test system to be intelligently constructed, and the signal processing method is used to extract the characteristics of the spoken English pronunciation signal and be identified by the information. In this process, the spoken English pronunciation signal needs to be established first. The model then extracts the voiceprint of the spoken English speech, and uses the Melton frequency cepstral coefficient sensing method to identify and compare the spoken lines of the spoken English. At the same time, it is necessary to ensure that the pronunciation tester of the spoken English test system Melton frequency cepstrum coefficient and other aspects have a comprehensive understanding, flexible application of the frequency cepstrum analysis of the English speaking test system pronunciation status, while carrying out intelligent detection work on the English speaking test system, reducing the English speaking test system pronunciation error intelligent detection process The time invested in, thus improving the corresponding detection efficiency. In addition, relevant personnel should conduct effective analysis on the frequency model, understand the relationship between the frequency model and the operation of the English speaking test system, further plan reasonable and effective optimization and improvement measures, and highlight the application value of the English speaking test system.

#### **3.2 Speech signal matching filter processing**

The voice wants to get a more accurate division, it needs to be recorded into the system and then converted into a digital signal and then filtered. At this time, the low-pass filter is used to limit the frequency in the signal, so that the frequency component can be compared with the sampling. The

frequency is half lower. This can effectively prevent the signal aliasing interference problem, and the high-pass filter used to resist the 50Hz signal in the power supply interference. From the whole processing method, the speech signal is used to process the band-pass filter. Then the voice signal is collected and analyzed by a bandpass filter. The processed voice signal also needs to be collected and collected, and the voice signal of the spoken language test system is modeled by using the processing method of the sensor array signal. After the matched filtering process is obtained, the interference noise is also mostly removed.

#### **4. Pronunciation error detection algorithm optimization**

English learners need to start to sound according to the prompts of the system. At this time, the system will compare with the pronunciation rules of the standard pronunciation dictionary, and combine with the factor level monitoring network to generate the learner's pronunciation bar memo, which will be extracted by the system. The detector model is used to identify the acoustic model, and finally the actual phoneme string is output, and the error factors and types are identified and distinguished. In view of the current application of the pronunciation error detection method, there are two types. It is to use the language learning method to search for the voice features and detect errors. The other is to use the method of speech recognition to combine computer technology to detect the errors. These two methods have their own advantages and work. Personnel can choose according to the actual situation. For the language learning method, it mainly uses a series of learning language features to find the pronunciation component of the English speaking test system, and then combines the system comprehensive operation mode to deal with the pronunciation errors in the spoken English test system. Implement optimization and, if necessary, use special Test of Spoken English system of measures to implement effective reform, which the planned structural components operating state, to avoid problems disorders of the structural components at run time. Continuously improve the effect of the English speaking test system to ensure that the English speaking test system plays its biggest role in the English teaching process. For the language recognition method, the pronunciation error detection method of the English spoken language test system mainly uses the computer system to carry out the speech recognition work on the spoken English test system, so that the relevant personnel can find the pronunciation error of the spoken English test system in a short time. Reasons, then plan for reasonable optimization and improvement measures. At the same time, it should also ensure that the relevant personnel have a comprehensive grasp of the computer operation mode and voice recognition requirements, and ensure that the relevant personnel flexibly apply relevant technologies to carry out the pronunciation error detection of the spoken English test system, so as to provide an effective reference for the optimization of the spoken English test system.

With the continuous updating of research techniques, the pronunciation error detection algorithm is also optimized. Therefore, when the speech signal is matched and filtered, the noise can be completely removed, and then the English speech test system is used to detect the error and the intelligent detection algorithm is used in the English speech signal. The existing pronunciation errors are recognized, which is the adaptive beam focusing process that people often say. In addition, when detecting the system pronunciation error, the relevant personnel are required to find the spoken English test from the perspective of the spoken English test system. The reason for the system pronunciation error, and reasonable improvement measures according to the corresponding reasons, effectively deal with the abnormal pronunciation of the spoken English test system, and fully implement the goal of improving the comprehensive effect of the spoken English test system.

#### **5. Simulation experiments and results analysis**

It is necessary to invest in the system and technology, and to collect the voice and tone of the speaker. The whole process is complicated and requires a lot of material and economic cost support. At the same time, the pronunciation database is very limited. This also leads to the fact that the discriminability of the acoustic model is affected because the training data is not sufficient. The

existence of these problems directly leads to the reduced accuracy of the output of the pronunciation error detection work, and the type of the false pronunciation cannot be well distinguished. In response to this, it is necessary to carry out standardized simulation experiments on the English speaking test system, and conduct an investigation and analysis of the voices of English scholars and speakers, to understand the gap between the English reading methods of English learners and the spoken language test system, and to From the perspective of English teaching, the effective implementation of the English speaking test system voice adjustment, and gradually improve the English oral test system simulation effect, in order to bring a better oral English learning experience for English scholars. In this process, the scale of the English speaking test system pronunciation database should also be expanded. If necessary, a series of training data should be introduced to optimize the English oral test system learning model differentiation effect. While improving the simulation effect of the English speaking test system, it effectively solves the problem of pronunciation errors in the long-running process of the spoken English test system. Improve the accuracy of the pronunciation test of the spoken English test system, fully implement the goal of the pronunciation type of the spoken English test system, and provide an effective reference for the optimization and improvement of the spoken English test system and system update.

Under normal circumstances, the pronunciation error detection of the spoken English test system is directly based on the acquisition and detection of speech signals, so the current task of the researchers should focus on the classification of these pronunciation errors and find out the obvious. The traditional detection method is to extract the characteristics of spoken English pronunciation signals, and then use LORFA spectral feature method to extract and detect. It also needs to use the voiceprint feature extraction technology to adaptively filter and detect English spoken pronunciation signals, which is helpful for pronunciation detection. The accuracy of the results can also improve the ability of false judgments. The emergence of intelligent detection technology not only changes the algorithm of the English spoken language test system in the recognition of pronunciation errors, but also improves the recognition ability of false pronunciations.

The traditional speech signal detection system has poor anti-interference ability. The intelligent detection technology of the English spoken language test system can perform matching filtering processing on these speech signals, collect the spectrum of the speech signal, and then separate the types of speech pronunciation errors according to the spectral difference. The experimenter carried out the simulation experiment to detect the practicability and applicability of the English pronunciation test system error detection intelligent detection technology, and obtained good use effect, which proves that this intelligent detection technology has absolute performance advantages and can be promoted comprehensively and completely by related personnel.

## **6. Conclusion**

In the artificial intelligence system of oral English test, voice signal processing and false pronunciation intelligent detection technology are added to make the system more powerful. This technology can match and filter the speech signal to improve the accuracy of voice pronunciation error detection.

## **References**

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