CLAIMS

1. A method for generating a deformation special effect program file package, comprising:

obtaining parameter values of at least one deformation effect parameter for at least one deformation region, wherein before the parameter values of the at least one deformation effect parameter for the at least one deformation region are obtained, a deformation region adding instruction input through an interactive interface of an action bar is received, and the at least one deformation region is added;

establishing a correspondence between the at least one deformation region and predetermined at least one key point; and

generating a deformation special effect program file package according to the correspondence and the at least one deformation region for which the parameter values are obtained, wherein the deformation special effect program file package, after being imported into an electronic device, is used for generating a deformation special effect for a video or image played back by the electronic device.

2. The method according to claim 1, wherein when the at least one deformation region comprises a plurality of deformation regions, the obtaining parameter values of at least one deformation effect parameter for at least one deformation region comprises:

performing batch obtaining of parameter values of deformation effect parameters for the plurality of deformation regions; and/or

respectively obtaining parameter values of deformation effect parameters for at least some of the plurality of deformation regions; and/or

obtaining, by duplication of one deformation region, another deformation region and parameter values of deformation effect parameters for the another deformation region.

3. The method according to any one of claims 1 to 2, further comprising:

generating a deformation effect parameter setting interface of the at least one

deformation region, and displaying the deformation effect parameter setting interface of the at least one deformation region in the action bar;

wherein the obtaining parameter values of at least one deformation effect parameter for at least one deformation region comprises: obtaining the parameter values of the at least one deformation effect parameter for the at least one deformation region through the deformation effect parameter setting interface.

4. The method according to any one of claims 1 to 3, wherein the obtaining parameter values of at least one deformation effect parameter for at least one deformation region comprises:

obtaining at least one position parameter of the at least one deformation region by moving the at least one deformation region on a reference image; and/or

obtaining a range of the at least one deformation region by adjusting sizes of the at least one deformation region; and/or

obtaining the parameter values of the at least one deformation effect parameter for the at least one the deformation region by adjusting a deformation curve for controlling a deformation effect; and/or

obtaining the parameter values of the at least one deformation effect parameter for the at least one deformation region by receiving parameter values of at least one deformation effect control parameter.

5. The method according to claim 3 or 4, wherein the obtaining parameter values of at least one deformation effect parameter for at least one deformation region comprises:

in response to receiving parameter values set for the at least one deformation effect parameter sent through an interactive interface in the deformation effect parameter setting interface of the at least one deformation region, taking the set parameter values as the parameter values of the at least one deformation effect parameter for the at least one deformation region; and/or

in response to not receiving parameter values of the at least one deformation effect parameter sent through an interactive interface in the deformation effect parameter setting interface of the at least one deformation region, taking a preset

parameter value as the parameter value of the deformation effect parameter of the deformation region.

6. The method according to any one of claims 3 to 5, further comprising: receiving a deformation region deletion instruction input through the interactive interface of the action bar, and deleting the at least one deformation region and the parameter value of the at least one deformation effect parameter of the at least one deformation region.

7. The method according to any one of claims 1 to 6, wherein the establishing a correspondence between the at least one deformation region and the predetermined at least one key point comprises: establishing a correspondence between at least one position reference point of the at least one deformation region and the predetermined at least one key point; and/or establishing a correspondence between a position reference point of the at least one deformation region and at least one central key point of at least one detection bounding box.

8. The method according to any one of claims 1 to 7, wherein the at least one deformation effect parameter comprises at least one of:

a display parameter, configured to control whether to display a deformation effect of a deformation region;

a trigger action parameter, configured to represent a trigger action for triggering the display of the deformation effect of the deformation region;

a loop parameter, configured to represent a number of loop playbacks of the deformation effect;

a trigger delay parameter, configured to represent a time by which the display of the deformation effect of the deformation region is delayed;

a trigger stop parameter, configured to represent an action for stopping the display of the deformation effect of the deformation region;

a deformation effect control parameter, configured to control the deformation effect of the deformation region;

a display scale parameter, configured to represent a reference basis for change in a size of the deformation region;

a position parameter, configured to represent a positional binding relationship between the deformation region and preset key points;

a rotation center parameter, configured to represent a center point on which rotation of the deformation region is based;

a deformation center parameter, configured to represent a center point of the deformation region;

a mode transfer parameter, configured to transfer between center point offset modes of the deformation region; and

a beautifying/make-up effect parameter, configured to represent a beautifying/make-up effect displayed at a preset part during display of the deformation effect,

wherein a trigger action corresponding to a parameter value of the trigger action parameter comprises at least one of: a trigger without an action, an eye action, a head action, an eyebrow action, a hand action, a mouth action, or a shoulder action,

wherein the center point offset modes of the deformation region comprise a simple center point stretching mode and/or a radial offset stretching mode.

9. The method according to claim 8, wherein the deformation effect of the deformation region is controlled based on a deformation curve, and the deformation effect control parameter comprises parameters of the deformation curve; and

the parameters of the deformation curve comprise at least one of a first control point parameter used for controlling a stretching direction and a stretching radius of the deformation effect, a second control point parameter used for controlling a transition smoothness of a middle region of the deformation region, or a third control point parameter used for controlling a transition smoothness of a boundary region of the deformation region,

wherein the stretching direction of the deformation effect comprises stretching outward from the center point of the deformation region, and/or stretching inward from the center point of the deformation region.

10. The method according to any one of claims 8 to 9, wherein the preset key points in the position parameter comprise two key points in predetermined key points, the two

key points being located on a boundary of the deformation region and having a connection line passing through the center point of the deformation region; and

the establishing a correspondence between the deformation region and predetermined at least one key point comprises: establishing a correspondence between the deformation region and the two key points located on the boundary of the deformation region and having a connection line passing through the center point of the deformation region.

11. The method according to any one of claims 1 to 10, further comprising: displaying a reference image through a content display bar, the reference image comprising at least one reference part;

receiving a reference point display instruction input through an interactive interface of the action bar and displaying at least one key point of the reference image; and/or receiving a reference point close instruction input through the interactive interface of the action bar, and displaying no key point of the reference image,

wherein the reference image comprises at least one part of an image of a reference person,

wherein the at least one part of the image of the reference person comprises at least one of the following image of the reference person: a complete image, a head image, a face image, a shoulder image, an arm image, a gesture image, a waist image, a leg image, or a foot image.

12. The method according to claim 11, further comprising: displaying deformation effect of a deformation region in the content display bar according to a parameter value of a deformation effect parameter for the deformation region;

updating a display position of the deformation region in the content display bar according to a position movement operation on the deformation region received through the content display bar, and updating a corresponding parameter value of the deformation effect parameter for the deformation region.

13. The method according to claim 11 or 12, further comprising: adjusting a occlusion relationship between two or more deformation regions according to an image layer parameter adjustment instruction for the two or more deformation regions received through the interactive interface of the action bar; and displaying a deformation effect corresponding to the two or more deformation regions according to the adjusted occlusion relationship and parameter values of deformation parameters corresponding to the two or more deformation regions.

14. The method according to any one of claims 1 to 13, further comprising: before the generating the deformation special effect program file package, generating a special effect program file of the at least one deformation region according to a preset deformation special effect program file and the parameter values of the at least one deformation effect parameter for the at least one deformation region, and displaying the special effect program file of the at least one deformation region through a program file bar.

15. The method according to any one of claims 1 to 14, further comprising: starting, according to a received start instruction, and displaying an operation interface, the operation interface comprising the action bar, the content display bar, and/or the program file bar,

wherein the operation interface consists of a left region, a middle region, and a right region; and

the displaying an operation interface comprises displaying the action bar on the left region of the operation interface, displaying the content display bar in the middle region of the operation interface, and displaying the program file bar on the right region of the operation interface.

16. A method for generating a deformation special effect, comprising:

obtaining a parameter value of a deformation effect parameter for a deformation region; and

generating a special effect of a deformation effect on an image to be processed

based on at least one key point in the image to be processed and the parameter values of the deformation effect parameter for the deformation region,

wherein before the parameter value of the deformation effect parameter for the deformation region is obtained, importing a deformation special effect program file package generated by the method according to any one of claims 1 to 15 into an electronic device.

17. The method according to claim 16,

wherein the obtaining a parameter value of a deformation effect parameter for a deformation region comprises: obtaining the parameter value of the deformation effect parameter for the deformation region in the deformation special effect program file package.

18. The method according to claim 16 or 17, wherein the parameter value of the deformation effect parameter for the deformation region comprises a correspondence between the deformation region and predetermined at least one key point,

wherein the importing a deformation special effect program file package comprises: read the deformation special effect program file package into a memory by invoking a first interface function for reading a deformation region; and parsing the deformation special effect program file package to obtain a deformation special effect program file, the deformation special effect program file comprising the parameter value of the deformation effect parameter.

19. The method according to claim 18, wherein the obtaining a parameter value of a deformation effect parameter of a deformation region comprises: creating a sticker handle by invoking a second interface function for creating a sticker handle; and reading the parameter value of the deformation effect parameter for the deformation region in the deformation special effect program file and storing the read parameter value to the sticker handle;

obtaining, according to the parameter value of the deformation effect parameter for the deformation region in the deformation special effect program file in the sticker handle, a position of the deformation region displayed in the image to be processed;

in condition that the image to be processed is an image in a video, obtaining a video frame number of the deformation region displayed in the video where the image is located, and previously reading images corresponding to a number of frames of the video frames from the video.

20. The method according to claim 19, wherein the generating the special effect of the deformation effect on the image to be processed based on the at least one key point in the image to be processed and the parameter value of the deformation effect parameter for the deformation region comprises:

reading, from the sticker handle, the deformation region to be displayed on the image to be processed by invoking a third interface function for rendering a deformation region;

determining, according to the at least one key point in the image to be processed and the parameter value of the deformation effect parameter for the deformation region to be displayed, the display position of the deformation region on the image to be processed; and

displaying, according to the display position of the deformation region on the image to be processed, the deformation region at the display position on the image to be processed.

21. The method according to any one of claims 18 to 20, wherein the detecting the at least one key point in the image to be processed comprises: performing, for the image to be processed, detection on key points involved in a correspondence between the deformation region and predetermined at least one key point through a neural network, and outputting a key point detection result,

wherein the key point detection result comprises at least one of: positions of the key points involved in the correspondence in the image to be processed, and a preset serial number of the key points involved in the correspondence.

22. The method according to claim 21, wherein the deformation effect parameter comprises a trigger action parameter, the trigger action parameter being configured to represent a trigger action for triggering the display of a deformation effect;

the method further comprises detecting whether a trigger action corresponding to the parameter value of the trigger action parameter is present in the image to be processed; and

the generating the special effect of the deformation effect on the image to be processed based on the key points in the image to be processed and the parameter value of the deformation effect parameter for the deformation region comprises: in response to detecting that the trigger action corresponding to the parameter value of the trigger action parameter is present in the image to be processed, generating the special effect of the deformation effect on the image to be processed based on the key points in the image to be processed and the parameter value of the deformation effect parameter for the deformation region.

23. The method according to any one of claims 16 to 22, wherein the deformation effect parameter comprises a beautifying/make-up effect parameter, the beautifying/make-up effect parameter being configured to represent a beautifying/make-up effect displayed at a preset part during displaying a deformation effect; and

the method further comprises: displaying, based on the key points in the image to be processed and the parameter value of the deformation effect parameter of the deformation region, the beautifying/make-up effect on the image to be processed according to the beautifying/make-up effect parameter when generating the special effect of the deformation effect on the image to be processed.

24. An apparatus for generating a deformation special effect program file package, comprising:

a first obtaining module, configured to obtain parameter values of at least one deformation effect parameter for at least one deformation region;

an establishing module, configured to establish a correspondence between the at least one deformation region and predetermined at least one key point; and

a first generating module, configured to generate a deformation special effect program file package according to the correspondence and the at least one deformation region for which the parameter values are obtained;

an action bar comprising an interactive interface and configured to receive a deformation region adding instruction input through the interactive interface, before

the parameter values of the at least one deformation effect parameter for the at least one deformation region are obtained; and

an adding module, configured to add the at least one deformation region.

25. An apparatus for generating a deformation special effect, comprising:

a second obtaining module, configured to obtain a parameter value of a deformation effect parameter for a deformation region; and

a second generating module, configured to generate a special effect of a deformation effect on an image to be processed based on at least one key point in the image to be processed and the parameter value of the deformation effect parameter for the deformation region,

an importing module, configured to import a deformation special effect program file package generated by the method according to any one of claims 1 to 15, before the parameter value of the deformation effect parameter for the deformation region is obtained.

26. An electronic device, comprising:

a memory, configured to store a computer program; and

a processor, configured to execute the computer program stored in the memory, wherein the computer program, when being executed by the processor, enables the processor to implement the method according to any one of claims 1 to 23.

27. A computer readable storage medium having a computer program stored thereon, wherein the computer program, when being executed by a processor, enables the processor to implement the method according to any one of claims 1 to 23.