CLAIMS

1. An information display method, comprising:

acquiring a first image comprising a first object in a video;

determining whether a second object is present in the first image;

when it is determined that the second object is present in the first image and that the second object satisfies a preset positional relationship with the first object, superimposing a first material on an area where the second object is located in the first image;

wherein the first object is a human face and the second object is a face mask; the preset positional relationship is specifically that: the human face wears the face mask; and

wherein the first material is used to indicate a facial expression of the first object.

2. The method according to claim 1, wherein determining whether the second object is present in the first image comprises:

acquiring a target image comprising the human face in the first image;

inputting the target image to a face mask recognition model to obtain a recognition result, wherein the recognition result is used to indicate whether the human face wears the face mask, and the face mask recognition model is a lightweight machine learning model.

3. The method according to claim 2, wherein the face mask recognition model comprises: a shuffle channel module, a channel slice module, two 1×1 convolution modules, a 3×3 convolution module, and a channel concat module.

4. The method according to claim 2 or 3, wherein acquiring the target image comprising the human face in the first image comprises:

inputting the first image into a first human face recognition model to obtain a first image of a face area in the first image, and using the first image as the target image.

5. The method according to claim 2 or 3, wherein acquiring the target image comprising the human face in the first image comprises:

inputting the first image into a second human face recognition model to obtain a first image of a face area in the first image and key point information of the face area;

performing rotation processing on the first image according to the key point information to obtain a second image, and using the second image as the target image.

6. The method according to any one of claims 2-5, wherein a training process of the face mask recognition model comprises:

establishing an initial face mask recognition model;

acquiring positive and negative image samples and annotation results of the positive and negative image samples, wherein human faces comprised in the positive image samples wear face masks and human faces comprised in the negative image samples do not wear face masks, and the annotation results comprise labels for indicating whether the human faces in the image samples wear the face masks and position information of the face masks;

training the initial face mask recognition model by using the positive and negative image samples as inputs of the face mask recognition model and the annotation results of the positive and negative image samples as outputs of the face mask recognition model, to obtain the face mask recognition model.

7. The method according to any one of claims 1-6, wherein after superimposing the first material on the area where the second object is located in the first image, the method further comprises:

when it is determined that the second object is not present in a second image after the first image, removing the first material and superimposing a second material in the second image, wherein the second material is different from the first material.

8. The method according to any one of claims 1-6, wherein after superimposing the first material on the area where the second object is located in the first image, the method further comprises:

acquiring a switching operation of a user for the first material displayed in the first image;

removing the first material and superimposing a third material in a second image

after the first image in response to the switching operation, wherein the third material is different from the first material.

9. The method according to claim 8, wherein the switching operation comprises any one of the following: a gesture operation, a facial action, a head action, a voice control, a selection operation in a material selection area of an interface, and an input operation in a text input area of the interface.

10. The method according to claim 8 or9, wherein the third material is text information or an expression inputted by the user in the text input area of the interface.

11. The method according to any one of claims 1-10, wherein the method further comprises:

when it is determined that the second object is not present in the first image, displaying prompt information on the first image, wherein the prompt information is used to prompt a user to wear the second object.

12. An information display device, comprising:

an acquiring module, configured to acquire a first image comprising a first object in a video;

a processing module, configured to determine whether a second object is present in the first image;

a display module, configured to superimpose a first material on an area where the second object is located in the first image, when it is determined that the second object is present in the first image and that the second object satisfies a preset positional relationship with the first object;

wherein the first object is a human face and the second object is a face mask; the preset positional relationship is specifically that: the human face wears the face mask; and

wherein the first material is used to indicate a facial expression of the first object.

13. An electronic device, comprising: at least one processor and a memory;

wherein the memory stores computer-execution instructions;

the at least one processor executes the computer-execution instructions stored in

the memory to cause the at least one processor to execute the information display method according to any one of claims 1-11.

14. A computer-readable storage medium, wherein the computer-readable storage medium stores computer-execution instructions, and when a processor executes the computer-execution instructions, the information display method according to any one of claims 1-11 is implemented.

15. A computer program product comprising a computer program, wherein the information display method according to any one of claims 1-11 is implemented when the computer program is executed by a processor.