

Digital Image Processing Technology and Its Application

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Abstract—Digital image processing technology is more and more widely used in our life and work, such as the post-production of some pictures, military fields and advertising design. In this paper, we analyze the connotation and current situation of digital image processing technology, and the application of digital image processing technology in real life, hoping to bring some help to the majority of colleagues, sometime we wish to get some advice from you.

Keywords—Digital image processing, Technology, Application, Image compression

I. INTRODUCTION

Computer is a great invention of decades, with the continuous development and progress of computer, gave birth to digital image processing technology. In recent years, with the progress of social science and technology, the rapid progress of science and technology, multimedia and information technology has mushroomed as a rapid development, has a profound impact on our way of life and rhythm. Digital image processing technology is also in the era of gestation, and has made continuous development and progress. With the continuous development and progress of computer technology, digital image processing technology also presents many advantages such as diversity of image processing, reproducibility of image, and large amount of image processing. Technology is more and more advanced and means are diverse, so we need to work hard to learn and understand digital image processing technology, digital image processing technology to better serve us.

II. CONNOTATION AND OVERVIEW OF DIGITAL IMAGE PROCESSING TECHNOLOGY

Digital image processing, also known as computer image processing, refers to the process of converting image signals into digital signals and using computers to process them. This process includes image enhancement, noise removal, segmentation, restoration, coding, compression, feature extraction and other contents. The generation of image processing technology is inseparable from the development of computers [1].

A. Image Transformation

The image processing transformation operation of digital image processing technology can transform the processing of spatial region into the processing of domain by various methods of image change. Through this way of processing, we greatly reduce the amount of work calculation, improve the efficiency of work, and improve the benefits [2].

B. Image Coding Compression Operation and Image Display Effect Enhancement

Image processing technology can reduce the amount of data of the quoted image, save space and time, and enhance the display effect of the image to highlight the special places at a glance [3].

C. Image Description

We can describe the characteristics of specific things through the characteristic method of operating geometric principle, so that we can capture the key points more easily [4].

D. Image Classification and Recognition

Through the image processing and segmentation to understand the characteristics of the image, let a person at a glance [5].

E. Current Situation of Digital Image Processing Technology

Image processing refers to the use of advanced computer technology to carry out certain image processing, get the image effect we want. The main is to improve the visual effect of the image, to achieve the established requirements of the image results[6]. Originated from the birth of computer in the last century, with the continuous development of computer, digital image processing technology has also made greater and greater progress, has been more and more people's use and attention. Now the image processing technology has even been extended to the aerospace, aerospace industry, for the aerospace, space program has contributed an indelible role, through the image processing of space photos, so that we can see more clearly the surface of the moon and the picture of the universe planets. The image processing technology used to be used in the hospital in the 1970s, and it was in the field of the field, and it was a part of the medical field that was devoted to the field of medicine [7]. Up to now, digital image processing technology is developing more and more rapidly and has made more progress. It has been gradually applied to a wide range of industries.

III. APPLICATION OF DIGITAL IMAGE PROCESSING TECHNOLOGY

A. Application of Digital Image Processing Technology in the Medical Field

Digital image processing technology has been well applied in medical field. Especially after the appearance of CT scanning surface, it becomes simpler [8]. Before a lot of difficult and miscellaneous diseases are hidden in the skin, it is difficult to see through the naked eye and through the combination of digital image processing technology, can be more intuitive and clear scanning out. This has promoted the great progress in the medical field, such as the birth of nuclear magnetic resonance, b-ultrasound technology, which has greatly changed the status quo of human medical and health undertakings, for many patients with the Gospel.



Figure 1. Magnetic resonance imaging machines take pictures of the brain

B. Application of Digital Image Processing Technology in Military Field

Digital image processing technology has been widely used in military field. Modern military development is more and more dependent on computer technology; long-range strike and electronic warfare are more and more popular and popularized by military theorists. Digital image processing technology can transmit and process images of military bases and topographic structures. Through analysis, it can provide the army with the analysis of topographic structures and military facilities in a certain area in all aspects, and then carry out effective military strikes through the instructions of the command center. The invasion of Iraq by the United States took the lead in launching the attack through the application of digital image processing technology, which destroyed the military bases and facilities in Iraq and effectively hit the military forces in Iraq, resulting in the rapid defeat of Iraq[9]. Digital image processing technology is more and more conducive to the development of modern warfare and contributes to China's national defense security.

C. Application of Digital Image Processing Technology in Aerospace Field

Digital image processing technology has been widely used in aerospace and space fields. With the development of manned space flight and human landing on the moon in the 1960s and 1970s, human beings have been exploring space and space fields more and more frequently, opening the door to a new world after another for mankind. Through digital image processing on the images of manned spacecraft or space satellites, we can clearly see the scene of the universe and the image of many planets in the solar system. This has greatly promoted the development of space industry and laid a solid foundation and provided necessary technical support for the future human space industry [10].



Figure 2. Planet imaging satellite images of Dulles international airport

D. Application of Digital Image Processing Technology in Other Fields

Digital image processing technology is being used in more and more fields and industries, which is the inevitable trend of the development of digital image processing technology, which benefits from its powerful technical functions and convenient practicality [11]. In terms of the public security system, the use of digital image processing technology is also widely, the public security policemen can through digital image processing technology to the criminal suspect's appearance characteristics of special post-processing, exclusion and selection, to narrow the scope of criminal suspects and basic lock in the criminal suspect, which makes the criminal suspect no escape, keep silent; In terms of culture and art, can be achieved by the use of image processing technology, to design more excellent works of literature and art, can design more good advertising and logo for the company, also can through digital image processing techniques for costume design services, through the operation on the computer and post-processing, to become more efficient the clothing design, plate making and save time cost and manpower cost.

IV. APPLICATION OF DIGITAL IMAGE PROCESSING TECHNOLOGY

Digital image processing technology is a high application rate of technology, has been widely used in military, medical, cultural, aerospace and other fields, change and facilitate our way of life and production, and promote our human progress and development. We should study digital image processing technology well and make due contributions to serve all walks of life in our country.

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