Research on Image Fusion Algorithm Based on Nonsubsampled Shear Wave Transform and Principal Component Analysis

Huiying Jia1,*

1Yantai Gold College, Zhaoyuan, Shandong, China, 265401

*Corresponding author e-mail: hyjaaa@ytgc.edu.cn

Abstract. With the development of network remote monitoring technology, its application in all walks of life has become more and more extensive. The application of remote monitoring technology makes the development of all walks of life more intelligent and informatized. This paper analyzes the development status of remote monitoring technology, and studies the design and implementation of remote network monitoring system based on computer technology. It also conducts related research on the future development trend of remote monitoring technology.

Keywords: Network Remote Monitoring, Development Status, Future Development Trend

1. Introduction

The development of network technology is the prerequisite and foundation for the generation of remote monitoring technology. With the development of network technology, new intelligent monitoring systems have also emerged. Compared with traditional online video, the intelligent monitoring system can not only scan the surrounding environment in all directions and collect distance information data of surrounding objects, it also has powerful image processing functions and advanced display technology. It can provide users with more advanced functions such as advanced video analysis. Therefore, the intelligent development of network-based real-time remote monitoring systems is the direction of future development [1].

2. Analysis of the status quo of the development of remote monitoring technology

2.1. Functional analysis of remote monitoring technology

The basic functions of remote monitoring technology are remote monitoring and on-site monitoring + remote monitoring. The scenario of purely using remote monitoring technology is mainly unable to carry out on-site monitoring. It can only use remote monitoring technology to collect on-site environmental data, and then analyze it through a computer system. The scene of using on-site monitoring + remote monitoring technology is mainly the type that can directly enter the site for monitoring, so that the on-site monitoring combined with remote monitoring is used to create an
integrated unit monitoring system on the site. Use its control site to connect to the Internet point, which can become the company's internal network, so that everyone can also share the resources for monitoring content [2].

Using the remote monitoring system can track the target's motion trajectory, and this can effectively monitor the environment within the site, so that relevant personnel can learn the information inside the site through the remote monitoring system display video. Moreover, the remote monitoring system can effectively collect and manage site-related information, so that the monitoring and management personnel can better understand the monitoring content, supplement, organize and store the monitoring data. In the monitoring process, the monitoring system can remind employees to pay attention to the failure problem by means of alarms, so that they can also understand its detection information and formulate an action plan [3].

2.2. Problem analysis of remote monitoring technology

Although the development of remote monitoring technology has greatly promoted the development of various industries, there are still some problems in the application of remote monitoring. First, the operation of the remote monitoring system is based on network technology. If the network signal is not good, it will greatly affect the stability and reliability of the monitoring system. Second, today's network technology programming has security issues, and there are also certain deficiencies in data transmission [4]. Third, there are certain technical difficulties in collecting data from multiple terminals, which limits the development of remote monitoring technology.

3. Design and implementation of remote network monitoring system based on computer technology

3.1. The overall structure of the system

The overall structure of the remote network monitoring system is shown in Figure 1.
3.2. **Web server architecture**

The main job of the web server is to accept user requests and respond. The specific process is that after the user triggers a certain function on the client, the client can submit the request to the web server, and the server responds accordingly after receiving the request [5]. HTTP responses usually include HTML files, but can also include plain text files, images, or other file types. The overall structure of the Web server is shown in Figure 2.

![Figure 2. The overall architecture of the Web server](image)

After constructing the main module, each system contains a main program. After the main program runs, the programs of the major modules can be started and triggered. The main program running framework is shown in Figure 3 [6].

![Figure 3. The main program running framework](image)

3.3. **System front-end web page architecture**

The user can enter the system through the login function of the front-end web page of the system. The overall front-end architecture of the remote monitoring system is shown in Figure 4 [7].
Among them, the code of the login interface is as follows:

```javascript
function login() {
    var name = document.getElementById("name").value;
    var pass = document.getElementById("pass").value;
    if (name == "wtt" && pass == "wtt") {
        alert("sign in success fully");
        window.location = "index1.html";
    } else {
        alert("wrong user name or password");
        window.location = "reload.html";
    }
}
```

3.4. System design

This system mainly uses wireless network technology to monitor the environment and monitor the screen, and it can complete the function of multi-screen display and switching. The design of this system is shown as in Figure 5. In addition, the purpose of monitoring is to detect, analyze, and intervene on abnormal events in the scene. Therefore, in order to perfect the system functions, it is also necessary to design an alarm function module [8, 9]. The alarm processing thread is shown in Figure 6.
4. **Research on the future development trend of remote monitoring technology**

With the development of network monitoring technology, its application in people's lives has become more and more extensive, and various computer technologies and system software have provided people with a more convenient life foundation. With the continuous development and progress of today's society, traditional network monitoring technology can no longer meet people's needs, so the improvement of network monitoring technology is necessary. With the continuous emergence of emerging technologies, it has a great role in promoting the improvement of remote monitoring technology. The future development trend of remote monitoring technology will be more advanced, and the technical form and advantages can be adjusted according to the needs of different fields, so as to meet the needs of different industries and people at the time. In the future development of remote monitoring technology, embedded systems will become the main development trend of remote monitoring technology, and monitoring sensors will also be widely used. Sensors will continue to innovate and be able to communicate with computers [10].

5. **Conclusion**

With the development of remote monitoring technology, its application in all walks of life has become more and more extensive, and the application of remote monitoring systems has not only promoted the development of informatization and intelligence in all walks of life, but also effectively promoted social harmony. For example, the remote monitoring system can be applied to hotels, restaurants, roads, and various rooms, so that people can watch the video display of the monitored place at any time through mobile phones. Today's remote monitoring technology cannot keep up with the pace of social development. It is necessary to focus on research and development of its technology, and relevant personnel must give full play to its advantages, so that it will have greater development prospects in the future.

**References**

[1] Chen Dan, Zhu Jianbang. Development status and trends of remote monitoring technology [J]
Information recording material, 2019: 48-49.

[2] Ying Qin. The development status and future development trend of network security technology [J]. Network Security Technology and Application, 2015:110-111.

[3] Gao Nanhu. Research on the Development Trend of Remote Monitoring Technology [J]. Science and Technology Outlook, 2017.

[4] Wang Yifan. Status and trends of remote monitoring and control technology development [J] Wireless Internet Technology, 2019: 150-152.

[5] Lu Yijia. Development status and future trend of network technology facing "Internet+" [J]. Computer Knowledge and Technology, 2017.

[6] Dai Rong. Application of remote monitoring system based on computer network technology [J]. Technology Wind, 2018:73.

[7] Jia Qi. Based on the future development trend of computer science and technology in the Internet + era [J]. China Science and Technology Investment, 2017.

[8] Liu Hui. The status quo and development trend of distance education based on network technology [J]. Heilongjiang Science and Technology Information, 2014:176.

[9] Li Guangwei. The application and development of computer network remote control technology [J]. Computer fan: Digital Life (first issue), 2013:46-47.

[10] Xie Jianqiao. Discussion on the Application of Computer Network Technology in Remote Monitoring System [J]. Computer Products and Circulation, 2019:15.