Design of Medical Image Database Management System Based on Information System Integration

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Abstract: Medical image database is a database technology that supports effective storage, transmission, retrieval and management of medical image data based on image database, image processing, computer network technology and medical knowledge. Medical image database technology is a very practical database technology oriented to specific fields of medical images. In order to improve the intelligence of the video surveillance system and reduce the recognition error caused by personnel participation, it is very necessary to introduce intelligent recognition technology of computer graphics. Building a database system based on information system integration can not only provide a lot of data for medical research, but also has great use in teaching. Medical image data is playing an important role in clinical diagnosis, teaching and research. This paper discusses the medical image and its clinical application, the development of content-based image retrieval technology, the management and application of medical image database.

1. Introduction

In recent years, medical imaging technology has made great progress. Medical images are becoming more and more digital and diversified. With the development of medical imaging technology and computer technology, medical images are playing an increasingly important role in clinical diagnosis and scientific research [1]. Medical image database technology is a very practical database technology oriented to specific fields of medical images. Biomedical image information database system is composed of a large number of different types of multimedia objects using multimedia databases, which may include relational database records, object-oriented databases with character and digit attributes, and multimedia object storage servers [2]. In order to improve the intelligence of the video surveillance system and reduce the recognition error caused by personnel participation, it is very necessary to introduce intelligent recognition technology of computer graphics. Due to the large amount of data in medical image database and the abundance of information it represents, how to better organize, store, query and display medical image data is a key problem in medical image database system [3]. Medical image database is a database technology based on image database, image processing, computer network technology and medical field knowledge to support the effective storage, transmission, retrieval and management of medical image data [4].

With the continuous development of visualization technology, modern medicine has become more and more inseparable from the information processing of medical images. Medical image data is playing an extremely important role in clinical diagnosis, teaching and research. The research and analysis of dynamic sequence images not only need to have the basic technology of single frame static image collection, processing, enhancement, segmentation, measurement, recognition [5]. The imaging of medical images is closely related to the shape of the human body. Medical images use the differences between the characteristics of the tissues of the human body to be imaged. In actual use, the experimental conditions in each laboratory are different, the images are very different, and the role of general image processing analysis software Very limited [6]. If the general methods are still used for testing and training, the accuracy and requirements put forward by the rapid development of sports technology have not been reached [7]. The tester is mainly based on the

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nerve response of the human senses to the external sound, light, graphics, etc. And the left and right upper and lower limbs and the whole body make corresponding movements, and measure the time data of their sensitivity, coordination, speed and other capabilities. Due to the large amount of data in the medical image database and the rich information content, how to better organize, store, query and display the medical image data is a key issue of the medical image database system.

2. Main Structure and Function Design of the System

Medical images play an irreplaceable role in the diagnosis of diseases with morphological variations. Besides medical image diagnosis based on morphology, it can also provide medical images of anatomical structure and organ function. When the system is handed over to the user, the administrator registers the user through the management layer and assigns the user rights before the user can use the presentation layer. When the system is running, the system management has all the power to control the data except the personalized data of users [8]. Image segmentation is the preprocessing stage of pattern recognition and image analysis. In content-based video analysis, only after image segmentation can it be possible to extract the color features of the background and the color, shape, texture and other features of the main body in the image. Its effectiveness will have a direct impact on the later results. In cardiac catheter surgery and some operations requiring accurate positioning, doctors can accurately grasp the treatment site according to the anatomical structure displayed by the image.

In content-based video analysis, only after image segmentation can it be possible to extract the color features of the background and the color, shape, texture and other features of the main body in the image. Its effectiveness will have a direct impact on the later results. The gradual change signal will not change when passing through the median filter. This feature can be applied to image filtering and so on, because the data can be smoothed and the edge of the image can be well maintained [9]. Set up exercise books to compare the target movements with those of professional players in more detail. It is possible to compare images of each frame and each frame and to set different action points. Figure 1 is an image cognitive structure system.

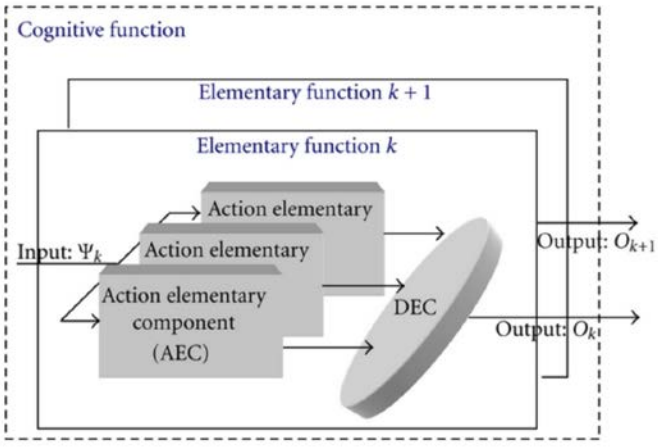

Figure 1 Image cognitive structure system

The database user must obtain the authentication of the operating system before entering the database. Computer graphics can be used to rotate and cut stereoscopic images. Doctors can not only observe the organ structure from different angles, but also simulate the operation process on the computer and study and formulate the surgical plan. The image data is firstly collected by an image sensor, and the preprocessed image data is subjected to anomaly detection by an inter-frame difference detection module. In order to ensure that the system can minimize losses when the main database fails or is damaged, the main database can be backed up in real time to ensure data synchronization between the backup database and the main database. Database is essential to the design of integrated application programs for information systems. Only with the support of the background database can we process all kinds of information and realize all kinds of functions

quickly and massively. Medical image is an indispensable tool in modern clinical diagnosis and medical research. How to manage and make full use of the rapidly increasing medical image data is the main problem currently facing us [10].

3. Development Environment and Technology of the System

3.1. Retrieval Technology of Medical Image Database

With the wide application of computers in different fields, such as geographic information systems, image database systems, etc., more and more complex objects are involved in these fields. The expression of these complex objects needs to be described together with their various features and their relationships. Content-based image retrieval method is different from the traditional retrieval method based on keywords or descriptive text. It integrates image understanding technology, thus providing a more effective retrieval approach. For example, in the medical image database based on content query, medical images similar to a certain image are often queried. We can express the feature information of medical images by extracting the gray scale, texture, shape, etc. of medical images to form high-dimensional vectors of feature data, which are stored in the feature library. In the process of query, the efficiency of query can be effectively improved by removing those high-dimensional data objects that obviously do not meet the query conditions and only calculating the similarity distance in the relevant data sets.

3.2. General Storage Structure of Medical Image Data

The functional algorithm of image difference and difference image binarization has been realized. Due to the influence of various factors in obtaining the scene of the video sequence, a large number of noise points will inevitably be left in the image obtained by the two value of the difference image. When the frame rate is high, the target is separated from full occlusion or from full occlusion to re separation. In case of partial occlusion, manual detection method can be used. Figure 2 is a manual detection program of image processing.

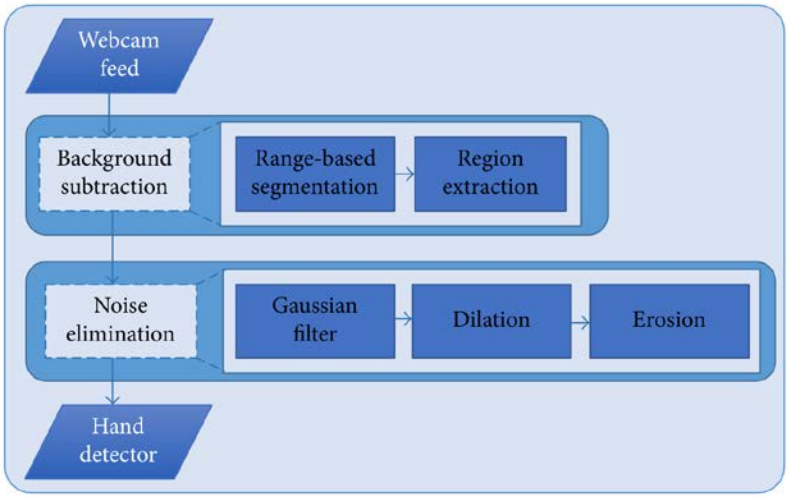

Figure 2 Manual detection procedure

In the image preprocessing operation, the original image needs to be processed into a binary image suitable for object recognition. The saved processed image is played back, thus completing the binarization of the video. The motion is decomposed by motion freezing, and every motion is displayed. In fact, it is video panorama synthesis. Traditional relational database has a single data structure and easy storage, but it cannot support complex data types, which makes it unable to adapt to some more complex applications. When building the database, image segmentation and neural network technology are used to extract image features, and then feature quantity is stored according to semantic data model to reduce storage space and improve query speed. The object-oriented database is logically and physically upgraded from record-oriented to object-oriented and oriented

to a logical entity with complex structure. In the medical image database, it is necessary to find a suitable high-dimensional index structure to realize the query based on medical image content.

4. Conclusions

With the continuous development of image processing technology and database technology, medical information retrieval technology and advanced semantic retrieval technology must play an important role in content-based medical image retrieval. The ideal image query should involve both automatically extracted keywords and low-level content-based retrieval. With the rapid development of various medical imaging equipment and the continuous updating of computer technology, combining the two to establish a medical image database system can improve the storage efficiency and maintenance management of various medical information. Medical image database technology is a kind of database technology for special application field, that is, specific database technology for medical image and its related information management. Medical image database technology is a very practical database technology for the specific field of medical image. Medical image database is the data storage center of medical information system, which is the basis of the system and other medical information systems related to image. In medical image database, we need to find a suitable high-dimensional index structure to realize the query based on medical image content.

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