Current Situation and Development Direction of Medical Image Processing Technology in the Background of Big Data

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Abstract: With the progress of society and the development of technology, digital technology has been widely used in current life practices. From the perspective of practical application effects, digital technology has not only greatly improved people's work efficiency, but also significantly improved the quality of work. From the perspective of the current application of digital technology, digital image processing is very common. This work benefits from the digital technology and computer foundation, so the quality of image processing is higher, and the use effect is higher. The emergence and development of the main content of image enhancement and restoration, image segmentation, and image analysis, and based on the latest progress in this field, this paper briefly describes the latest hotspots in five main research areas of digital image processing technology, and finally summarizes the main challenges and future development directions in the field of digital image processing technology.

1. INTRODUCTION

Judging from the current development of information technology, regardless of the means of communication, people are more willing to choose more intuitive and realistic images for expression. Therefore, in the future social development process, people's demand for the form of information transmission of images will become increasingly high. Timely, intuitive, or objective development conditions pose new challenges to the current processing of digital image technology. Specifically, to achieve digital image processing, it is necessary to have two aspects of technology: first, digital technology, and second, computer technology. Without the support of these two technologies, digital image processing cannot be carried out. Therefore, it is necessary to analyze the current situation and development direction of digital image processing technology based on these two aspects of technology, so that the discussion of digital image processing technology will be more valuable.

Since the mid-1970s, with the rapid development of computer technology, artificial intelligence, and thinking science, digital image processing has developed to a higher and deeper level. People have begun to study how to use computer systems to interpret images and achieve understanding of the external world like human visual systems. Many countries, especially developed countries, have invested more human and material resources in this research, and have achieved much important research results.

One of the representative achievements is the visual computing theory proposed by MIT's Marr in the late 1970s. After years of improvement and development, current electronic image processing technology mainly has the following characteristics: 1. Good reproducibility. Compared with traditional analog image processing techniques, digital image processing does not cause changes in image quality due to storage, transmission, and replication during image processing; 2. The occupied frequency band is relatively wide. The width of the frequency band is relative to the information language, and the information language of an image occupies a frequency band that is many orders of magnitude larger than the language information. Therefore, the information of an image is more difficult in the actual operation process; Wide application range: We can obtain data resources from various ways, including digitizing images from microscopes or astronomy; Strong flexibility. Digital image processing technology not only has obvious characteristics, but also has significant advantages in the application process.

In terms of current practical behavior, digital image processing technology has shown four prominent advantages: first, strong reproducibility. The processing process of digital image processing technology does not cause degradation in image quality, so it can well reproduce the original image. The second is that the processing accuracy of digital image processing technology is relatively high, which can basically meet all the requirements of image processing at this stage. The third is that digital image processing technology has a wide range of applications. There are many sources of image information, and this technology can use image information collected through various information channels, so its utilization is highly universal. Fourth, strong flexibility. The strong flexibility effectively enhances its utilization value.

2. THE PROPOSED METHODOLOGY

2.1 Concept of digital image processing technology

Because an image is a two-dimensional projection of a three-dimensional scene, an image itself does not have the ability to reproduce all the geometric information of the three-dimensional scene, and it is obvious that some of the information behind the three-dimensional scene cannot be reflected on the two-dimensional image screen. Therefore, to analyze and understand the three-dimensional scene, it is necessary to make appropriate assumptions or add new measurements. Knowledge guidance is required when understanding the three-dimensional scene, this is also a knowledge engineering problem that is being addressed in artificial intelligence. As a guide, using X-ray computer interrupt layer photography technology devices, it is possible

to project the cross section of a person's head and reconstruct the image cross section after computer processing. Later, this technology of image reconstruction was widely used in whole-body CT devices, which made a significant contribution to human development. Later, digital imaging technology was widely used in various fields and industries, and its rapid development has made it a new discipline with wireless development prospects.

To improve the utilization effect of an image, certain standards need to be met, so necessary enhancement of the image can improve its quality. The fourth is image segmentation. An image is a continuous set, and for effective processing, it needs to be segmented, to achieve block processing optimization and achieve processing results. The fifth is to analyze the image. Image analysis is an important work in determining the value of images, so it needs to be taken seriously.

The fundamental difference between digital image processing and analog image processing is that it does not degrade image quality due to a series of transformation operations such as image storage, transmission, or copying. If the image accurately represents the original document during digitization, the digital image processing process can always maintain image reproduction. High processing accuracy. According to current technology, it is possible to digitize an analog image into a two-dimensional array of almost any size. Modern scanners can quantify the gray level of each pixel to 16 bits or higher, which means that the digitization accuracy of the image can meet any application needs. China has conducted research work on computer technology since the founding of New China, and with the reform and opening, China has also made significant progress in the development of computer image processing technology, especially in the research of certain theories, which has been able to catch up with the world's advanced level. First, the ability to collect imaging data. Through the successful development of a series of sensors and launched Earth observation satellites, it is possible to successfully obtain data on oceans, winds, clouds, environment, and resources, as well as environmental disaster reduction, while obtaining accurate and effective data and imaging effects. Moreover, digital image processing technology is most widely used in industries such as architecture, biomedicine, and transportation engineering, and its application in these industries can better reflect the actual situation of the development of digital image processing technology.

2.2 Future Development Direction of Medical Digital Image Processing

Image compression coding is also an important part of digital image processing technology. From the practical work of digital image processing, because image information is basically two-dimensional information, the amount of information is very large. Processing in such an information ocean will undoubtedly increase the difficulty of processing. To improve the efficiency of information processing, image information is actively encoded and processed, so that relevant content can be compressed to a unified range.

The development process of image extraction technology has undergone the following four stages of development: (1) The embryonic stage. The extraction conditions are achieved through the set during shooting (2) In the initial stage, independent sub disciplines were established based on quad pixels and digitization (3) Leap stage. Extraction based on the principles of probability and statistics (4) Differentiation stage.

Recognizing the correlation between frames in video, a specific scheme for video extraction was developed. However, due to the complexity of natural color distribution, there is no widely recognized model or systematic and unified evaluation criteria. The application of this technology in the construction industry can convert the height and density of proposed building clusters, as well as information that has an impact on building quality and the environment, into the form of images, this allows designers to make reasonable planning.

The application of this technology in the field of communication engineering, in which this technology, together with factors such as voice and text, constitutes the basic content of modern multimedia. When transmitting images, encoding technology can be used to compress the bit amount of information. However, the content currently developed by this technology mainly includes change coding, etc. In future development, it is possible to achieve image segmentation and compression coding using wavelet transform. The main application in biological engineering is book image technology, which can objectively present the mechanism of human activity to researchers in the form of images. This has brought irreplaceable effects on the development of medicine. The above is the actual situation of the development of book image processing technology in China. Image segmentation is an important content in digital image processing.

As mentioned in the above analysis, digital images are highly correlated, so they exist in a continuous set manner. This approach makes image processing more difficult, so it is necessary to segment the image during processing. In terms of current segmentation, there are mainly two methods: the first is region-based segmentation. This type of segmentation is mainly based on the region of the image, so it is relatively straightforward and relatively simple. The common methods are region growth method and split merge method.

During the process of image acquisition, transmission, and storage, due to various factors such as blurring, distortion, and noise, image quality can be degraded, which is called image degradation. There are many reasons for image degradation, such as in the process of image acquisition (digitization) and transmission, such as using a CCD camera to obtain images, The degree of illumination and sensor temperature are the main factors that cause image degradation. During the transmission process, images are mainly contaminated by noise due to the interference of the transmission channel used, which can also cause degradation in image quality. Image restoration technology aims to achieve a certain degree of improvement in visual quality. According to a specified image degradation model, degraded or degraded images under certain circumstances are restored to obtain the original original image without degradation.

3. CONCLUSION

Computer image processing technology is widely used in people's daily lives, reflecting the advantages of this technology. Whether it's watching movies or television, or surfing the Internet or mobile communication, each of us is closely related to this technology. Therefore, the development of digital image technology and the degree of people's enjoyment of life and material have a certain impact. Therefore, we must attach great importance to the research of this technology to improve people's quality of life and level. An analysis of its development status can help people better understand this technology and improve its application. Of course, the improvement of technology utilization needs to

explore the future development, so this article also introduces the future development direction of digital image processing technology.

4. REFERENCES

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