INFORMATION DISPLAY METHOD AND APPARATUS, ELECTRONIC DEVICE, AND STORAGE MEDIUM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to Chinese Patent Application No. 202410355116.0, filed on March 26, 2024, entitled "INFORMATION DISPLAY METHOD AND APPARATUS, ELECTRONIC DEVICE, AND STORAGE MEDIUM", which is incorporated herein by reference in its entirety.

FIELD

[0002] The present disclosure relates to the field of computer technologies, and in particular, to an information display method and apparatus, an electronic device, and a storage medium.

BACKGROUND

[0003] In recent years, with the vigorous development of artificial intelligence technology, text-to-image and image-to-image technologies have made breakthrough progress. They have realized efficient transformation from text to image and intelligent iterative innovation among images through deep learning models. This technological progress has greatly broadened the artistic creation boundaries of designers and given them unprecedented space for imagination.

SUMMARY

[0004] In order to solve the above technical problems or at least partially solve the above technical problems, the present disclosure provides an information display method and apparatus, an electronic device, and a storage medium.

[0005] In a first aspect, the present disclosure provides an information display method, including:

displaying an image creation page, where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option; and

in response to a trigger operation on the image generation option, displaying a first image in the canvas area, and displaying a layer where the first image is located in the layer display area, where the first image is an image generated by an image generation model.

[0006] In a second aspect, the present disclosure further provides an information display apparatus, including:

a first display module, configured to display an image creation page, where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option; and

a second display module, configured to, in response to a trigger operation on the image generation option, display a first image in the canvas area, and display a layer where the first image is located in the layer display area, where the first image is an image generated by an image generation model.

[0007] In a third aspect, the present disclosure further provides an electronic device, including:

one or more processors;

a storage apparatus, configured to store one or more programs;

the one or more programs, when executed by the one or more processors, cause the one or more processors to implement the information display method according to the above.

[0008] In a fourth aspect, the present disclosure further provides a computer-readable storage medium, having a computer program stored thereon, when the program is executed by a processor, the information display method according to the above is implemented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The drawings herein, which are incorporated into and constitute a part of this specification, illustrate embodiments consistent with the present disclosure and, together with the description, serve to explain the principles of the present disclosure.

[0010] In order to more clearly explain the technical solutions in the embodiments of the present disclosure or in the prior art, the drawings that need to be used in the description of the embodiments or the prior art will be briefly introduced below. Obviously, for those of ordinary skill in the art, other drawings may be obtained according to these drawings without paying creative labor.

[0011] Fig. 1 is a flowchart of an information display method provided by an embodiment of the present disclosure;

[0012] Fig. 2 to Fig. 10 are schematic diagrams of several terminal display interfaces provided by embodiments of the present disclosure;

[0013] Fig. 11 is a schematic structural diagram of an information display apparatus provided by an embodiment of the present disclosure; and

[0014] Fig. 12 is a schematic structural diagram of an electronic device provided by an embodiment of the present disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

[0015] In order to understand the above objects, features, and advantages of the present disclosure more clearly, the solutions of the present disclosure will be further described below. It should be noted that the embodiments of the present disclosure and the features in the embodiments may be combined with each other without conflict.

[0016] Many specific details are set forth in the following description to facilitate a full understanding of the present disclosure, but the present disclosure may also be implemented in other ways different from those described herein. Obviously, the described embodiments are part of the embodiments of the present disclosure, but not all of the embodiments.

[0017] In practice, designers' works are not accomplished in an instant, but go through numerous meticulous modifications and improvements. They usually follow a progressive creation rule, constantly trying and stitching images together on the canvas and observing the effect in real time, so as to gradually adjust to an ideal state. Although the text-to-image and image-to-image technologies have great potential, at the current stage, there is still a lack of a creation platform that can fully integrate such technologies and adapt to the characteristics of designers' workflows.

[0018] Compared with the prior art, the technical solutions provided by the embodiments of the present disclosure have the following advantages:

[0019] The technical solution provided by the embodiment of the present disclosure includes: displaying an image creation page, where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option; in response to a trigger operation on the image generation option, displaying a first image in the canvas area, and displaying a layer where the first image is located in the layer display area, where the first image is an image generated by an image generation model. In essence, it provides an image creation platform that may meet the needs of progressive creation, which may meet the needs of designers to constantly try and stitch images together on the canvas and observe the effect in real time until the image is adjusted to an ideal state.

[0020] Fig. 1 is a flowchart of an information display method provided by an embodiment of the present disclosure. The embodiment may be applied to a case of performing information display in a client. The method may be performed by an information display apparatus. The apparatus may be implemented in a form of software and/or hardware, and may be configured in an electronic device, such as a terminal, specifically including but not limited to a smart phone, a palmtop computer, a tablet computer, a wearable device with a display screen, a desktop computer, a laptop computer, an all-in-one machine, a smart home device, and the like.

[0021] As shown in Fig. 1, the method may specifically include the following steps.

[0022] S110: An image creation page is displayed, where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option.

[0023] The image creation page may be, for example, a work interface for creating an image. The image creation page may include an image creation tool, a canvas area, a layer display area, and the like.

[0024] In practice, the image creation page may include multiple image creation tools, and different image creation tools have different functions. The image generation option is an image creation tool used to generate

an image. In practice, the image generation option may include a text-to-image option and/or an image-to-image option. The text-to-image option may be, for example, a tool for creating an image by using a text-to-image technology. The image-to-image option may be, for example, a tool for creating an image by using an image-to-image technology. Optionally, the image creation tool may further include an image insertion option. The image insertion option may be, for example, a tool to assist a user in inserting a material image.

[0025] The multiple image creation tools may be displayed in a creation tool panel. The creation tool panel may be, for example, an area for gathering and displaying the image creation tools.

[0026] The canvas area may be, for example, an actual space where a designer creates an image, which is used to display the content of the image currently being created.

[0027] The layer display area may be, for example, an area used to display which layers are currently included. In the layer display area, the displayed layers may be managed and edited.

[0028] In order to facilitate distinguishing among different layers, optionally, respective layers are displayed in the layer display area in a form of a layer identification. A layer has multiple attributes, and different layers may be distinguished by the attributes of the layer. Exemplarily, the attributes of the layer include a name, content, visibility, a blend mode, opacity, and the like. The identification of the layer may be a set of some attributes in the layer. Optionally, the identification of the layer includes a thumbnail of an image in the layer, a name of the layer, and visibility of the layer.

[0029] In the present application, there is no limitation on a relative positional relationship among the canvas area, the creation tool panel, and the layer display area on the image creation page. Optionally, the canvas area is located in a central position of the image creation page. The creation tool panel is located on a left side of the canvas area. The layer display area is located on a right side of the canvas area.

[0030] Referring to Fig. 2, the image creation page includes a creation tool panel, a canvas area, and a layer display area. The canvas area is located in a central position of the image creation page. The creation tool panel is located on a left side of the canvas area. The image creation tool includes an image generation option. The image generation option includes a text-to-image option and an image-to-image option. The layer display area is located on a right side of the canvas area.

[0031] There are multiple implementation methods of this step, which is not limited in the present application. Exemplarily, the implementation method of this step includes: in response to a trigger operation on an image creation entry, displaying an image creation page, where the image creation entry is located in at least one of a historical creation image gathering page, a navigation bar, and an information flow page.

[0032] The image creation entry may be, for example, a control, an icon, or a link to enter the layer creation page.

[0033] The historical creation image gathering page may be, for example, a page for gathering and displaying images created by a user. It should be emphasized that the images displayed on the historical creation image gathering page are all created by the same user.

[0034] The information flow page may be, for example, a page or an area for displaying information in an information sequence. The information sequence is a data form that continuously provides content to the user. The information sequence includes multiple pieces of information arranged in a certain order. The information in the information sequence may include, for example, an image. In the information flow, different pieces of information may be created by different users. All users may view images created by themselves or other users through the information flow page.

[0035] The navigation bar may be, for example, a group of links, buttons, or icons on a web page, an application, or other digital interfaces, which is used to guide users to browse and operate, so as to provide users with a way to quickly access different pages, functions, or information. It is usually located at the top, side, or bottom of the interface, and the links, buttons, or icons it includes are displayed in a horizontal or vertical arrangement.

[0036] Exemplarily, the terminal display interface in Fig. 3 includes a navigation bar and an information flow page, and the navigation bar is located on a left side of the information flow page. Image 1 to Image 9 in the information flow page are image information in the information sequence, which may be images created by the user or other users. Both the "canvas creation" in the navigation bar and the "canvas creation" in the information flow page are image creation entries. If the user clicks one of the "canvas creation" in the navigation bar or the "canvas creation" in the information flow page, referring to Fig. 2, the image creation page is displayed.

[0037] Exemplarily, the terminal display interface in Fig. 4 includes a navigation bar and a historical creation image gathering page, and the navigation bar is located on a left side of the historical creation image gathering page. Image a to Image c in the historical creation image gathering page are images created by the user. Both the "canvas creation" in the navigation bar and the "+ canvas creation" in the historical creation image gathering page are image creation entries. If the user clicks one of the "canvas creation" in the navigation bar or the "+ canvas creation" in the historical creation image gathering page, referring to Fig. 2, the image creation page is displayed.

[0038] Continuing to refer to Fig. 2, the image creation page further includes a project selection option, a canvas size adjustment option, and a canvas scaling ratio adjustment option. In a case that a completed creation of an image utilizing the method provided in the present application is regarded as a project, if the user triggers the project selection option, the project may be switched, such as opening a project created before or creating a new project. If the user triggers the canvas size adjustment option, the size of the canvas area may be changed. If the user triggers the canvas scaling ratio adjustment option, the scaling ratio of the canvas area may be changed.

[0039] It should be noted that, in the present application, the trigger operation on an option may be, for example, an operation that expresses the user's desire to use the function corresponding to the option. The trigger operation on an option may include a click operation or a slide operation on the option.

[0040] S120: A first image is displayed in the canvas area, and a layer where the first image is located is displayed in the layer display area in response to a trigger operation on the image generation option, where the first image is an image generated by an image generation model.

[0041] The trigger operation on the image generation option may be, for example, an operation used to express the user's desire to use the image generation option to generate an image.

[0042] The first image may be, for example, an image generated by using the function of the triggered image generation option. Exemplarily, if the triggered image generation option is a text-to-image option, the first image is an image generated based on a text-to-image model. If the triggered image generation option is an image-to-image option, the first image is an image generated based on an image-to-image model.

[0043] Displaying the first image in the canvas area may be, for example, displaying the content of the first image in the canvas area.

[0044] Displaying the layer where the first image is located in the layer display area may be, for example, displaying an identification of the layer where the first image is located in the layer display area. It should be emphasized here that the layer in the present application refers to a layer unit that may be edited and controlled independently. When there are multiple layers, the user's operations such as size adjustment, position adjustment, scaling, cropping, and modification on the image in one layer will not affect other layers.

[0045] There are multiple implementation methods of this step, which is not limited in the present application. Exemplarily, the implementation method of this step may include: in response to the trigger operation on the image generation option, displaying an image generation configuration panel, where the image generation configuration panel includes an image generation configuration item, and the image generation configuration item is configured to configure a constraint condition for image generation; in response to a configuration operation on the image generation configuration item, generating the first image based on the configured constraint condition; displaying the first image in the canvas area, and displaying the layer where the first image is located in the layer display area.

[0046] The image generation configuration panel may be, for example, an area used to centrally display image generation configuration items. The image generation configuration item may be, for example, a configuration item used to assist the user in configuring or confirming the constraint condition for image generation.

[0047] Optionally, if the triggered image generation option is a text-to-image option, the image generation configuration item is configured to configure at least one of the following: description information of content of

an image to be generated, related information of an image generation model to be used, and size information of the image to be generated.

[0048] The description information of the content of the image to be generated may be, for example, a text version of a description word, and the related information of the image generation model to be used may include, for example, a type and a name of the image generation model to be used, and accuracy of an image generated by the model. Generally, the higher the accuracy of the image generated by the model, the better the quality of the image generated by the model. The size information of the image to be generated may be, for example, a size and a display proportion of the image to be generated.

[0049] In an example, the user clicks the text-to-image option in Fig. 2, and referring to Fig. 5, the image generation configuration panel is displayed. The image generation configuration panel includes several configuration items such as a "description word", an "image generation model", a " display size", and a " display proportion". The "description word" is used to collect the description information of the content of the image to be generated, and the "image generation model" is used to collect the related information of the text-to-image model to be used. Specifically, the "model type" in the "image generation model" is used for the user to select the text-to-image model that the user hopes to use. The "model accuracy" in the "image generation model" is used to limit the accuracy of the image generated by the model. The " display size" and the " display proportion" are used to collect the size information of the image to be generated. Specifically, the " display size" is used to limit the size of the image to be generated. The " display proportion" is used to limit the proportion of the image to be generated. After configuring respective configuration items in the image generation configuration panel, the user clicks the "generate immediately" option, and the information configured by respective configuration items together constitutes the image generation constraint condition, and the first image is generated based on the image generation constraint condition. Referring to Fig. 6, the first image is displayed in the canvas area, and if the layer where the first image is located is layer 1, layer 1 is displayed in the layer display area. In the layer display area, a name of layer 1, a thumbnail of the image in layer 1, and a visibility identification of layer 1 are specifically displayed. The name of layer 1, the thumbnail of the image in layer 1, and the visibility identification of layer 1 together constitute an identification of layer 1.

[0050] Subsequently, operations such as size adjustment, position adjustment, scaling, cropping, and modification may be performed on the image in layer 1.

[0051] If the triggered image generation option is an image-to-image option, the image generation configuration item is configured to configure at least one of the following: a guide image, description information of content of the image to be generated, related information of an image generation model to be used, a reference degree of the guide image, and an influence factor of the guide image on the image to be generated.

[0052] The guide image refers to a reference image used to guide a process of generating a new image. The description information of the content of the image to be generated may be, for example, a text version of a description word, and the related information of the image generation model to be used may include, for example, a type and a name of an image-to-image model to be used, and accuracy of an image generated by the model.

Generally, the higher the accuracy of the image generated by the model, the better the quality of the image generated by the model. The reference degree of the guide image may be, for example, a reference and dependence degree on the guide image in an image-to-image process. If the reference degree of the guide image is higher, the image to be generated is more similar to the guide image. The influence factor of the guide image on the image to be generated may be, for example, which image feature information in the guide image is used as the guidance information to guide the generation of the new image. In practice, the information in the guide image that may be used as the image-to-image guidance information includes at least one of the following: posture information, depth information, edge information, position information, and subject information. The posture information may be, for example, a posture of a person in the guide image, and the depth information may be, for example, a far or near relationship among objects (such as the person, an animal, or an article) in the guide image. The edge information may be, for example, a contour boundary of the objects (such as the person, the animal, or the article) in the guide image. The position information may be, for example, positions of the objects (such as the person, the animal, or the article) in the guide image, and the subject information may be, for example, an appearance of a core object in the guide image.

[0053] In another example, the user clicks the image-to-image option, and referring to Fig. 7, the image generation configuration panel is displayed. The image generation configuration panel includes several configuration items such as a "guide image preview", a "description word", an "image generation model", a "guide image reference degree", and an "advanced setting". The "guide image preview" is used to assist the user in confirming which image is currently used as the guide image. The "description word" is used to collect the description information of the content of the image to be generated, and the "image generation model" is used to collect the related information of the image-to-image model to be used. The "guide image reference degree" is used to limit a dependence degree of the image to be generated on the guide image, that is, a divergence degree of the process of generating an image by the image-to-image model. The "advanced setting" is used to configure the influence factor of the guide image on the image to be generated. The "advanced setting" includes five influence factor options such as "posture information", "depth information", "edge information", "position information", and "subject information" for the user to select. After configuring each configuration item in the image generation configuration panel, the user clicks the "generate immediately" option, and the information configured by each configuration item together constitutes the image generation constraint condition, and the first image is generated based on the image generation constraint condition. The first image is displayed in the canvas area, and the layer where the first image is located is displayed in the layer display area. Subsequently, the operations such as the size adjustment, the position adjustment, the scaling, the cropping, and the modification may be performed on the first image.

[0054] Optionally, the influence factor options ("posture information", "depth information", "edge information", "position information", and "subject information") under the "advanced setting" may be hidden or displayed.

[0055] In practice, optionally, after the first image is generated, the first image is displayed in the canvas area, and the image generation configuration panel is kept to be displayed. Alternatively, it may be set that after the first image is generated, the first image is displayed in the canvas area, and the image generation configuration panel is collapsed. Subsequently, when a selection operation on the first image is detected, the image generation configuration panel is displayed again. The selection operation on the first image may be, for example, a selection operation on the first image in the canvas area, or a selection operation on the layer where the first image is located in the layer display area. In the present application, the selection operation on an image or a layer may be, for example, a click operation or a slide operation on the image or the layer.

[0056] In an embodiment, optionally, when a state of the image generation configuration panel is a display state, a state of the creation tool panel is set to a collapse state; and when the state of the image generation configuration panel is the collapse state (that is, a stop displaying state), the state of the creation tool panel is set to the display state. Exemplarily, referring to Fig. 5 or Fig. 7, when the state of the image generation configuration panel is the display state, the state of the creation tool panel is set to the collapse state. In this way, the blocking of the canvas area by the image generation configuration panel and the creation tool panel may be minimized as much as possible.

[0057] According to the above technical method, the image creation page is displayed, where the image creation page includes the image generation option, the canvas area, and the layer display area, and the image generation option includes the text-to-image option and/or the image-to-image option; in response to the trigger operation on the image generation option, the first image is displayed in the canvas area, and the layer where the first image is located is displayed in the layer display area, where the first image is the image generated by the image generation model. In essence, it provides an image creation platform that may meet the needs of progressive creation, which may meet the needs of designers to constantly try and stitch images together on the canvas and observe the effect in real time until the image is adjusted to an ideal state.

[0058] On the basis of the above technical solution, optionally, if the image creation page further includes an image insertion option, the method further includes: in response to a selection operation on the image insertion option and a material image, displaying a second image in the canvas area, and displaying a layer where the second image is located in the layer display area, where the second image is the selected material image. In essence, such setting allows the user to insert the material image according to the user's needs, that is, allows the user to add the material image collected by the user to the work that needs to be created, or use the material image collected by the user to influence the work that needs to be created.

[0059] Exemplarily, the "upload image" option in Fig. 2 is the image insertion option. If the user clicks the "upload image" option, a material selector is displayed. The material selector may be, for example, a page for the user to browse and select the material image. The material selector includes multiple material images. After the user selects a certain material image, the selected material image is inserted into the canvas area as the second image. Optionally, the material selector includes a storage address of a folder where the material image is located and an identification of the material image included in the folder where the material image is located.

The material image has multiple attributes, and the material images may be distinguished by the attributes of the material image. Exemplarily, the attributes of the material image include a name, a size, a modification time, a type, a thumbnail, and the like. The identification of the material image is a set of part of attributes in the material image.

[0060] On the basis of the above technical solution, optionally, the method further includes: if the canvas area includes an image in a target layer, displaying an image processing option in the image creation page, where the image processing option includes at least one of the following: a redraw option, an image expansion option, an elimination option, an ultra-clear option, and a background option, and the target layer is a layer in a selected state; in response to a trigger operation on the image processing option, obtaining a processed image by performing a processing operation corresponding to the triggered image processing option on the image in the target layer; displaying the processed image in the canvas area, and establishing a correspondence between the processed image and the target layer. The image processing here specifically refers to the modification of the image.

[0061] The layer being in the selected state means that the user desires to use the image in the selected layer as the processing object for the image processing. In practice, optionally, the user may make a selection for the identification of the layer in the layer display area, or make a selection for the image of a certain layer in the canvas area, for the purpose of selecting a certain layer.

[0062] The target layer may be, for example, the layer where the image (that is, the first image) generated by the image generation model is located, or the layer where the inserted material image (that is, the second image) is located. In other words, the object of the image processing may be the image generated based on the image generation model or the inserted material image. Establishing the correspondence between the processed image and the target layer refers to setting the processed image to be also in the target layer.

[0063] The redraw may include, for example, a local redraw or a global redraw of the image, and during the redrawing process, a text description word (that is, description information of redrawn content) may be used or may not be used. Exemplarily, the redraw may include a local redraw and/or a detail redraw. The local redraw may be, for example, an image-to-image function, that is, a pre-specified local area in the original image is redrawn based on a new text description word and the original image (in the present application, the image in the target layer), and the area that is not redrawn remains in the original style. The detail redraw may be, for example, an image-to-image function, which generates a new image based on basic features such as an overall layout and color matching of the original image (in the present application, the image in the target layer). The generated new image is similar to the original image at first glance, but actually has differences in local details.

[0064] The image expansion may be, for example, an image-to-image function, which may be based on the original image (in the present application, the image in the target layer) to generate a new image part closely connected with the original image around the original image. Moreover, the generated new image part is associated with the content and style of the original image. The visual effect brought about by the image expansion is like naturally filling in extra picture details when the original image is enlarged, so that the newly

generated part is not only integrated with the original image (in the present application, the image in the target layer) in terms of visual effect, but also exceeds the size of the original image in terms of overall size, thus forming a larger and more complete new image.

[0065] The elimination may be, for example, an operation of eliminating an object in the image. The object in the image may be, for example, a thing in the image, which may be specifically a person, an animal, an article, or the like. Optionally, the elimination further includes generating new content matching the surrounding environment to fill in the area left after the object is eliminated after the object in the image is eliminated, so that it is almost impossible to detect that the object is eliminated with naked eyes.

[0066] The ultra-clear may be, for example, an improvement in the resolution of the original image (in the present application, the image in the target layer), so that the processed image becomes clearer and more delicate, with more details and clearer image quality. The "ultra-clear" here may include non-generated high-definition and/or generated ultra-clear. The non-generated high-definition refers to that no image generation technology is used in a process of processing a low-definition image (in the present application, the image in the target layer) into a high-definition image. The generated ultra-clear refers to that an image generation technology is used in a process of processing a low-definition image (in the present application, the image in the target layer) into an ultra-clear image. Generally, the image resolution of the high-definition image is often lower than the image resolution of the ultra-clear image.

[0067] The background option may have, for example, a function of processing a background. Processing the background may include, for example, removing the background in the original image (in the present application, the image in the target layer) and/or stylizing the background in the original image.

[0068] "Performing, in response to the trigger operation on the image processing option, the processing operation corresponding to the triggered image processing option on the image in the target layer" may be, for example, performing a local redraw operation on the image in the target layer in response to a trigger operation on a local redraw option; performing an image expansion operation on the image in the target layer in response to a trigger operation on the image expansion option; performing an object elimination operation on the image in the target layer in response to a trigger operation on the elimination option; improving the resolution of the image in the target layer in response to a trigger operation on a high-definition image option; performing a detail redraw operation on the image in the target layer in response to a trigger operation on a detail redraw option; and performing a background removal operation on the image in the target layer in response to a trigger operation on a background removal option.

[0069] Exemplarily, referring to Fig. 6, layer 1 is the layer where the first image is located, and it is in the selected state. Moreover, since layer 1 is in the visible state, the image in layer 1 is displayed in the canvas area. Therefore, layer 1 is the target layer. In the image creation page, the image processing option is displayed above the canvas area. The image processing option includes the local redraw option, the image expansion option, the elimination option, the high-definition image option, the detail redraw option, and the background removal

option. If the user clicks the background removal option, referring to Fig. 8, the image after the background removal processing is displayed in the canvas area.

[0070] In response to the trigger operation on the image processing option, the processing operation corresponding to the triggered image processing option is performed on the image in the target layer, which essentially allows further processing of the image to be generated or the inserted material image, so as to meet the diverse image modification and creation needs of the user.

[0071] On the basis of the above technical solution, optionally, the image creation page further includes a historical image generation record panel, and the method further includes: displaying a historical image generation record of a layer that is currently in a selected state in the historical image generation record panel.

[0072] The historical image generation record panel may be, for example, an area used to gather and display the historical image generation record of the layer in the selected state.

[0073] It should be noted that if the layer is created by generating the first image, the historical image generation record of the layer may include an image generation record formed by triggering the image generation option and an image generation record formed by processing the first image (such as processing operations such as redrawing, image expansion, elimination, ultra-clear, and background). If the layer is created by inserting the material image, the historical image generation record of the layer may include an image generation record formed by processing the second image (such as processing operations such as redrawing, image expansion, elimination, ultra-clear, and background).

[0074] Exemplarily, the user clicks the text-to-image option in Fig. 2, and referring to Fig. 6, the first image is generated, and the first layer (that is, layer 1) is obtained, and the first layer is set to be in the selected state, and the historical image generation record of the first layer (that is, layer 1) is displayed in the historical image generation record panel. Alternatively, referring to Fig. 9, if the layer display area includes multiple layers, and if the user clicks layer 2 in the layer display area to make layer 2 in the selected state, the historical image generation record of layer 2 is displayed in the historical image generation record panel.

[0075] Optionally, if there is currently no layer in the selected state, prompt information for prompting that there is currently no layer in the selected state is displayed in the historical image generation record panel. Exemplarily, the prompt information is "no layer selected".

[0076] If there is currently a layer in the selected state, but the image in the layer has no image generation record, prompt information for prompting that the layer in the current selected state has no image generation record is displayed in the historical image generation record panel. Exemplarily, the prompt information is "there is currently no image generation record for this layer". This case corresponds to that there is currently a layer in the selected state, and the layer in the selected state is obtained by transforming the inserted material image (that is, the second image), and no image processing operation related to image generation (such as processing operations such as redrawing, image expansion, elimination, ultra-clear, and background) is performed on the material image.

[0077] Optionally, the method further includes: in response to a selection operation on the historical image generation record in the historical image generation record panel, displaying an image corresponding to the selected historical image generation record in the canvas area.

[0078] Exemplarily, it is assumed that the user clicks the "generate image immediately" option in the image generation configuration panel in Fig. 5, and four images, namely, image A to image D, are generated based on the image generation constraint condition collected by the image generation configuration panel. Referring to Fig. 6, image A is displayed in the canvas area, layer 1 is displayed in the layer display area, layer 1 corresponds to all the four images to be generated (that is, image A to image D), and thumbnails of the four images to be generated (that is, image A to image D) are displayed in the historical image generation record panel as the historical image generation record. If the user clicks on the thumbnail of image C in the historical image generation record panel, image A in the canvas area is replaced with image C.

[0079] By setting to display the historical image generation record of the layer that is currently in the selected state in the historical image generation record panel and allowing the selection of the historical image generation record, the user may conveniently query and call the image generation history of each layer at any time.

[0080] On the basis of the above technical solutions, optionally, displaying the first image in the canvas area in response to the trigger operation on the image generation option includes: in response to a trigger operation on the image-to-image option, if the triggered image generation option is the image-to-image option, generating the first image by using an entirety constituted by an image displayed in the current canvas area and a layout of the image in the canvas area as the guide image; and displaying the first image in the canvas area. In essence, such setting allows the user to create the guide image according to the user's own needs, thereby achieving the purpose of precisely controlling the content of the image to be generated.

[0081] Exemplarily, referring to Fig. 9, it is assumed that layer 1 includes an image of a moon, and layer 2 includes an image of a mountain. Since layer 1 and layer 2 are in the visible state, and layer 3 and layer 4 are in the hidden state, the image of the moon and the image of the mountain are displayed in the canvas area, excluding the content of layer 3 and layer 4. Moreover, in the canvas area, the moon is located in the upper right corner, and the mountain is located in the lower left corner. On this basis, if the user clicks the image-to-image option, referring to Fig. 7, the image generation configuration panel is displayed, and the guide image is displayed in the image generation configuration panel. The guide image includes the image displayed in the current canvas area, and the layout of these images is consistent with the layout in the current canvas area. If the user configures other configuration items in the image generation configuration panel and then clicks "generate image immediately", the guide image is used as the reference image for image generation.

[0082] It should be emphasized here that, in the image-to-image process, the information conveyed by the guide image to the image-to-image model includes: content information of the image displayed in the canvas area, position information of the image in the canvas area, size information of the image, relative position

relationship information between images, and the like. The image-to-image model may refer to all the information conveyed by the guide image or part of the information conveyed by the guide image in the image generation process. Which information to specifically refer to is determined by the influence factor of the guide image on the image to be generated collected through the image generation configuration panel.

[0083] Further, if the current canvas area does not include an image, a state of the image-to-image option is set to a non-selectable state; and if the current canvas area includes an image, the state of the image-to-image option is set to a selectable state. The entirety constituted by the image displayed in the current canvas area and the layout of the image in the canvas area is used as the guide image. If the current canvas area does not include an image, it means that there is currently no guide image. Therefore, the state of the image-to-image option is set to the non-selectable state, that is, the user is restricted from using the image-to-image function to create a new first image. If the current canvas area includes an image, it means that there is currently an image that may be used as the guide image. Therefore, the state of the image-to-image option is set to the selectable state, that is, the user is allowed to use the image-to-image function to create a new first image.

[0084] On the basis of the above technical solution, optionally, the image creation page further includes a saving option, and the method further includes: in response to a trigger operation on the saving option, saving an image in the current canvas area as one image, or saving all layers in a form of layers.

[0085] For example, saving the image in the current canvas area as one image may be to save the content displayed in the current canvas area in a form of a single image. Exemplarily, there are three layers, namely, layer 1, layer 2, and layer 3. The images in layer 1 and layer 2 are displayed in the canvas area, and the image in layer 3 is not displayed in the canvas. Only the image obtained by compositing layer 1 and layer 2 is saved as a single image. The saved image includes the image content in layer 1, the image content in layer 2, and the relative position relationship between the image in layer 1 and the image in layer 2.

[0086] Still taking the case where there are three layers, namely, layer 1, layer 2, and layer 3 as an example, saving all layers in the form of layers may be, for example, saving these three layers in the form of layers regardless of whether there is a layer among layer 1, layer 2, and layer 3 that is not displayed in the canvas area. If the user opens the file next time, the layer display area is still displayed as having three layers, and the user may perform size adjustment, position adjustment, scaling, cropping, or modification on any one of these three layers.

[0087] The following describes the whole process of image creation using the image creation platform provided by the method with reference to specific examples.

[0088] When the interface shown in Fig. 3 is displayed on the terminal, the user clicks the "canvas creation" option in the navigation bar, and referring to Fig. 2, the image creation page is displayed. Next, the user clicks the "text-to-image" option in the creation tool panel in Fig. 2, and referring to Fig. 5, the image generation configuration panel is displayed. After completing the configuration of the image generation configuration item in the image generation configuration panel, the user clicks "generate immediately" to

generate four images based on the image generation prompt information given by the configured image generation configuration item. Referring to Fig. 6, the first image in the four images to be generated is used as the first image, the first image is displayed in the canvas area, and the identification of the layer corresponding to the first image, that is, the identification of layer 1, is displayed in the layer display area. The state of layer 1 is set to the selected state, and the historical image generation record of layer 1 is displayed in the historical image generation record panel. The historical image generation record of layer 1 includes thumbnails of the four images to be generated. Since layer 1 is in the selected state and the image in layer 1 is displayed in the canvas area, the image processing option is displayed in the image creation page, and the image processing option includes the local redraw option, the image expansion option, the elimination option, the high-definition image option, the detail redraw option, and the background removal option. If the user selects the background removal option, the background of the first image in layer 1 is removed, and referring to Fig. 8, the image with the background removed is obtained, and the image with the background removed is displayed in the canvas area. The thumbnail in the identification of layer 1 is updated. The thumbnail of the image with the background removed is added to the historical image generation record panel.

[0089] Next, the user clicks the "upload image" option in the creation tool panel in Fig. 8 to select the material image that needs to be uploaded, and the selected material image is used as the second image and displayed in the canvas area, and the identification of the layer corresponding to the second image, that is, the identification of layer 2, is displayed in the layer display area.

[0090] As described above, the user may create layer 3 and layer 4 based on similar operations. Subsequently, the user sets layer 1 and layer 2 to the visible state, and sets layer 3 and layer 4 to the hidden state. The user may change the sizes and positions of the first image of layer 1 and the second image of layer 2 in the canvas area to adjust the relative position and size of the first image and the second image to an appropriate level. Referring to Fig. 9, the user clicks the "image-to-image" option in the creation tool panel, and referring to Fig. 7, the image generation configuration panel is displayed, and the preview image of the guide image is displayed in the image generation configuration panel. The guide image is consistent with the content of the current canvas area, and after completing the configuration of the image generation configuration item in the image generation configuration panel, the user clicks "generate immediately" to generate four images based on the image generation constraint condition given by the configured image generation configuration item. Referring to Fig. 10, the first image in the four images to be generated is displayed in the canvas area, and the identification of layer 5 is displayed in the layer display area. The state of layer 5 is set to the selected state, and the historical image generation record of layer 5 is displayed in the historical image generation record panel. The historical image generation record of layer 5 includes thumbnails of the four images to be generated. Since layer 5 is in the selected state and the image in layer 5 is displayed in the canvas area, the image processing option is displayed in the image creation page, and the image processing option includes the local redraw option, the image expansion option, the elimination option, the high-definition image option, the detail redraw option, and the background removal option.

[0091] It may be understood that before using the technical solutions disclosed in the embodiments of the present disclosure, the user shall be informed of the type, range of use, use scenarios, etc., of personal information involved in the present disclosure and obtain the authorization of the user in an appropriate manner in accordance with relevant laws and regulations.

[0092] For example, in response to receiving an active request from the user, prompt information is sent to the user to clearly prompt the user that the requested operation will require access to and use of the user's personal information. In this way, the user may independently choose whether to provide the personal information to software or hardware such as an electronic device, an application, a server, or a storage medium that performs the operations of the technical solutions of the present disclosure based on the prompt information.

[0093] As an optional but non-limiting implementation, in response to receiving the active request from the user, the prompt information may be sent to the user in a form of, for example, a pop-up window, and the prompt information may be displayed in text in the pop-up window. In addition, the pop-up window may also carry a selection control for the user to select "agree" or "disagree" to provide the personal information to the electronic device.

[0094] It may be understood that the above process of notifying and obtaining user authorization is only illustrative and does not limit the implementations of the present disclosure, and other manners that satisfy the relevant laws and regulations may also be applied to the implementations of the present disclosure.

[0095] It should be noted that, for the sake of simple description, the foregoing method embodiments are all expressed as a series of action combinations, but those skilled in the art should know that the present invention is not limited to the described order of actions, because according to the present invention, certain steps may be performed in other orders or simultaneously. Secondly, those skilled in the art should also know that the embodiments described in the specification all belong to preferred embodiments, and the actions and modules involved are not necessarily required by the present invention.

[0096] Fig. 11 is a schematic structural diagram of an information display apparatus according to an embodiment of the present disclosure. The information display apparatus provided by the embodiment of the present disclosure may be configured in a client. Referring to Fig. 11, the information display apparatus specifically includes:

a first display module 310, configured to display an image creation page; where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option; and

a second display module 320, configured to, in response to a trigger operation on the image generation option, display a first image in the canvas area, and display a layer where the first image is located in the layer display area, where the first image is an image generated by an image generation model.

[0097] Further, the second display module 320 is configured to:

in response to the trigger operation on the image generation option, display an image generation configuration panel, where the image generation configuration panel includes an image generation configuration item, and the image generation configuration item is configured to configure a constraint condition for image generation;

in response to a configuration operation on the image generation configuration item, generate the first image based on the constraint condition; and

display the first image in the canvas area, and display the layer where the first image is located in the layer display area.

[0098] Further, if the triggered image generation option is the text-to-image option, the image generation configuration item is configured to configure at least one of the following: description information of content of an image to be generated, related information of an image generation model that needs to be used, and size information of the image to be generated; and

if the triggered image generation option is the image-to-image option, the image generation configuration item is configured to configure at least one of the following: a guide image, description information of content of the image to be generated, related information of an image generation model that needs to be used, a reference degree of the guide image, and an influence factor of the guide image on the image to be generated.

[0099] Further, the second display module 320 is configured to:

in response to a trigger operation on the image-to-image option, if the triggered image generation option is the image-to-image option, generate the first image by using an entirety constituted by an image displayed in the current canvas area and a layout of the image in the canvas area as the guide image; and

display the first image in the canvas area.

[00100] Further, if the current canvas area does not include an image, a state of the image-to-image option is set to a non-selectable state; and

if the current canvas area includes an image, the state of the image-to-image option is set to a selectable state.

[00101] Further, the image creation page further includes an image insertion option, and the second display module 320 is configured to:

in response to a selection operation on the image insertion option and a material image, display a second image in the canvas area, and display a layer where the second image is located in the layer display area, where the second image is the selected material image.

[00102] Further, the image creation page further includes a historical image generation record panel, and the apparatus further includes an updating module, configured to:

display a historical image generation record of a layer that is currently in a selected state in the historical image generation record panel.

[00103] Further, the apparatus further includes a third display module, configured to:

in response to a selection operation on the historical image generation record in the historical image generation record panel, display an image corresponding to the selected historical image generation record in the canvas area.

[00104] Further, the apparatus further includes a fourth display module, configured to:

if the canvas area includes an image in a target layer, display an image processing option in the image creation page, where the image processing option includes at least one of the following: a redraw option, an image expansion option, an elimination option, an ultra-clear option, and a background option, and the target layer is a layer in a selected state;

in response to a trigger operation on the image processing option, obtain a processed image by performing a processing operation corresponding to the triggered image processing option on the image in the target layer; and

display the processed image in the canvas area, and establish a correspondence between the processed image and the target layer.

[00105] Further, the image creation page further includes a saving option, and the apparatus includes a saving module, configured to:

in response to a trigger operation on the saving option, save an image in the current canvas area as one image, or save all the layers in a form of layers.

[00106] The information display apparatus provided by the embodiment of the present disclosure may perform the steps performed by the client in the information display method provided by the method embodiment of the present disclosure, and has the steps performed and beneficial effects, which will not be repeated here.

[00107] Fig. 12 is a schematic structural diagram of an electronic device provided by an embodiment of the present disclosure. The following specifically refers to Fig. 12, which illustrates a schematic structural diagram of an electronic device 1000 suitable for implementing the embodiments of the present disclosure. The electronic device 1000 in the embodiments of the present disclosure may include, but is not limited to, a mobile terminal such as a mobile phone, a laptop, a digital broadcast receiver, a personal digital assistant (PDA), a tablet computer (PAD), a portable multimedia player (PMP), a vehicle-mounted terminal (for example, a vehicle navigation terminal), and a wearable electronic device, and a fixed terminal such as a digital TV, a desktop computer, and a smart home device. The electronic device shown in Fig. 12 is only an example, and should not impose any limitation on the function and scope of use of the embodiments of the present disclosure.

[00108] As shown in Fig. 12, the electronic device 1000 may include a processing apparatus (such as a central processing unit, a graphics processor, etc.) 1001, which may perform various appropriate actions and processes according to a program stored in a read-only memory (ROM) 1002 or a program loaded from a storage apparatus 1008 into a random access memory (RAM) 1003 to implement the information display method of the embodiments according to the present disclosure. In the RAM 1003, various programs and information required

for operations of the electronic device 1000 are also stored. The processing apparatus 1001, the ROM 1002, and the RAM 1003 are connected to each other through a bus 1004. An input/output (I/O) interface 1005 is also connected to the bus 1004.

[00109] Generally, the following apparatuses may be connected to the I/O interface 1005: an input apparatus 1006 including, for example, a touch screen, a touchpad, a keyboard, a mouse, a camera, a microphone, an accelerometer, and a gyroscope; an output apparatus 1007 including, for example, a liquid crystal display (LCD), a speaker, and a vibrator; the storage apparatus 1008 including, for example, a magnetic tape and a hard disk; and a communication apparatus 1009. The communication apparatus 1009 may allow the electronic device 1000 to perform wireless or wired communication with other devices to exchange information. Although Fig. 12 shows the electronic device 1000 having various apparatuses, it should be understood that it is not required to implement or have all the apparatuses shown. More or fewer apparatuses may be implemented or provided alternatively.

[00110] In particular, according to the embodiments of the present disclosure, the process described above with reference to the flowchart may be implemented as a computer software program. For example, the embodiments of the present disclosure include a computer program product, which includes a computer program carried on a non-transitory computer-readable medium, where the computer program contains program code for performing the method shown in the flowchart, thereby implementing the information display method according to the above. In such an embodiment, the computer program may be downloaded and installed from a network through the communication apparatus 1009, or installed from the storage apparatus 1008, or installed from the ROM 1002. When the computer program is executed by the processing apparatus 1001, the above-mentioned functions defined in the method of the embodiments of the present disclosure are executed.

[00111] It should be noted that the above computer-readable medium in the present disclosure may be a computer-readable signal medium or a computer-readable storage medium, or any combination of the two. The computer-readable storage medium may be, for example, but not limited to, an electrical, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, or any combination of the above. More specific examples of the computer-readable storage medium may include, but are not limited to: an electrical connection having one or more conductors, a portable computer magnetic disk, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or flash memory), an optical fiber, a portable compact disk read-only memory (CD-ROM), an optical storage device, a magnetic storage device, or any suitable combination of the above. In the present disclosure, the computer-readable storage medium may be any tangible medium that contains or stores a program, and the program may be used by or in combination with an instruction execution system, apparatus, or device. In the present disclosure, a computer-readable signal medium may include an information signal propagated in a baseband or as a part of a carrier wave, and computer-readable program code is carried in the information signal. This propagated information signal may adopt multiple forms, including but not limited to an electromagnetic signal, an optical signal, or any suitable combination of the above. The computer-readable signal medium may also be any

computer-readable medium other than the computer-readable storage medium, and the computer-readable signal medium may send, propagate, or transmit the program used by or in combination with the instruction execution system, apparatus, or device. The program code contained on the computer-readable medium may be transmitted by any suitable medium, including but not limited to: a wire, an optical cable, a radio frequency (RF), etc., or any suitable combination of the above.

[00112] In some implementations, the client and the server may communicate using any known or future developed network protocol, such as the HTTP (HyperText Transfer Protocol), and may be interconnected with any form or medium of digital information communication (for example, a communication network). Examples of the communication network include a local area network ("LAN"), a wide area network ("WAN"), an internet (for example, the Internet), a peer-to-peer network (for example, an Ad-Hoc network), and any network developed now or in the future.

[00113] The above computer-readable medium may be included in the above electronic device, or may exist alone without being assembled into the electronic device.

[00114] The above computer-readable medium carries one or more programs, and when the one or more programs are executed by the electronic device, the electronic device is caused to:

display an image creation page, where the image creation page includes an image generation option, a canvas area, and a layer display area, and the image generation option includes a text-to-image option and/or an image-to-image option; and

in response to a trigger operation on the image generation option, display a first image in the canvas area, and display a layer where the first image is located in the layer display area, where the first image is an image generated by an image generation model.

[00115] Optionally, when the one or more programs are executed by the electronic device, the electronic device may further perform other steps described in the above embodiments.

[00116] The computer program code for performing the operations of the present disclosure may be written in one or more programming languages or a combination thereof, where the above programming languages include but are not limited to object-oriented programming languages such as Java, Smalltalk, and C++, and further include conventional procedural programming languages such as "C" language or similar programming languages. The program code may be completely executed on a computer of a user, partially executed on a computer of a user, executed as an independent software package, partially executed on a computer of a user and partially executed on a remote computer, or completely executed on a remote computer or a server. In the case of involving the remote computer, the remote computer may be connected to the computer of the user through any kind of network, including a local area network (LAN) or a wide area network (WAN), or may be connected to an external computer (for example, connected through the Internet using an Internet service provider).

[00117] The flowcharts and block diagrams in the drawings illustrate the possibly implemented architectures, functions, and operations of the system, the method, and the computer program product according to various embodiments of the present disclosure. In this regard, each block in the flowchart or block diagram may represent a module, program segment, or part of code, and the module, program segment, or part of code contains one or more executable instructions for implementing the specified logical functions. It should also be noted that, in some alternative implementations, the functions marked in the blocks may also occur in an order different from that marked in the drawings. For example, two blocks shown in succession may actually be executed substantially in parallel, or they may sometimes be executed in the reverse order, depending on the functions involved. It should also be noted that each block in the block diagram and/or the flowchart, and the combination of the blocks in the block diagram and/or the flowchart may be implemented by a dedicated hardware-based system that executes specified functions or operations, or may be implemented by a combination of dedicated hardware and computer instructions.

[00118] The units involved in the embodiments of the present disclosure may be implemented by software or by hardware. Among them, the name of the unit does not constitute a limitation on the unit itself under certain circumstances.

[00119] The functions described above herein may be performed at least in part by one or more hardware logic components. For example, without limitation, exemplary types of hardware logic components that may be used include: a field programmable gate array (FPGA), an application specific integrated circuit (ASIC), an application specific standard product (ASSP), a system on chip (SOC), a complex programmable logical device (CPLD), etc.

[00120] In the context of the present disclosure, a machine-readable medium may be a tangible medium that may contain or store a program for use by or in combination with an instruction execution system, apparatus, or device. The machine-readable medium may be a machine-readable signal medium or a machine-readable storage medium. The machine-readable medium may include, but is not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, or any suitable combination of the above. More specific examples of the machine-readable storage medium may include an electrical connection based on one or more wires, a portable computer magnetic disk, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or flash memory), an optical fiber, a portable compact disk read-only memory (CD-ROM), an optical storage device, a magnetic storage device, or any suitable combination of the above.

[00121] According to one or more embodiments of the present disclosure, the present disclosure provides an electronic device, including:

one or more processors;

a memory, configured to store one or more programs;

the one or more programs, when executed by the one or more processors, cause the one or more processors to implement the information display method according to any one of the embodiments provided in the present disclosure.

[00122] According to one or more embodiments of the present disclosure, the present disclosure provides a computer-readable storage medium, having a computer program stored thereon, and when the program is executed by a processor, the information display method according to any one of the embodiments provided in the present disclosure is implemented.

[00123] An embodiment of the present disclosure further provides a computer program product, where the computer program product includes a computer program or instructions, and when the computer program or instructions are executed by a processor, the information display method according to the above is implemented.

[00124] It should be noted that in this article, relational terms such as "first" and "second" are only used to distinguish one entity or operation from another entity or operation, and do not necessarily require or imply any actual relationship or order between these entities or operations. Moreover, the terms "include", "include", or any other variation thereof are intended to cover non-exclusive inclusion, so that a process, method, item, or device including a series of elements includes not only those elements, but also other elements not explicitly listed or elements inherent to such process, method, item, or device. Without further restrictions, an element defined by the phrase "includes a" does not exclude that there are other identical elements in the process, method, item, or device that includes the element.

[00125] The above descriptions are only specific embodiments of the present disclosure, so that those skilled in the art may understand or implement the present disclosure. Various modifications to these embodiments will be obvious to those skilled in the art, and the general principles defined herein may be implemented in other embodiments without departing from the spirit or scope of the present disclosure. Therefore, the present disclosure will not be limited to the embodiments described herein, but rather to the widest scope consistent with the principles and novel features disclosed herein.

I/We Claim:

1. An information display method, comprising:

displaying an image creation page; the image creation page comprising an image generation option, a canvas area, and a layer display area, and the image generation option comprising: a text-to-image option and/or an image-to-image option; and

displaying, in response to a trigger operation on the image generation option, a first image in the canvas area, and displaying a layer where the first image is located in the layer display area, the first image being an image generated by an image generation model.

2. The method of claim 1, wherein displaying, in response to the trigger operation on the image generation option, the first image in the canvas area and displaying the layer where the first image is located in the layer display area comprises:

displaying, in response to the trigger operation on the image generation option, an image generation configuration panel, the image generation configuration panel comprising an image generation configuration item, and the image generation configuration item is configured to configure a constraint condition for image generation;

generating, in response to a configuration operation on the image generation configuration item, the first image based on the constraint condition; and

displaying the first image in the canvas area, and displaying the layer where the first image is located in the layer display area.

3. The method of claim 2, wherein

the image generation configuration item, in response to the triggered image generation option being the text-to-image option, is configured to configure at least one of the following: description information of content of an image to be generated, related information of an image generation model that needs to be used, and size information of the image to be generated; and

the image generation configuration item, in response to the triggered image generation option being the image-to-image option, is configured to configure at least one of the following: a guide image, description information of content of the image to be generated, related information of an image generation model that needs to be used, a reference degree of the guide image, and an influence factor of the guide image on the image to be generated.

4. The method of claim 1, wherein displaying, in response to the trigger operation on the image generation option, the first image in the canvas area comprises:

generating, in response to the trigger operation on the image generation option and the triggered image generation option being the image-to-image option, the first image by using an entirety constituted by an image displayed in the current canvas area and a layout of the image in the canvas area as a guide image; and

displaying the first image in the canvas area.

5. The method of claim 4, wherein

setting, in response to the current canvas area not comprising an image, a state of the image-to-image option to a non-selectable state; and

setting, in response to the current canvas area comprising an image, the state of the image-to-image option to a selectable state.

6. The method of claim 1, wherein the image creation page further comprises an image insertion option, and the method further comprises:

displaying, in response to a selection operation on the image insertion option and a material image, a second image in the canvas area, and displaying a layer where the second image is located in the layer display area, the second image being the selected material image.

7. The method of any of claims 1 to 6, wherein the image creation page further comprises a historical image generation record panel, and the method further comprises:

displaying a historical image generation record of a layer that is currently in a selected state in the historical image generation record panel.

8. The method of claim 7, further comprising:

displaying, in response to a selection operation on the historical image generation record in the historical image generation record panel, an image corresponding to the selected historical image generation record in the canvas area.

9. The method of claim 1, further comprising:

displaying, in response to the canvas area comprising an image in a target layer, an image processing option in the image creation page, the image processing option comprising at least one of the following: a redraw option, an image expansion option, an elimination option, an ultra-clear option, and a background option, and the target layer being a layer in a selected state;

obtaining, in response to a trigger operation on the image processing option, a processed image by performing a processing operation corresponding to the triggered image processing option on the image in the target layer; and

displaying the processed image in the canvas area, and establishing a correspondence between the processed image and the target layer.

10. The method of claim 1, wherein the image creation page further comprises a saving option, and the method further comprises:

saving, in response to a trigger operation on the saving option, an image in the current canvas area as one image, or saving all layers in a form of layers.

11. An information display apparatus, comprising:

a first display module, configured to display an image creation page; the image creation page comprising an image generation option, a canvas area, and a layer display area, and the image generation option comprising a text-to-image option and/or an image-to-image option; and

a second display module, configured to, display, in response to a trigger operation on the image generation option, a first image in the canvas area, and display a layer where the first image is located in the layer display area, the first image being an image generated by an image generation model.

12. An electronic device, comprising:

one or more processors;

a storage apparatus, configured to store one or more programs;

wherein the one or more programs, when executed by the one or more processors, cause the one or more processors to implement the method of any of claims 1 to 10.

13. A computer-readable storage medium, having a computer program stored thereon, wherein when the program is executed by a processor, the method of any of claims 1 to 10 is implemented.