Use motion capture device to help doctors improve surgical skills

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Abstract: The capture instrument provides a doctor operation popular science wisdom supervision system, which comprises at least one VR lens arranged in an operation room and used for photographing an operation full-motion video; At least one motion capture device for monitoring motion information of at least one part. A server for receiving action information of the full-motion video and the at least one part; the server is also used for reconstructing a three-dimensional surgical image of the surgical full-motion video by VR technology. The server is further configured to monitor physical condition information of the motion capture target and the environment information in real time; and obtain the motion capture object according to the action information of the at least one part, the physical condition information, and the environment information. Complete movement posture and complete movement information. The smart supervision system is actively serving medical services, abandoning empty slogan education and high-cold theory preaching, and interpreting the "thinking of genetic elements" throughout the period, and integrating diversified ideological elements into the pre- and post-operative surgery. In the whole process, let technology serve doctors for the benefit of the people.

Introduction

Surgery in hospitals, especially major operations, requires full video recording so that other doctors outside the operating room can see the progress of the operation at any time. These video data can also be used as learning materials for older doctors to guide young doctors.

In the prior art, cameras are usually arranged at all angles of the operating room for full-range video recording. However, in the actual operating room, because the operation space is relatively small, coupled with the doctor's hands and surgical instruments to occlude the vision, therefore, these methods can only record the general progress of the operation, and the operation details of many operations are still not observed in the video.

Motion capture technology

The invention relates to a doctor's operation action intelligence monitoring system, which is characterized by comprising at least one VR lens arranged in an operation room and used for photographing an operation full-motion video; At least one motion capture device for monitoring motion information of at least one part. A server for receiving action information of the full-motion video and the at least one part; The server is also used for reconstructing a three-dimensional surgical image of the surgical full-motion video by VR technology. The server is further configured to monitor physical condition information and environment information of the motion capture object in real time; and according to the action information of the at least one part, the physical condition information, and the environment information. Obtaining a complete motion posture and complete motion information of the motion capture object; the system further includes an RFID reader/writer for identifying the RFID radio frequency tag disposed on the surgical tool.

1. According to claim 1, a doctor's operation science popularization wisdom supervision system is

characterized in that the system is based on the movement information of the at least one part, the body condition information and the environment information. Obtaining a complete motion posture and complete motion information of the motion capture object, specifically including:

The position information, acceleration, angular velocity and geomagnetic information of the motion capture object are obtained by processing the motion information of one or more parts, the body condition information and the environment information. And generating a biomechanical model according to the position information, the acceleration, the angular velocity and the geomagnetic information, and obtaining a complete motion posture and complete motion information of the motion capture object according to the biomechanical model.

2. According to claim 1, a doctor operation popular science wisdom supervision system, the server is further configured to update the medical teaching scene according to the data acquired by the motion capture device.

3. According to claim 1, a doctor's operation popular science intelligence supervision system is characterized in that the system further comprises a display device for playing the three-dimensional operation image.

4. A doctor's surgical science wisdom supervision system according to claim 4, wherein the display device is a VR head-mounted eye shield.

In view of the above-mentioned shortcomings of the prior art, the purpose of the capture device is to provide a doctor's operation popular science intelligence monitoring system to solve the problem that the prior art cannot capture the operation details.

In order to achieve the above and other related purposes, the capture device provides a doctor's operation science popularization wisdom supervision system, including:

At least one VR lens arranged in the operating room for photographing the full-motion video of the operation;

At least one motion capture device for monitoring motion information of at least one part;

A server for receiving the action information of the full-motion video and the at least one part;

The server is further configured to reconstruct a three-dimensional surgical image of the surgical panoramic video by using VR technology;

The server is further configured to monitor physical condition information of the motion capture target and the environment information in real time; and obtain the motion capture object according to the action information of the at least one part, the physical condition information, and the environment information. Complete movement posture and complete movement information;

The system also includes an RFID reader for identifying the RFID radio frequency tag disposed on the surgical tool.

Research on Sports Capture Data Assisted Golf Training

Optionally, the obtaining of the complete motion posture and complete motion information of the motion capture object according to the motion information of the at least one part, the body condition information and the environment information specifically includes:

Processing the motion information, the body condition information and the environment information of the one or more parts to obtain position information, acceleration, angular velocity and geomagnetic information of the motion capture object, And generating a biomechanical model according to the position information, the acceleration, the angular velocity and the geomagnetic information, and obtaining a complete motion posture and complete motion information of the motion capture object according to the biomechanical model.

Optionally, the server also updates the medical teaching scene according to the data acquired by the motion capture device.

Optionally, the system further comprises a display device for playing the three-dimensional surgical image.

Optionally, the display device is a VR head-mounted eyeshade.

As mentioned above, a doctor operation popular science wisdom supervision system of the capture

instrument has the following beneficial effects:

According to the capture instrument, a VR lens is arranged in an operating room, and a server reconstructs a full-motion video shot by the VR lens into a three-dimensional operation image, so that not only can the whole operation process and operation details therein be shot, but also the three-dimensional operation image can restore a real three-dimensional operation scene to a doctor, Let it experience the feeling of being there, which is conducive to post-teaching. At the same time, the doctor can use the motion capture device to watch the subtle indicators of various actions during the operation, and help the doctor to improve the surgical skills and scientific research.

Specifically, the VR head-mounted eyepatch includes a first eye lens, a second eye lens, and an adjustment module for adjusting the distance between the first eye lens and the second eye lens.

The adjusting module adjusts the distance between the first eye lens and the second eye lens in the following manner:

Acquiring eye image information of the user through an image acquisition device;

Calculating the distance between two pupils of the user according to the eye image information;

Acquiring interpupillary distance information of the user according to the distance between two pupils of the user;

According to the eye information, if it is determined that the eye information does not meet the visual condition of the VR head-mounted eyepatch, then an adjustment mode is determined according to the eye information, including:

And determining, according to the distance information and the distance configuration information, that the adjustment mode is a distance adjustment mode.

Conclusion

According to the capture instrument, a VR lens is arranged in an operating room, and a server reconstructs a full-motion video shot by the VR lens into a popular science three-dimensional operation image, so that not only can the whole operation process and operation details therein be shot, but also the three-dimensional operation image can restore a real three-dimensional operation scene to a doctor, enable the doctor to experience the feeling of being personally present, and is beneficial to later-stage teaching. At the time of use, the doctor can observe the VR video while comparing the data of the motion capture device with the corresponding motion of the VR video. Watch the subtle indicators of various actions during your surgery to help doctors improve their surgical skills and research for the benefit of their patients. Let technology and art serve the people! Better to achieve "Cure Diseases!"

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