CLAIMS

1. A method for generating a virtual object, comprising:

acquiring first prompt information and second prompt information, the first prompt information representing body shape information of the virtual object, and the second prompt information representing appearance information of the virtual object;

determining a first virtual model based on the first prompt information; and

generating the virtual object based on the second prompt information and the first virtual model;

wherein the generating the virtual object based on the second prompt information and the first virtual model comprises:

for each first observation view angle of at least one first observation view angle, determining a first observation image of the first virtual model at the each first observation view angle;

for each the first observation image, updating the first observation image for at least one time by using a preset first neural network, to obtain a second observation image;

determining a first target loss value based on each the second observation image and the second prompt information; and

in a case that the first target loss value satisfies a first preset condition, rendering the first virtual model based on each the second observation image, to generate the virtual object;

wherein the first observation view angle comprises a first observation point and at least one first observation direction corresponding to the first observation point; the first observation image comprises at least one first pixel point, each the first pixel point corresponds to one first intersection point on the first virtual model, each the first intersection point represents the first intersection point between the first virtual model and a line coming from the first observation point and extending along one first observation direction;

wherein the updating the first observation image for at least one time by using a preset first neural network, to obtain a second observation image comprises:

determining at least one first spatial point corresponding to each the first observation direction based on the first observation point and each the first observation direction;

for each the first spatial point of each the first observation direction, determining, by using the preset first neural network, a first distance value between the first intersection point corresponding to the first observation direction where the first spatial point is located and the first spatial point, and determining a first color value obtained by observing the first virtual model according to the first observation direction at the first spatial point; and

updating the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation image.

2. The method of claim 1, wherein the determining a first virtual model based on the first prompt information comprises:

determining a target body shape image matching the first prompt information based on a preset first correspondence, the first correspondence representing a correspondence between the first prompt information and a body shape image; and

performing three-dimensional modeling based on the target body shape image, to generate the first virtual model.

3. The method of claim 2, wherein the determining a target body shape image matching the first prompt information based on a preset first correspondence comprises:

respectively determining a first distance between each body shape image in the first

correspondence and a set standard body shape image;

determining a second distance between the first prompt information and standard prompt information corresponding to the standard body shape image; and

determining the target body shape image based on each the first distance and the second distance.

4. The method of any of claims 1 to 3, wherein the generating the virtual object based on the second prompt information and the first virtual model further comprises:

in a case that the first target loss value fails to satisfy the first preset condition, updating a network parameter of the first neural network based on the first target loss value;

updating each the first observation image for at least one time by using the updated first neural network, to obtain an updated second observation image; and

determining an updated first target loss value based on each the updated second observation image and the second prompt information.

5. The method of any of claims 1 to 4, wherein the updating the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation image comprises:

for each the first observation direction, determining a first weight value of each the first spatial point based on the first distance value corresponding to each the first spatial point in the first observation direction; and

updating the at least one first pixel point in the first observation image based on the first weight value and the first color value of each the first spatial point, to obtain the second observation image.

6. The method of any of claims 1 to 5, wherein the determining a first target loss value based on each the second observation image and the second prompt information comprises:

for each the first observation image, determining a first loss sub-value based on the second prompt information and the first observation image;

for each the second observation image, determining a second loss sub-value based on the second prompt information and the second observation image; and

determining the first target loss value based on each the first loss sub-value and each the second loss sub-value.

7. The method of claim 6, wherein the determining a first loss sub-value based on the second prompt information and the first observation image comprises:

determining a third observation image based on the first observation image; and determining the first loss sub-value based on the second prompt information and the third observation image.

8. The method of claim 7, wherein the determining a third observation image based on the first observation image comprises:

for each the first observation direction, determining a distance gradient value of each the first spatial point based on the first distance value corresponding to each first spatial point in the first observation direction; and

updating the at least one first pixel point in the first observation image based on the first weight value of each the first spatial point and the distance gradient value, to obtain the third observation image.

9. The method of any of claims 1 to 8, further comprising:

acquiring third prompt information, the third prompt information representing animation information of the virtual object; and

generating a target animation of the virtual object based on the third prompt information.

10. The method of claim 9, wherein the generating a target animation of the virtual object based on the third prompt information comprises:

determining a first candidate pose image set based on the third prompt information;

generating a first animation based on a preset first parameter; and

determining the target animation of the virtual object based on the first candidate pose image set and the first animation.

11. The method of claim 10, wherein the determining a first candidate pose image set based on the third prompt information comprises:

querying a preset second correspondence by using the third prompt information, to obtain at least one candidate pose image matching the third prompt information, the second correspondence representing a correspondence between the third prompt information and the pose image; and

determining the first candidate pose image set based on each the candidate pose image.

12. The method of claim 10 or 11, wherein the determining the target animation of the virtual object based on the first candidate pose image set and the first animation comprises:

determining a second target loss value based on the first candidate pose image set and the first animation; and

using the first animation as the target animation in a case that the second target loss value satisfies a second preset condition.

13. The method of claim 12, wherein the determining the target animation of the virtual object based on the first candidate pose image set and the first animation further comprises:

in a case that the second target loss value fails to satisfy the second preset condition, updating the first parameter to obtain the updated first parameter;

generating an updated first animation based on the updated first parameter; and

determining the second target loss value based on the first candidate pose image set and the updated first animation.

14. The method of claim 12 or 13, wherein the determining a second target loss value based on the first candidate pose image set and the first animation comprises:

determining a third loss sub-value based on the first candidate pose image set and each frame of image in the first animation;

determining a fourth loss sub-value based on each two adjacent frame images in the first animation;

determining a fifth loss sub-value based on the third prompt information and each frame of image in the first animation; and

determining the second target loss value based on the third loss sub-value, the fourth loss sub-value, and the fifth loss sub-value.

15. An apparatus for generating a virtual object, comprising:

a first determination module, configured to acquire first prompt information and second prompt information, the first prompt information representing body shape information of the virtual object, and the second prompt information representing appearance information of the virtual object;

a second determination module, configured to determine a first virtual model based on the first prompt information; and

a first generation module, configured to generate the virtual object based on the second prompt information and the first virtual model;

wherein the first generation module is configured to:

for each first observation view angle of at least one first observation view angle, determine a first observation image of the first virtual model at the each first observation view angle;

for each the first observation image, update the first observation image for at least one time by using a preset first neural network, to obtain a second observation image;

determine a first target loss value based on each the second observation image and the second prompt information; and

in a case that the first target loss value satisfies a first preset condition, render the first virtual model based on each the second observation image, to generate the virtual object;

wherein the first observation view angle comprises a first observation point and at least one first observation direction corresponding to the first observation point; the first observation image comprises at least one first pixel point, each the first pixel point corresponds to one first intersection point on the first virtual model, each the first intersection point represents the first intersection point between the first virtual model and a line coming from the first observation point and extending along one first observation direction;

wherein the first generation module is configured to:

determine at least one first spatial point corresponding to each the first observation direction based on the first observation point and each the first observation direction;

for each the first spatial point of each the first observation direction, determine, by using the preset first neural network, a first distance value between the first intersection point corresponding to the first observation direction where the first spatial point is located and the first spatial point, and determining a first color value obtained by observing the first virtual model according to the first observation direction at the first spatial point; and

update the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation image.

16. An electronic device, comprising a processor and a memory, wherein the memory stores a computer program executable on the processor, wherein the processor is configured to execute the computer program to:

acquire first prompt information and second prompt information, the first prompt information representing body shape information of the virtual object, and the second prompt information representing appearance information of the virtual object;

determine a first virtual model based on the first prompt information; and

generate the virtual object based on the second prompt information and the first virtual model;

wherein the processor is configured to:

for each first observation view angle of at least one first observation view angle, determine a first observation image of the first virtual model at the each first observation view angle;

for each the first observation image, update the first observation image for at least one time by using a preset first neural network, to obtain a second observation image;

determine a first target loss value based on each the second observation image and the second prompt information; and

in a case that the first target loss value satisfies a first preset condition, render the first virtual model based on each the second observation image, to generate the virtual object;

wherein the first observation view angle comprises a first observation point and at least one first

observation direction corresponding to the first observation point; the first observation image comprises at least one first pixel point, each the first pixel point corresponds to one first intersection point on the first virtual model, each the first intersection point represents the first intersection point between the first virtual model and a line coming from the first observation point and extending along one first observation direction;

wherein the processor is configured to:

determine at least one first spatial point corresponding to each the first observation direction based on the first observation point and each the first observation direction;

for each the first spatial point of each the first observation direction, determine, by using the preset first neural network, a first distance value between the first intersection point corresponding to the first observation direction where the first spatial point is located and the first spatial point, and determining a first color value obtained by observing the first virtual model according to the first observation direction at the first spatial point; and

update the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation image.

17. A computer-readable storage medium, having a computer program stored thereon, wherein the computer program is performed by a processor to:

acquire first prompt information and second prompt information, the first prompt information representing body shape information of the virtual object, and the second prompt information representing appearance information of the virtual object;

determine a first virtual model based on the first prompt information; and

generate the virtual object based on the second prompt information and the first virtual model;

wherein the computer program is performed by the processor to:

for each first observation view angle of at least one first observation view angle, determine a first observation image of the first virtual model at the each first observation view angle;

for each the first observation image, update the first observation image for at least one time by using a preset first neural network, to obtain a second observation image;

determine a first target loss value based on each the second observation image and the second prompt information; and

in a case that the first target loss value satisfies a first preset condition, render the first virtual model based on each the second observation image, to generate the virtual object;

wherein the first observation view angle comprises a first observation point and at least one first observation direction corresponding to the first observation point; the first observation image comprises at least one first pixel point, each the first pixel point corresponds to one first intersection point on the first virtual model, each the first intersection point represents the first intersection point between the first virtual model and a line coming from the first observation point and extending along one first observation direction;

wherein the computer program is performed by the processor to:

determine at least one first spatial point corresponding to each the first observation direction based on the first observation point and each the first observation direction;

for each the first spatial point of each the first observation direction, determine, by using the preset first neural network, a first distance value between the first intersection point corresponding to the first observation direction where the first spatial point is located and the first spatial point, and determining a first color value obtained by observing the first virtual model according to the first observation direction at the first spatial point; and

update the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation

image.

18. A computer program, wherein the computer program is executable by a processor to:

acquire first prompt information and second prompt information, the first prompt information representing body shape information of the virtual object, and the second prompt information representing appearance information of the virtual object;

determine a first virtual model based on the first prompt information; and

generate the virtual object based on the second prompt information and the first virtual model;

wherein the computer program is executable to:

for each first observation view angle of at least one first observation view angle, determine a first observation image of the first virtual model at the each first observation view angle;

for each the first observation image, update the first observation image for at least one time by using a preset first neural network, to obtain a second observation image;

determine a first target loss value based on each the second observation image and the second prompt information; and

in a case that the first target loss value satisfies a first preset condition, render the first virtual model based on each the second observation image, to generate the virtual object;

wherein the first observation view angle comprises a first observation point and at least one first observation direction corresponding to the first observation point; the first observation image comprises at least one first pixel point, each the first pixel point corresponds to one first intersection point on the first virtual model, each the first intersection point represents the first intersection point between the first virtual model and a line coming from the first observation point and extending along one first observation direction;

wherein the computer program is executable to:

determine at least one first spatial point corresponding to each the first observation direction based on the first observation point and each the first observation direction;

for each the first spatial point of each the first observation direction, determine, by using the preset first neural network, a first distance value between the first intersection point corresponding to the first observation direction where the first spatial point is located and the first spatial point, and determining a first color value obtained by observing the first virtual model according to the first observation direction at the first spatial point; and

update the first observation image for at least one time based on the first distance value and the first color value corresponding to each the first spatial point, to obtain the second observation image.