

Application of Testing Machine PIB Technology in Intelligent Hardware-Assisted College Sports Remote Training System

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Abstract: This paper firstly analyzes the characteristics of testing machine PIB from the technical level, and analyzes the role of PIB technology in college sports remote training. First, it discusses an intelligent in-machine testing PIB verification system. The remote software/hardware faults are injected into the system under test to verify the validity of the PIB design. Then combine React and Angular frameworks to establish the front and back systems of the college sports remote training system to visualize sports data, use PIB hardware for sports data entry, and combine hardware and software to assist the perfect operation of the college sports remote training system, with a real-time efficiency of 97%.

Keywords: Testing Machine, PIB Technology, Intelligent Hardware, Sports Remote Training System

1. INTRODUCTION

With the improvement of the degree of integration of avionics systems, in-flight testing (BIT) has become an important way to improve the fault diagnosis capability of avionics systems [1]. In China, the research on BIT technology is still in its infancy. In 1990, after the promulgation of the "Testing Program for Electronic Systems and Equipment", various units have carried out this work to varying degrees [2], and achieved some remarkable results. Especially in the development of avionics systems of certain types of aircraft, BIT has been written into the development task book as an [3] important design requirement, and the actual BIT design has been carried out, which has advanced various technologies and methods of domestic BIT design and analysis to a great extent. Step [4].

In the computer advanced human-machine interface industry, virtual reality technology (Virtual Reality, VR for short) is a representative of [5] the frontier of technology, involving sensor measurement technology, Internet technology, graphic recognition and processing technology, artificial intelligence and other fields [6], interactive and conceptual development concepts, so that participants can get the same experience as the real scene. The combination of computer virtual reality technology and college sports training is a creative attempt and an important content of educational technology reform [7]. The application of virtual technology changes It has provided a broader imagination space for the exploration of new teaching methods and the training of knowledge and skills [8]. "Virtual reality" mainly simulates various real scenes through computers, so it can transform the simulated scenes correspondingly under human operation, so as to perfectly link reality and imagination. This ability has two-way interaction, which makes the computer "virtual reality" technology have interactive characteristics [9].

Because of this, technicians can selectively simulate various non-existent scenes in real life, which is of great significance in scene simulations such as film and television shooting or physical research [10]. With the help of "virtual reality" technology, people can completely immerse themselves in this virtual environment created by computers. In this virtual

environment composed of computers [11], participants can more intuitively observe the external motion laws of things, and more By systematically understanding the internal changes of the object [12], the participants can make the feeling almost exactly the same as the feeling in the real world through their own contact with the things in this virtual environment, so that the participants are completely in it, Make it part of this virtual system [13].

With the development of network and computer technology, the era of informationization and intelligence is coming [14]. The intelligence of the Internet of Things is based on big data, forming an intelligent network distributed in agriculture, home furnishing, urban monitoring, logistics and other application fields [15]; large-scale intelligent equipment has been used in the manufacturing industry for complex machining, intelligent the representative of the robot has been initially applied [16], the technology is becoming more and more mature, and the application will be more and more extensive. In addition, due to the continuous advancement of UAV technology, the reliability and safety of many airborne equipment in the UAV [17] system have received extensive attention from people from all walks of life. At present, the main purpose of UAV researchers is how to accurately and efficiently simulate and monitor the signals generated by UAV airborne equipment [18].

At the same time, due to the high degree of complexity of the UAV system, it not only includes the onboard computer, but also has many avionics such as sensors [19], engines, and steering gears. Therefore, in order to efficiently complete the test of the overall UAV system, it is necessary to test and simulate Atmospheric signals, digital I/O signals, output signals, and input signals generated [20] by the entire UAV equipment. Compared with the in-depth development of BIT design and analysis, another very important area of BIT research has not received due progress during this period, which is the verification and evaluation of BIT [21]. In the past two to three years, the research on the verification and evaluation of BIT has been continuously strengthened [22], and it has become a new hot spot in the research of BIT technology. Create a "self-learning" environment that can be used anytime and anywhere, and use information technology

to enable learners to obtain learning mode switching experience [23].

2. THE PROPOSED METHODOLOGY

2.1 The Tester PIB Technology

The host computer is the main control computer of the in-machine test system, which is connected with the fault injector and the system under test through the serial interface. The system software resides in the host, which is used to set and control the fault injector to generate various fault modes, and to analyze and process the fault injection results. As the host computer of the system under test, the host computer is used to receive the fault detection results from the system under test.

With the enhancement of national strength, the development of sports in our country is very rapid, and the technical difficulty of competitive sports continues to increase, especially in sports with strong confrontation, the increase in difficulty increases the potential risk of injury during training. This is indeed the case. The application of computer virtual reality technology, training in a virtual real environment, reduces this risk, complex technical movements, training difficulty and intensity become as easy as usual, and eliminates the training process. Accidental Injury Situation. Athletes in a computer-simulated environment can let go of their hands and feet and focus on the training itself.

If a large-scale system contains 1000 sensors, there will be 1000 analog acquisition channels, including voltage, temperature, strain, potentiometer, ICP and other analog types, which results in the more test parameters, the more complex the data acquisition system. , The greater the technical difficulty, the longer the design/integration cycle. Taking the networked acquisition system of a certain type of machine as an example, it includes 30 collectors, nearly 200 analog acquisition modules, and more than 3,000 various analog acquisition channels. Therefore, the automatic test system needs to build a corresponding connection relationship model and test Resource models, etc., and these models cannot be separated from the specific software operating environment, so the automatic test system will be affected by the operating environment during the auditing process. Secondly, in the process of defining and describing signals, there are many differences between different standards, so the calling methods, configuration resources and architectures of different automatic test systems are quite different, and there is no unified signal-oriented system. Standard for the development of automated test systems.

2.2 The PIB-Based Smart Hardware Assistance

The fault injector has a serial interface with the host and a fault injection interface with the system under test. The former is used for information transmission with the host; the latter is used to apply fault signals to the system under test and receive information about fault detection of the system under test. When the system is working, the fault injector first latches the fault injection parameters and control commands sent by the host, and controls the sequence of each component of the fault injector, simulates the corresponding fault mode, and then injects faults into the system under test.

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The wireless transceiver receives the signals output by multiple and multiple types of sensors, and encodes and outputs them in the form of a bus through the main control module.

2.3 The College Sports Remote Training System

The entire system is housed in a unified equipment cabinet. The design of the equipment cabinet is beautiful in appearance, reasonable in layout, convenient in use and maintenance. When the fault injector injects faults, the fault can be injected into the system under test only through the quick-removable XKE series aviation plugs/seats fixed on the rear chassis board of the system under test without opening the chassis. The key content is to let students master a certain technical movement and make their movements more standard through corresponding training. At present, many countries have increased the construction of various simulation, simulation and virtual reality technologies.

This simulation system can comprehensively analyze the specific content of athlete's training and find out the problems existing in technical movements, so as to strengthen training in the later actual training and improve the effect of students' physical training. The conception of virtual reality technology is based on the powerful expansion function of this technology, which can open up the imagination of human beings infinitely and change the scope of human cognition. Through it, this feature can inspire people's thinking and imagination ability to a great extent. The application of wireless sensor network will make the design of collectors simpler, and the number of collectors will be greatly reduced. It is foreseeable that the collectors in the future only need a limited number of bus acquisition boards to meet the test requirements of large-scale tasks. The number will also be reduced to one-tenth or even less.

At present, although the acquisition method of motion three-dimensional information has gradually developed from the previous mechanical type to the current electromagnetic type, the "active tracking method" is still the main method of motion three-dimensional information acquisition. This method is to paste special marking points on the key sports parts of the body of the collected object. Because this method is not allowed in the rules of many sports competitions, coupled with the highly developed technology and precision of competitive sports in the world today The characteristics of the athlete, sticking the marking point on the body of the athlete who is in the fierce competition state will definitely have a great impact on the athlete's state performance and the achievement of excellent results.

3. CONCLUSION

The PIB technology of the test machine can create a scene that simulates a real training environment. With the help of multimedia technology, it can produce vivid and informative teaching videos and play the explanation repeatedly. Many problems must be dealt with reasonably, not only must face the problem, but also strengthen the confidence of future development. Through the application of PIB technology of testing machine in college sports basketball, aerobics, volleyball teaching and daily training, virtual scenes can

reduce the training intensity of athletes improve the pertinence, efficiency and quality of training. The host sends a fault injection command to the fault injector, and the fault injector injects faults into the system under test according to a certain sequence, and simultaneously sends a synchronization signal to the system under test to determine the fault detection time.

4. REFERENCES

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