

Research on computer intelligent image recognition algorithm

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Abstract

With the continuous progress of science, technology and economy, computer technology has become an indispensable technical object in all walks of life. With the development of science and technology, computer technology has made new progress in the development, which can explore and explore the unknown. From the development of exploring things at this stage, we can find that things change based on their own form, which will have an impact on people's judgment. The effective application of computer intelligent image recognition algorithm can help people better understand the essence of things. Based on the principle of image recognition technology, this paper discusses the development status of computer intelligent image recognition technology, studies computer intelligent image recognition technology and algorithm, expands the application scope of computer technology and creates greater social value.

Keywords

Computer algorithm, Intelligent image recognition, image processing.

1. Introduction

There are many factors affecting the form of things. When these complex conditions act on a thing together, it will affect people's accurate judgment of the thing and bring great inconvenience to people's work and life. Intelligent identification of things through computer technology can help people understand the essence of things. In recent years, the research and exploration of this technology has become a key topic in the field of electronic computer engineering in various countries. Making full use of it is of great significance to the whole society and a specific person.

2. Development of computer intelligent image recognition algorithm

At present, in the process of exploring computer intelligent image recognition technology, it has evolved from traditional character recognition to digital image recognition at this stage, after decades of development. Character recognition mainly originated in the 1950s, including not only numbers, letters, but also symbol recognition. Its origin is mainly from printed character recognition. Its intelligent image recognition technology mainly develops from printed character recognition to handwritten character recognition and analog image. Usually, it can compress and store a large number of digital images, and there will be no distortion in the transmission process. However, in order to give full play to the advantages of computer intelligent image recognition technology, artificial intelligence technology needs to be integrated. In the process of image recognition, it is necessary to filter useful information from many information, process the information well, and extract it according to the characteristics of the information. For all stored images, computer intelligent image recognition technology can fuse different types of information and promote the whole process more convenient and fast. At the same time, it can also realize the effective compression of images, then integrate them, do a good job in image classification and processing, make the whole computer intelligent image recognition system more stable, reduce the error of recognition operation, and

comprehensively improve the management ability of computer information system. At this time, it is necessary to study the computer intelligent image recognition algorithm, which can effectively solve the problem of system collapse. To some extent, almost all computer operations are completed manually. In recent years, with the rapid development of science and information technology, computers have also made rapid progress. At this time, programmers only need to work in specific programs, Set the functions of the computer. When the computer starts working, relevant operators need to operate it. Giving full play to the role of computer intelligent image recognition technology, the image information stored in the system can effectively solve the problem of incomplete recognition in practical operation through manual operation and inspection. Therefore, in the research process of computer intelligent image recognition technology, effective ways should be taken to improve the reliability and stability of intelligent image recognition.

3. Principle analysis of image recognition technology

There is no essential difference between computer and human image recognition. All of them recognize images through the storage and memory of images. People classify images according to their features and recognize images by distinguishing features. Computer image recognition is more novel. Using artificial neural network to recognize images has made remarkable progress in the field of artificial intelligence.

As a very popular technology, image recognition technology can solve the problems that can not be effectively solved in the past with the support of technology. The computer system needs to analyze the image, obtain more data information and complete the image recognition. Computer intelligent image recognition technology can use the equipment to analyze the image, obtain the characteristics of the analysis object, and complete the image analysis on the basis of collecting relevant information. Because a large amount of picture information has been stored in the computer, in the actual analysis process, the computer only needs to mobilize the database data to compare with the processed image, and can accurately complete the image recognition. Generally speaking, it is to use the computer to explore the image, identify the basic information of the image, and complete the function similar to human eye recognition. After analysis, it can be found that this technology is similar to human eye recognition, and the salient features of the image will be observed in advance. For example, when people watch two buildings, they will observe the differences between the two buildings, grasp some significant features of the buildings, and observe the commonalities between the buildings. Computer intelligent image recognition makes use of this. Because there are too many information elements in the image, when the system recognizes the elements one by one, it will consume a lot of time and affect the recognition speed. Identification based on main information can accurately recognize special elements and store important information to ensure that the identification process and results are more intelligent.

4. Main technical characteristics of computer image intelligent recognition

The reason why computer intelligent image recognition is so popular is not only because it can recognize, but also because it has a great relationship with other technical characteristics. In fact, there are not many kinds and numbers of computers with recognition function, but why is the computer intelligent image recognition technology so widely used, because, The excellent technical characteristics of this technology have attracted the attention of the public.

4.1. Large amount of information

The intelligent image recognition technology of computer can be widely used, which is inseparable from the large amount of information stored. In addition to the functional characteristics of general computers, for example, it has the same configuration, memory of the same specification and operating system of other computers, It also has a larger amount of information storage than other computers, which will store a large number of image feature systems. During recognition, it is convenient to select images with consistent features from them. However, although the amount of information stored is large, it will not slow down the recognition speed at all, which is also one of the reasons why this technology is widely recognized, It can store a large amount of information, but it will not take too long to identify, so as to ensure the efficiency of identification.

4.2. Strong correlation

The technology of computer intelligent image recognition also has a strong correlation. Among all the stored images, the computer intelligent image recognition system can associate all the image information together, making the whole recognition process more convenient and fast. It can manage the whole recognition system more scientifically and effectively, compress all the images, and then associate them together, and reasonably classify and sort all the images, which can make the whole system more stable, less prone to system confusion, and no errors in recognition. The technical feature of strong correlation makes the computer intelligent image recognition system more stable, avoids the confusion of the system, and also avoids the collapse of the system. It is of great significance to the whole computer intelligent image recognition technology.

4.3. Strong human nature

In how to say, computer engineering is also invented by man. Man invented all the operations and functions of computer. Therefore, man has a great impact on the development of computer. When programmers design the computer, they set the computer function well and correctly, which makes the influence of human factors in the computer very great. When the computer works, people also need to operate and control it, so it has a strong human nature. Of course, the computer intelligent image recognition system is no exception. In the computer intelligent image recognition system, the image information stored in the system is tested and operated by people. In the process of recognition, there may be an incomplete phenomenon, which is the error in the process of human operation, which will affect the accuracy of the whole recognition process. In addition, after the computer completes the recognition, it is up to people to judge. Because there may be errors in people's judgment, the results of computer intelligent recognition are inaccurate due to human reasons. This is the strong human nature of computer intelligent image recognition, which will have a certain impact on our daily work. Therefore, we should actively find ways to solve this obstacle, ensure the stability of computer intelligent image recognition and enhance its reliability. It can increase the professional quality of operators, so that operators can make accurate judgment after intelligent recognition by computer, and multiple people need to analyze at the same time, so that they can exchange opinions, better judge the recognized images, ensure the normal progress of graphic recognition and ensure its accuracy.

5. Concrete application of computer image recognition technology

Since the application of computer technology, computer image recognition technology has been widely favored by virtue of its powerful performance. In short, computer image recognition is a process in which relevant workers or researchers use the function of taking images by electronic computers to obtain images, and use the image recognition function to select and

identify the contents that need to be identified. For this characteristic, relevant personnel have developed a variety of relevant application products of computer image recognition technology, which has brought great convenience to people's life. At the same time, this technology can effectively identify various macro or micro things, such as the monitoring of illegal vehicles in the traffic system, and the birth of children is the monitoring of organisms or virus cells in the human body. At present, computer image recognition technology has been widely used, involving all aspects of daily life, such as the monitoring of community safety environment, the monitoring of vehicle driving and so on. Computer image recognition technology is fully used in everything from the details of life to the politics and military of the country.

At present, the main application carriers of computer image recognition technology basically include three types: personal electronic computer equipment, smart mobile phone equipment and embedded terminal equipment. Among them, embedded terminal devices are most widely used in image recognition technology, such as fingerprint recognition or face recognition in daily life.

6. Related technical conditions of computer intelligent image recognition

Computer technology is highly professional. The progress of this work requires the staff to have rich theoretical knowledge and professional operation ability. The application of computer intelligent image recognition technology requires a complete image recognition system and the development and application of computer intelligent software.

Among them, the image recognition system includes a system for preliminary processing of images, a system for compression processing of images, a system for recognition and extraction of main features of images, and a system for intelligent classification of images. Firstly, the purpose of image preprocessing is to improve the recognizability of the image. It usually consists of binarization processing, grayscale processing and smooth denoising. As long as the binary painting processing processes the image with black-and-white effect through the processing of grayscale value, the normally set grayscale value is 0 or 255, However, the specific value to be selected depends on the selected image requirements. Grayscale processing mainly refers to the special processing of the pixel color (red, green and blue) of the image, and the drawing of the image grayscale histogram. Image smoothing and denoising refers to highlighting the key parts of the image and removing the redundant parts to ensure that the image seen by people is clearer and intuitive.

At the same time, people use computer technology to compress the image, in order to facilitate the preservation and transmission of the image. Compression processing is simply to use the compression code to compress and delete the useless information in the image, but the recognizability of the image must be guaranteed. There are many kinds of compression codes, and the specific code used should also be determined according to the situation. The extraction of image features is the most important part in the process of image recognition. In this process, the computer image recognition software must ensure the authenticity and integrity of the image. Generally, image feature extraction system includes image color feature, image texture feature, image shape feature and so on.

Intelligent image recognition processing, in short, is to make an analogy between the computer and the human brain and make an independent judgment on the "seen" things. In order to achieve this goal, relevant technical staff should pay attention to the research and development of new computer intelligent applications. Usually, computer engineers use C++ language for computer program research and development. This program language has strong advantages in the traditional image processing application process. However, for intelligent software, its flexibility needs to be improved. To solve this problem, many software development companies have begun the development of new language programs.

7. Research on Algorithm of computer intelligent image recognition

The basic requirement of intelligent image processing is that the computer can grasp its essential characteristics in time and recognize it effectively no matter what way and what form of the recognition object has changed. Therefore, in the image recognition algorithm, we should pay attention to ensure the invariance of the image. At present, the most widely used algorithm is the moment invariant method. This algorithm uses the mathematical features that do not change after image translation and rotation to intelligently recognize the image.

The moment invariant algorithm mainly constructs seven moment invariants using the second-order center and the third-order center. Their characteristics remain unchanged under the condition of continuous translation, scaling or rotation of the image.

Generally, moment invariants theory and D-S evidence reasoning theory cooperate with each other. This evidence theory was first put forward by Dempster in the second half of the 20th century and put forward by his student Shafer on the basis of continuous improvement. This theory is also called Dempster / Shafer evidence theory (D-S evidence theory), It belongs to the category of artificial intelligence. It was first applied in expert system and has the ability to deal with uncertain information. As an uncertain reasoning method, the main characteristics of evidence theory are: it satisfies weaker conditions than Bayesian probability theory; Have the ability to express "uncertainty" and "don't know" directly. The theory has a wide range of applications, and the technical engineers have continuously supplemented and developed it, and developed the ER algorithm based on this theory.

In D-S evidence theory, the identification framework is composed of two incompatible hypothetical propositions. In this framework, for a certain problem, the theory lists all possible situations, but only one of them is true. We regard this situation as the correct answer to the problem, and the subset of the framework is called proposition. Among them, the possible basic situation of each proposition is regarded as the basic probability distribution (BPA, also known as m function), and $m(a)$ is regarded as the basic credible number, which is used to reflect the reliability of A . The trust function $bel(a)$ is used to express the trust degree of proposition a , and the likelihood function $pl(a)$ represents the non false trust degree of proposition a , that is, the uncertainty measure that seems to be possible for a . In fact, $[bel(a), pl(a)]$ represents the uncertainty interval of a , $[0, Bel(a)]$ represents the supporting evidence interval of proposition a , $[0, pl(a)]$ represents the quasi belief interval of proposition a , $[pl(a), 1]$ represents the rejecting evidence interval of proposition a . Let $M1$ and $M2$ be the basic probability distribution functions derived from two independent evidence sources (sensors), then the Dempster combination rule can calculate the new basic probability distribution function reflecting the fusion information produced by the joint action of the two evidence sources.

8. Development and application of computer intelligent image recognition

Computer intelligent image recognition technology is a theory proposed for the needs of people's life, work and scientific research. Therefore, it has a wide market prospect. With the development of science and technology, the word intelligence has long been not limited to electronic computers. The emergence of handheld computers and smart phones has replaced most of the functions of computers. The use of intelligent image computer recognition technology is multifaceted. At present, with the continuous development of smart phone technology, the development of mobile intelligent software technology is also accelerating. Most photographing software and social software apply image intelligent recognition technology.

With the continuous development of computer intelligent image technology, the influence of this technology in people's life will gradually deepen and the scope involved will continue to

expand. For example, in the process of urban planning, aerial photography can be used to obtain the image of urban layout, and the method of intelligent image recognition can be used to find the disorganization in the process of urban planning in time. In the process of urban road construction, this technology can be used to timely monitor the road construction and ensure the construction quality of urban infrastructure.

The computer image recognition system should be more comprehensively optimized. In the stage of image acquisition, the system should have the function of automatically identifying image types and automatically finding key image information.

In the aspect of image preprocessing technology, the system should fully grayscale and stretch the image. The main purpose of this is to improve the efficiency of image processing and analysis and extract the features of the image more comprehensively. In the process of image recognition, technicians should pay attention to the full use of the algorithm. The image samples should be fully obtained, and the images should be intelligently recognized and classified according to the characteristics of the samples. According to the different data contents of the images, they should be automatically saved into the corresponding format and stored under the specific path.

9. Epilogue

To sum up, the application degree of computer intelligent image recognition technology will play and create favorable value for future development. Ensure that the personnel can fully master the technology and give full play to the image recognition and processing ability of the technology in the application process. Computer intelligent image recognition technology has a great impact on people's life. In the future development process, it also needs to continuously improve the technology to ensure that technicians can promote the rapid development of the technology and create greater value for the society, which is of practical significance to the society.

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