CLAIMS

What is claimed is:

1. An image generation method, performed by a computer device, the method comprising:

obtaining a first initial model and a second initial model, the first initial model and the second initial model having a same structure;

obtaining a first sample body image comprising a first body, a first sample clothes image comprising first clothes, and a second sample clothes image comprising second clothes, the first body in the first sample body image wearing the first clothes;

performing, with the first initial model, image fusion on the first sample body image and the second sample clothes image to generate a second sample body image, the first body in the second sample body image wearing the second clothes;

performing, with the second initial model, image fusion on the second sample body image and the first sample clothes image to generate a target sample body image, the first body in the target sample body image wearing the first clothes;

training the first initial model based on an error between the first sample body image and the second sample body image and an error between the first sample body image and the target sample body image;

training the second initial model based on an error between the second sample body image and the target sample body image and an error between the first sample body image and the target sample body image; and

in response to both the first initial model and the second initial model meeting a model training condition, obtaining a trained second initial model as an image fusion model;

obtaining a first body image comprising a target body and a first clothes image comprising target clothes;

transforming the first clothes image based on a posture of the target body in the first body image to obtain a second clothes image by using the image fusion model, the second clothes image comprising the target clothes, and a posture of the target clothes matching the posture of the target body;

performing feature extraction by using the image fusion model on the second clothes image, an image of a bare area in the first body image, and the first body image to obtain a clothes

feature, a skin feature and a body feature respectively, the bare area being an area of the target body in the first body image that is not covered by clothes; and

generating a second body image by using the image fusion model based on the clothes feature, the skin feature, and the body feature, the target body in the second body image wearing the target clothes.

2. The method according to claim 1, wherein the transforming the first clothes image based on the posture of the target body in the first body image to obtain the second clothes image comprises:

determining a first area image based on the posture of the target body in the first body image and the first clothes image, the first area image indicating an area covered by the target clothes when the target body wears the target clothes; and

transforming, based on the first area image, the first clothes image to obtain the second clothes image.

3. The method according to claim 2, wherein the determining the first area image based on the posture of the target body in the first body image and the first clothes image comprises:

performing body area recognition on the first body image, and setting pixels belonging to a same body area in the first body image to a same pixel value to obtain a body semantic image, the body semantic image indicating the posture of the target body; and

determining the first area image based on the body semantic image and the first clothes image.

4. The method according to claim 3, wherein the determining the first area image based on the body semantic image and the first clothes image comprises:

inputting the body semantic image and the first clothes image to a clothes area prediction network of an image fusion model;

extracting, with the clothes area prediction network, a body posture feature corresponding to the body semantic image and a contour feature of the target clothes in the first clothes image; and

determining the first area image based on the body posture feature and the contour feature of the target clothes.

5. The method according to claim 2, wherein the transforming based on the first area image

the first clothes image to obtain the second clothes image comprises:

inputting the first area image and the first clothes image to a spatial transformer network of an image fusion model, the spatial transformer network being configured to transform an image;

transforming, with the spatial transformer network, the first clothes image based on a mapping relationship between the first clothes image and a first mask area to obtain an intermediate clothes image, the first mask area indicating an area in which the target clothes are located in the first clothes image;

determining, with the spatial transformer network, a texture feature corresponding to the intermediate clothes image; and

generating the second clothes image based on the texture feature and the intermediate clothes image.

6. The method according to claim 5, wherein the transforming the first clothes image by using the spatial transformer network based on a mapping relationship between the first clothes image and a first mask area to obtain the intermediate clothes image comprises:

determining an initial contour of the target clothes based on the first mask area, and determining, based on the first area image, a target contour corresponding to the target clothes after the transformation;

determining a mapping relationship between the initial contour and the target contour based on the initial contour and the target contour; and

transforming the first clothes image based on the mapping relationship to obtain the intermediate clothes image.

7. The method according to claim 5, wherein the spatial transformer network comprises a clothes generation sub-network, and

the determining the texture feature corresponding to the intermediate clothes image by using the spatial transformer network comprises:

performing, based on the clothes generation sub-network and a pre-learned clothes detail feature, feature extraction on the intermediate clothes image to obtain the texture feature corresponding to the intermediate clothes image.

8. The method according to claim 1, wherein the performing feature extraction on the second clothes image, the image of the bare area in the first body image, and the first body image

to obtain the clothes feature, the skin feature, and the body feature respectively comprises:

performing, with a clothes coding network of an image fusion model, feature extraction on the second clothes image to obtain the clothes feature;

performing, with a skin coding network of the image fusion model, feature extraction on the image of the bare area in the first body image to obtain the skin feature; and

performing, with a portrait coding network of the image fusion model, feature extraction on the first body image to obtain the body feature.

9. The method according to claim 1, wherein the generating a second body image based on the clothes feature, the skin feature, and the body feature comprises:

splicing the clothes feature, the skin feature, and the body feature to obtain a spliced feature; and

decoding the spliced feature to generate the second body image.

10. The method according to claim 9, wherein the clothes feature, the skin feature, and the body feature each comprises sub-features having at least two different scales, and

the splicing the clothes feature, the skin feature, and the body feature to obtain a spliced feature comprises:

separately splicing sub-features with same scales in the clothes feature, the skin feature, and the body feature to obtain at least two spliced sub-features; and

splicing the at least two spliced sub-features to obtain the spliced feature.

11. The method according to claim 1, wherein the training the first initial model based on the error between the first sample body image and the second sample body image and the error between the first sample body image and the target sample body image comprises:

determining a first error based on a difference in pixel value distribution between the first sample body image and the second sample body image;

determining an error between a pixel value matrix corresponding to the first sample body image and a pixel value matrix corresponding to the second sample body image as a second error;

determining an error between the pixel value matrix corresponding to the first sample body image and a pixel value matrix corresponding to the target sample body image as a third error;

determining an error between an image feature of a clothes area in the first sample body

image and an image feature of a clothes area in the target sample body image as a fourth error; and

adjusting a model parameter of the first initial model based on the first error, the second error, the third error, and the fourth error.

12. The method according to claim 11, wherein the adjusting the model parameter of the first initial model based on the first error, the second error, the third error, and the fourth error comprises:

backpropagating the first error, the second error, the third error, and the fourth error to the first initial model, to solve a parameter at each operation layer in the first initial model; and

adjusting the parameter at each operation layer in the first initial model based on a solution result.

13. The method according to claim 1, wherein the training the second initial model based on an error between the second sample body image and the target sample body image and an error between the first sample body image and the target sample body image comprises:

determining a fifth error based on a difference in pixel value distribution between the second sample body image and the target sample body image;

determining an error between a pixel value matrix corresponding to the second sample body image and a pixel value matrix corresponding to the target sample body image as a sixth error;

determining an error between a pixel value matrix corresponding to the first sample body image and the pixel value matrix corresponding to the target sample body image as a seventh error;

determining an error between an image feature of a clothes area in the first sample body image and an image feature of a clothes area in the target sample body image as an eighth error; and

adjusting a model parameter of the second initial model based on the fifth error, the sixth error, the seventh error, and the eighth error.

14. An image generation apparatus, the apparatus comprising:

a second obtaining module, configured to obtain a first initial model and a second initial model, the first initial model and the second initial model having a same structure;

a third obtaining module, configured to obtain a first sample body image including a first

body, a first sample clothes image including first clothes, and a second sample clothes image including second clothes, the first body in the first sample body image wearing the first clothes;

a second generation module, configured to perform image fusion on the first sample body image and the second sample clothes image by using the first initial model to generate a second sample body image, the first body in the second sample body image wearing the second clothes;

a third generation module, configured to perform image fusion on the second sample body image and the first sample clothes image by using the second initial model to generate a target sample body image, the first body in the target sample body image wearing the first clothes;

a first training module, configured to train the first initial model based on an error between the first sample body image and the second sample body image and an error between the first sample body image and the target sample body image;

a second training module, configured to train the second initial model based on an error between the second sample body image and the target sample body image and the error between the first sample body image and the target sample body image; and

a fourth obtaining module, configured to: in response to that both the first initial model and the second initial model meet a model training condition, obtain a trained second initial model as an image fusion model;

a first obtaining module, configured to obtain a first body image comprising a target body and a first clothes image comprising target clothes;

a clothes transformation module, configured to transform the first clothes image based on a posture of the target body in the first body image to obtain a second clothes image by using the image fusion model, the second clothes image comprising the target clothes, and a posture of the target clothes matching the posture of the target body;

a feature extraction module, configured to perform feature extraction by using the image fusion model on the second clothes image, an image of a bare area in the first body image, and the first body image to obtain a clothes feature, a skin feature, and a body feature respectively, the bare area being an area, of the target body in the first body image, that is not covered by clothes; and

a first generation module, configured to generate a second body image by using the image fusion model based on the clothes feature, the skin feature, and the body feature, the target body in the second body image wearing the target clothes.

15. A computer device, comprising a memory and one or more processors, the memory storing computer-readable instructions, the one or more processors, when executing the computer-readable instructions, implementing the operations of the method according to any one of claims 1 to 13.

16. One or more non-transitory computer-readable storage media, storing computer-readable instructions, the computer-readable instructions, when executed by one or more processors, implementing the operations of the method according to any one of claims 1 to 13.

17. A computer program product, comprising computer-readable instructions, wherein the computer-readable instructions, when executed by one or more processors, implementing the operations of the method according to any one of claims 1 to 13.