【CLAIMS】

【Claim 1】

A system for managing a watermark of a VR content using a blockchain comprising:

a node connected to a blockchain network to generate a block recording transaction on the blockchain network;

a producer terminal for inserting address information, which is generated using a unique address value assigned by the blockchain network and key frame information of a VR content, and a watermark for protecting the copyright of the VR content into the VR content, and controlling transaction corresponding to a production behavior of the VR content to be recorded in a block of the blockchain network, upon authoring the virtual reality (VR) content; and

a user terminal provided with a viewer for controlling transaction corresponding to a playing behavior of the VR content to be recorded in the block of the blockchain network, restoring the address information using the watermark inserted into the VR content, and transmitting verification information comprising information about the restored value and the viewer to the blockchain network, upon playing the VR content~~.~~,

wherein the VR content is authored in two channels by producer terminal,

wherein the watermark is inserted into a frame spaced

apart from each key frame of the VR content constantly forward or backward, and the watermark is divided and inserted into both channels of the frame,

wherein the watermark, divided and inserted into both channels, is combined and restored through a predetermined operation formula by the user terminal while the VR content is being played,

wherein it is determined whether the verification information comprising the restored watermark is forged and falsified by the node.

~~**[Claim 2]**~~

~~The system for managing the watermark of the VR content using the blockchain of claim 1,~~

~~wherein the producer terminal inserts the watermark into a frame spaced apart from each key frame of the VR content constantly forward or backward and divides and inserts the watermark into both channels of the corresponding frame.~~

~~**[Claim 3]**~~

~~The system for managing the watermark of the VR content using the blockchain of claim 1,~~

~~wherein the node analyzes the verification information received from the viewer of the user terminal to determine whether the VR content is forged and falsified.~~

【Claim ~~4~~ 2】

The system for managing the watermark of the VR content using the blockchain of claim 1,

wherein the node determines that the VR content is forged and falsified, and a key frame not comprising the watermark exists and performs exception handling, if a unique address value does not exist in the verification information received from the viewer of the user terminal while the VR content is being played.

【Claim ~~5~~ 3】

The system for managing the watermark of the VR content using the blockchain of claim 1,

wherein the node determines that the VR content is forged and falsified, and a different watermark exists within a single file and performs exception handling, if a unique address value comprised in the verification information received from the viewer of the user terminal is changed while the VR content is being played.

【Claim ~~6~~ 4】

The system for managing the watermark of the VR content using the blockchain of claim 1,

wherein the node determines that the VR content is forged and falsified and performs exception handling, if a watermark, which is not restorable, exists in the VR content by analyzing the verification information received from the

viewer of the user terminal while the VR content is being played.

【Claim ~~7~~ 5】

A method for managing a watermark of a virtual reality (VR) content by a node connected to a blockchain network to generate a block recording transaction on the blockchain network, the method comprising:

producing, which assigns a unique address value on the blockchain network to a newly generated VR content according to the request from a producer terminal, and records transaction corresponding to a production behavior of the VR content in a block of the blockchain network; and

playing, which records transaction corresponding to a playing behavior of the VR content according to the request from a viewer playing the VR content in the block of the blockchain network, and determines, by the viewer, whether the VR content is forged and falsified by receiving and analyzing verification information generated using a watermark inserted into the VR content while the VR content is being played~~.~~,

wherein the VR content is authored in two channels by producer terminal,

wherein the watermark is inserted into a frame spaced apart from each key frame of the VR content constantly forward or backward, and the watermark is divided and

inserted into both channels of the frame,

wherein the watermark, divided and inserted into both channels, is combined and restored through a predetermined operation formula by the user terminal while the VR content is being played,

wherein it is determined whether the verification information comprising the restored watermark is forged and falsified by the node.

~~**【Claim 8】**~~

~~The method for managing the watermark of the VR content using the blockchain of claim 7,~~

~~wherein the watermark is divided and inserted into both channels of a frame spaced apart from each key frame of the generated VR content constantly forward or backward.~~

【Claim ~~9~~ 6】

The method for managing the watermark of the VR content using the blockchain of claim ~~7~~ 5,

wherein address information generated using the unique address value assigned from the blockchain network and key frame information, and a watermark for protecting a copyright are inserted into the generated VR content, and

wherein the verification information received from the viewer of the user interface comprises: information about a value obtained by restoring the address information using the watermark inserted into the VR content and the viewer.

【Claim ~~10~~ 7】

The method for managing the watermark of the VR content using the blockchain of claim ~~7~~ 5,

wherein the playing comprises:

determining that the VR content is forged and falsified and a key frame not comprising the watermark exists and performing exception handling, if a unique address value does not exist in the verification information received from the viewer of the user terminal while the VR content is being played;

determining that the VR content is forged and falsified, and a different watermark exists within a single file and performing the exception handling, if the unique address value comprised in the verification information received from the viewer of the user terminal is changed while the VR content is being played; and

determining that the VR content is forged and falsified and performing the exception handling, if a watermark, which is not restorable, exists in the VR content by analyzing the verification information received from the viewer of the user terminal while the VR content is being played.