CLAIMS

What is claimed is:

1. A virtual-life-based man-machine interaction method, comprising:

performing perception analysis on a target user who performs a man-machine interaction, to obtain cognitive data for the target user;

outputting target response content determined based on the cognitive data to the target user;

generating a basic virtual interactive animation based on the target response content, wherein the basic virtual interactive animation comprises a virtual life image that has a basic animation effect;

generating an additional virtual interactive animation based on the cognitive data for the target user, wherein the additional virtual interactive animation comprises a virtual life image that has an additional animation effect, and wherein the generating the additional virtual interactive animation based on the cognitive data for the target user comprises:

performing feature extraction on the cognitive data for the target user based on at least one feature dimension predetermined for user perception, to obtain a cognitive feature of the target user; and

inputting the obtained cognitive feature of the target user to a predetermined additional virtual image generation model, to obtain the additional virtual interactive animation, wherein the additional virtual image generation model is obtained through training based on a cognitive feature of a sample user and a basic animation effect of a virtual life image marked by the sample user, and the cognitive feature of the sample user has the same feature dimension as the cognitive feature of the target user; and

synthesizing the basic virtual interactive animation and the additional virtual interactive animation, to generate the virtual interactive animation; and

playing the virtual interactive animation that comprises a virtual life image and is dynamically generated based on the cognitive data and the target response content, wherein the virtual life image in the virtual interactive animation has an animation effect that matches the man-machine interaction performed with the target user.

2. The method according to claim 1, wherein

the cognitive data for the target user comprises a first emotional indicator that reflects an emotion of the target user; and

the generating an additional virtual interactive animation based on the cognitive data for the target user comprises:

determining a corresponding second emotional indicator based on the first emotional indicator that reflects the emotion of the target user; and

generating, based on the second emotional indicator, the additional animation effect of the virtual life image for making an emotional response to the target user.

3. The method according to claim 2, wherein

the outputting target response content determined based on the cognitive data to the target user comprises:

generating voice data of the target response content;

processing the voice data of the target response content based on the second emotional indicator, to obtain processed voice data that reflects the second emotional indicator; and

outputting the processed voice data to the target user through audio.

4. The method according to claim 3, wherein

the processing the voice data of the target response content based on the second emotional indicator comprises:

making at least one of the following adjustments to the voice data of the target response content based on the second emotional indicator:

an audio output tone, audio output volume, and an audio output pause time between words.

5. The method according to claim 1, wherein

the generating a basic virtual interactive animation based on the target response content comprises:

performing feature extraction on the target response content based on at least one feature dimension predetermined for making a response to a user, to obtain a response feature of the target response content; and

inputting the obtained response feature of the target response content to a predetermined basic virtual image generation model, to obtain the basic virtual interactive animation, wherein the basic virtual image generation model is obtained

through training based on a response feature in sample response content and a basic animation effect of a virtual life image marked by using the sample response content, and the response feature in the sample response content has the same feature dimension as the response feature extracted from the target response content.

6. The method according to claim 1, wherein

the performing perception analysis on a target user who performs a man-machine interaction, to obtain cognitive data for the target user comprises:

performing perception analysis of at least two types of modal information on the target user who performs the man-machine interaction, to obtain cognitive data about the at least two types of modal information for the target user, wherein

the perception analysis of the at least two types of modal information comprises at least one of perception analysis based on visual information, perception analysis based on auditory information, and perception analysis based on man-machine interaction input information.

7. A virtual-life-based man-machine interaction apparatus, comprising:

a cognitive module, configured to perform perception analysis on a target user who performs a man-machine interaction, to obtain cognitive data for the target user;

an output module, configured to output target response content determined based on the cognitive data to the target user;

a presentation module, configured to play a virtual interactive animation that comprises a virtual life image and is dynamically generated based on the cognitive data and the target response content, wherein the virtual life image in the virtual interactive animation has an animation effect that matches the man-machine interaction performed with the target user;

an animation determining module, configured to, before the presentation module plays the virtual interactive animation:

generate a basic virtual interactive animation based on the target response content, wherein the basic virtual interactive animation comprises a virtual life image that has a basic animation effect;

generate an additional virtual interactive animation based on the cognitive data for the target user, wherein the additional virtual interactive animation comprises a virtual life image that has an additional animation effect, and wherein, to generate the additional virtual interactive animation, the animation determining module is configured to:

perform feature extraction on the cognitive data for the target user based on at least one feature dimension predetermined for user perception, to obtain a cognitive feature of the target user; and

input the obtained cognitive feature of the target user to a predetermined additional virtual image generation model, to obtain the additional virtual interactive animation, wherein the additional virtual image generation model is obtained through training based on a cognitive feature of a sample user and a basic animation effect of a virtual life image marked by the sample user, and the cognitive feature of the sample user has the same feature dimension as the cognitive feature of the target user; and

synthesize the basic virtual interactive animation and the additional virtual interactive animation, to generate the virtual interactive animation.

8. An electronic device, comprising a memory, a processor, and a computer program that is stored in the memory and can run on the processor, wherein the computer program is executed by the processor to perform the following operations:

performing perception analysis on a target user who performs a man-machine interaction, to obtain cognitive data for the target user;

outputting target response content determined based on the cognitive data to the target user;

generating a basic virtual interactive animation based on the target response content, wherein the basic virtual interactive animation comprises a virtual life image that has a basic animation effect;

generating an additional virtual interactive animation based on the cognitive data for the target user, wherein the additional virtual interactive animation comprises a virtual life image that has an additional animation effect, and wherein the generating the additional virtual interactive animation based on the cognitive data for the target user comprises: performing feature extraction on the cognitive data for the target user based on at least one feature dimension predetermined for user perception, to obtain a cognitive feature of the target user; and inputting the obtained cognitive feature of the target user to a predetermined additional virtual image generation model, to obtain the additional virtual interactive animation, wherein the additional virtual image generation model is obtained through training based on a cognitive feature of a sample user and a basic animation effect of a virtual life image marked by the sample user, and the cognitive feature of the sample user has the same feature dimension as the cognitive feature of the target user; and

synthesizing the basic virtual interactive animation and the additional virtual interactive animation, to generate the virtual interactive animation; and

playing the virtual interactive animation that comprises a virtual life image and is dynamically generated based on the cognitive data and the target response content, wherein the virtual life image in the virtual interactive animation has an animation effect that matches the man-machine interaction performed with the target user.

9. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the following steps are implemented:

performing perception analysis on a target user who performs a man-machine interaction, to obtain cognitive data for the target user;

outputting target response content determined based on the cognitive data to the target user;

generating a basic virtual interactive animation based on the target response content, wherein the basic virtual interactive animation comprises a virtual life image that has a basic animation effect;

generating an additional virtual interactive animation based on the cognitive data for the target user, wherein the additional virtual interactive animation comprises a virtual life image that has an additional animation effect, and wherein the generating the additional virtual interactive animation based on the cognitive data for the target user comprises: performing feature extraction on the cognitive data for the target user based on at least one feature dimension predetermined for user perception, to obtain a cognitive feature of the target user; and inputting the obtained cognitive feature of the target user to a predetermined additional virtual image generation model, to obtain the additional virtual interactive animation, wherein the additional virtual image generation model is obtained through training based on a cognitive feature of a sample user and a basic animation effect of a virtual life image marked by the sample user, and the cognitive feature of the sample user has the same feature dimension as the cognitive feature of the target user;

synthesizing the basic virtual interactive animation and the additional virtual interactive animation, to generate the virtual interactive animation; and

playing the virtual interactive animation that comprises a virtual life image and is dynamically generated based on the cognitive data and the target response content,

wherein the virtual life image in the virtual interactive animation has an animation effect that matches the man-machine interaction performed with the target user.