Method and Electronic Device for Providing Product Information

[0001] This disclosure claims priority to Chinese Patent Application No. 202410375000.3, filed with the China National Intellectual Property Administration on March 28, 2024, with the title "Method for Providing Product Information and Electronic Device", the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of information processing technology, and more particularly to a method for providing product information and an electronic device.

BACKGROUND

[0003] In a product information service system, it is common for multiple products in combination to be produced on a single image for display on a merchant's store page or product detail page. For example, for apparel products, many merchants will photograph a model wearing a complete outfit to show the effect of wearing the apparel and the coordination effect with other apparel items, and so on. In the case where multiple products are displayed on a single image, since multiple products in the same image may be products for sale in the same store, the merchant may also wish to use the image to divert traffic to multiple products therein. For example, a product detail page for a garment A may display a model wearing garment A, where the model is also wearing garments B and C from the same store; in this case, the merchant may wish to use the model wearing image to divert traffic to garments B and C.

[0004] In order to achieve this goal, in the prior art, merchants are typically required to perform configuration work in advance. Specifically, hotspot areas can be selected within the above-mentioned image, and then links can be configured for the hotspot areas. In this way, when a user browses the image and clicks on a hotspot area, the user can be redirected to the page corresponding to the link configured for that hotspot area. For example, the area in the aforementioned image where garment B is located can redirect to the product detail page of garment B for display, and so on.

[0005] The above approach enables traffic diversion to multiple different products based on a single image; however, in specific implementation, it requires the merchant to have a certain level of production experience and relies on the merchant manually performing configuration operations. If the merchant has not configured the hotspot areas and links, the consumer side cannot learn from the image how to purchase the products in the combination.

SUMMARY

[0006] The present disclosure provides a method for providing product information and an electronic device, which are capable of, without relying on manual configuration by merchants, improving the traffic diversion efficiency of product instances, while providing users with a new way to quickly obtain product search results.

[0007] The present disclosure provides the following solutions:

[0008] a method for providing product information, comprising:

[0009] displaying a target image in a product information page, where the target image includes image content of at least one product element;

[0010] in response to a target operation performed by a first user at a target position in the target image, segmenting, by an artificial intelligence (AI) large-scale parameter model, the image content of a target product element associated with the target position;

[0011] performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, and providing information of at least one successfully matched product instance.

[0012] The method, further comprising:

[0013] during the process of segmenting the image content of the target product element, performing, by using the AI large-scale parameter model, image inpainting on the occluded portion of the target product element in the target image, so as to perform matching calculation against product instances in a product instance collection based on the inpainted image content.

[0014] The method, further comprising:

[0015] after segmenting the image content of the target product element, providing operation options regarding multiple selectable search scopes, so as to perform matching calculation against product instances in a corresponding product instance collection within a user-selected search scope.

[0016] The method, where the product information page further includes a search condition input control for initiating a product search;

[0017] the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

[0018] after segmenting the image content of the target product element, in response to an operation of dragging the segmented image content of the target product element to the search condition input control, triggering the step of performing matching calculation based on the segmented image content of the target product element against product instances in the product instance collection.

[0019] The at least one successfully matched product instance comprises: a product instance

having identical or similar characteristics to the target product element.

[0020] The product information page comprises a product detail page of a certain product, the target image comprises image content of the product and image content of other product elements used for coordination with the product, and the segmented target product element is one of the other product elements;

[0021] the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

[0022] performing matching calculation of product instances within the same store scope to which the product belongs or within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0023] The product information page comprises a product information aggregation page associated with a target store, and the target image comprises at least one product element in the target store;

[0024] the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

[0025] performing matching calculation of product instances within the same store scope of the target store or within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0026] The product information page comprises a cross-store product information aggregation page;

[0027] the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

[0028] performing matching calculation of product instances within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0029] The performing matching calculation based on the segmented image content of the target product element against product instances in the product instance collection comprises:

[0030] performing keyword recognition on the segmented image content of the target product element;

[0031] constructing, using the recognized keywords, prompt text expressed in natural language for conducting dialogue with the AI large-scale parameter model, so as to determine, through the AI large-scale parameter model, at least one matched product instance from the product instance collection.

[0032] According to different types of the product information page, different subdivision granularities are used during keyword recognition, and different degrees of restrictive conditions are used when constructing the prompt text.

[0033] A product search method, comprising:

[0034] displaying a target image in a product information page, where the target image includes image content of at least one product element;

[0035] in response to a click or long-press operation performed by a first user on a target position in the target image, segmenting, through an AI large-scale parameter model, the image content of the target product element associated with the target position;

[0036] in response to an operation of the first user dragging the segmented image content to a search input control of the product information page, initiating a request for performing a product search based on the segmented image content, and providing corresponding product search results.

[0037] A product search method, comprising:

[0038] displaying a target image in a product information page, where the target image includes image content of at least one product element;

[0039] in response to a click or long-press operation performed by a first user on a target position in the target image, segmenting, through an AI large-scale parameter model, the image content of the target product element associated with the target position;

[0040] providing a search operation option for initiating a product search request;

[0041] in response to a product search request initiated by the first user through the search operation option, providing search results of a product search performed based on the segmented image content of the target product element.

[0042] The search operation option comprises different search operation options corresponding to a plurality of different search scopes, so as to provide product search results within a user-selected search scope.

[0043] A store page design method, comprising:

[0044] receiving a target image uploaded by a second user during a store page design process, the target image being used to display coordination relationships or coordination effects among a plurality of product elements;

[0045] recognizing and prompting image content of a plurality of target product elements segmentable from the target image through an AI large-scale parameter model;

[0046] after receiving a confirmation operation from the second user on the image content segmentation result, publishing the target image to the store page, so that during the first user's browsing of the store page, in response to a target operation performed by the first user on a target position in the target image, the image content of the target product element associated with the target position is segmented by the AI large-scale parameter model, and product search results are provided based on the segmented image content of the target product element.

[0047] A computer-readable storage medium having a computer program stored thereon, the program, when executed by a processor, implementing the steps of any one of the preceding methods.

[0048] An electronic device, comprising:

[0049] one or more processors; and

[0050] a memory associated with the one or more processors, the memory configured to store program instructions that, when read and executed by the one or more processors, implement the steps of any one of the preceding methods.

[0051] A computer program product comprising a computer program /computer-executable instructions, wherein the computer program/computer-executable instructions, when executed by a processor in an electronic device, implement the steps of any one of the preceding methods.

[0052] According to the specific embodiments provided by the present disclosure, the present disclosure discloses the following technical effects:

[0053] according to the embodiments of the present disclosure, during the process of displaying a target image in a product information page, if the target image includes image content of at least one product element, a user may perform a target operation on a target position in the target image; correspondingly, the image content of the target product element associated with the target position may be segmented by an AI (artificial intelligence) large-scale parameter model; thereafter, based on the segmented image content of the target product element, matching calculation may be performed against product instances in a product instance collection, and information of at least one successfully matched product instance may be provided. In this manner, traffic diversion from a target image containing image content of at least one product element to specific product instances can be achieved, without relying on operations such as hotspot area selection and link configuration by the publisher of the target image. In addition, the successfully matched product instances may be one or more; therefore, compared with the prior art in which traffic can only be diverted to a single product corresponding to a pre-configured link, the traffic diversion efficiency for product instances can also be improved, while providing users with a new way to quickly obtain product search results.

[0054] Of course, any product implementing the present disclosure does not necessarily need to achieve all of the advantages described above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0055] In order to more clearly illustrate the technical solutions in the embodiments of the present disclosure or in the prior art, the drawings to be used in the embodiments will be briefly introduced below. Obviously, the drawings described below are only some embodiments of the

present disclosure, and for those of ordinary skill in the art, other drawings can also be obtained based on these drawings without any creative effort.

[0056] FIG. 1 is a schematic diagram of a system architecture provided by an embodiment of the present disclosure;

[0057] FIG. 2 is a flowchart of a first method provided by an embodiment of the present disclosure;

[0058] FIG. 3 is a schematic diagram of an interface provided by an embodiment of the present disclosure;

[0059] FIG. 4 is a flowchart of a second method provided by an embodiment of the present disclosure;

[0060] FIG. 5 is a flowchart of a third method provided by an embodiment of the present disclosure;

[0061] FIG. 6 is a flowchart of a fourth method provided by an embodiment of the present disclosure;

[0062] FIG. 7 is a schematic diagram of an electronic device provided by an embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0063] The technical solutions in the embodiments of the present disclosure will be clearly and completely described below with reference to the drawings in the embodiments of the present disclosure. Obviously, the described embodiments are only some of the embodiments of the present disclosure, not all of the embodiments. Based on the embodiments in the present disclosure, all other embodiments obtained by those of ordinary skill in the art fall within the scope of protection of the present disclosure.

[0064] In the embodiments of the present disclosure, AI (Artificial Intelligence) large-scale parameter model (which may be abbreviated as "AI large model") image processing capabilities such as intelligent "image cutout" may be utilized to achieve segmentation of image content of product elements contained in an image, and further, based on the segmented image content of the product elements, initiate matching calculation for product instances, and provide users with information on successfully matched product instances. Specifically, for merchants, for images containing multiple product elements, it is no longer necessary to perform hotspot area selection and link configuration; instead, such images can be directly published to a product information page (e.g., the store homepage or a product detail page, etc.). When a user browses such an image and needs to obtain information on a corresponding product instance for a particular product element therein, the user may perform a click or long-press operation at the position in

the image where the image content of that product element is located; thereafter, the AI large model may perform segmentation of the image content corresponding to the product element, and then, based on the segmented image content corresponding to the product element, perform matching calculation against product instances in the product instance collection, and the successfully matched product instance information may be provided to the user for display.

[0065] In the embodiments of the present disclosure, a "product element" refers to an element within an image that is related to a product. For example, if an image is a photograph taken of a model wearing an outfit, and the outfit includes a skirt, a cardigan, and an inner top, then the skirt, cardigan, and inner top are the product-related elements in the image — that is, elements that may be sold as products, but have not yet been associated with any specific product instance. A "product instance" refers to a product object that has already been published in the current product information service system, which has associated attributes such as a product ID, price, specifications, and detailed information, and is an object on which purchase operations can be performed. For example, a specific product published in a store is a "product instance." The embodiments of the present disclosure segment from an image the elements that may belong to products, and then match them to corresponding product instances in the current product information service system, so that users can perform operations such as purchasing or adding to a "shopping cart" based on these product instances.

[0066] Through the above approach, since the image content of product elements can be segmented from an image and matched against product instances, with information about successfully matched product instances being returned, even if a merchant user does not perform operations such as hotspot area selection or link configuration on the image during the store page "decoration" process, it is still possible to direct traffic to multiple products through the image. Furthermore, it is also possible to direct traffic to an even greater number of products. For example, under existing implementations, when a merchant decorates a store page and configures one link for each element in an image, traffic can only be directed to the product associated with that link. In the embodiments of the present disclosure, however, after segmenting the image content of a product element, multiple product instances may be matched — for example, not only the product instance with the highest matching degree for the image content, but also additional product instances with similar characteristics, such as multiple similar products within the same store, or even similar product instances matched across the entire platform, and so on. Therefore, more efficient traffic diversion can be achieved.

[0067] From a system architecture perspective, referring to FIG. 1, the embodiments of the present disclosure can provide functions related to product element segmentation, product instance matching, and the like within the product information service system. Requests initiated

by users through long-press operations and the like can be received on relevant pages of the client, after which the server can invoke a specific AI large model to perform tasks such as product element segmentation and product instance matching, and return the matching results to the client for display. For example, the client can display a search results page of product instances, and so on. Users can further browse each product instance displayed on the matching results page, and if there is a product instance that meets their needs, they can perform operations such as purchasing or adding to a "shopping cart."

[0068] The following provides a detailed introduction to the specific implementation solutions provided by the embodiments of the present disclosure.

[0069] Embodiment 1

[0070] First, Embodiment 1 of the present disclosure introduces specific interaction approaches primarily from the perspective of the client on the consumer side (i.e., from the perspective of a consumer user; in the embodiments of the present disclosure, a consumer user is referred to as a first user, and correspondingly, a seller user or merchant user is referred to as a second user), and provides a method for providing product information. Referring to FIG. 2, the method may specifically include:

[0071] S201: displaying a target image in a product information page, where the target image includes image content of at least one product element.

[0072] The product information page may include various types; for example, one type may be a product detail page for a specific product, in which a target image containing image content of at least one product element may be displayed. For example, if a certain product is a skirt, in order to display the effect of wearing the skirt, the product detail page includes a model wear photo, in which the skirt is coordinated with a cardigan and an inner top. In this case, the skirt, the cardigan, and the inner top are three different product elements in the image. While browsing such an image, a user may need to view the information of the product instance corresponding to the cardigan, and may even need to perform a purchase operation on it, and so on. Of course, if a target image contains image content of only one product element, the image content of that product element may also be segmented, and the subsequent matching operation for product instances may be performed.

[0073] Alternatively, the product information page may also be a product information aggregation page associated with a store, in which information about multiple products within the same store may be displayed, including cases where a single image is used to display the coordination or combination display effect of multiple different product elements. For such images, users may also need, during browsing, to view the information of the product instance corresponding to a certain product element, and may even need to make a purchase, and so on.

[0074] Alternatively, the product information page may also be a cross-store product information aggregation page, including a product recommendation feed page, or a marketing campaign venue page, and so on. Such pages may also include situations where a single image displays the coordinating or combination display effect of multiple different product elements, and so on.

[0075] S202: in response to a target operation performed by a first user on a target position in the target image, segmenting, by an artificial intelligence AI large-scale parameter model, the image content of the target product element associated with the target position.

[0076] If, while browsing the above image containing multiple product elements, a user needs to obtain information about the product instance corresponding to one of the product elements, the user can directly perform a target operation such as a long-press operation on a target position within the region where that product element is located in the image. Thereafter, the AI large-scale parameter model can segment the image content of the target product element associated with the target position.

[0077] The AI large model refers to a machine learning model with large-scale parameters and complex computational structures. These models are typically built from deep neural networks and have tens of billions or even hundreds of billions of parameters. AI large models are designed to improve the expressive power and predictive performance of models, enabling them to handle more complex tasks and data. Artificial intelligence systems based on AI large models can simulate human intelligent behavior, thinking, and cognitive processes through the use of computational models to achieve intelligent behavior. In other words, AI large models can provide explanations and simulations of human intelligence, and can also be used to build higher-level artificial intelligence systems.

[0078] Based on the above characteristics of AI large models, in the embodiments of the present disclosure, such AI large models can be used to segment the image content of product elements in images. Of course, in specific implementations, in order to improve the accuracy of segmentation, the AI large model can be trained in advance for the scenarios required by the embodiments of the present disclosure, so as to enhance its ability to recognize product elements. In addition, in order to enable the segmented product elements to be matched to corresponding product instances, images of multiple product instances across the entire platform and other scopes can be scanned and modeled in advance, keywords and other information can also be extracted, and these images, keywords, and the like can be used to train the AI large model, so that the AI large model has the ability to recognize product elements of various different categories and characteristics. Furthermore, the AI large model can preliminarily determine whether an element can be matched to a corresponding product instance, and then determine

whether the product element corresponding to the region currently operated on by the user can be segmented and whether subsequent product instance matching operations can be performed; if so, the specific segmentation processing is then performed.

[0079] It should be noted that, since the image content of a particular product element is being segmented from a combined image of multiple product elements, the image content of that product element may be occluded by other product elements or other elements in the image. For example, as shown at reference numeral 31 in FIG. 3(A), for the cardigan sweater, the back portion is occluded by the model's body or the inner top. In this case, if image content segmentation is performed directly from the original image, the image content of that product element may be incomplete. Therefore, in a preferred implementation mode, an AI large model or the like may also be used to perform image inpainting on the image content of the occluded portion of the segmented product element in the target image. This can also make the subsequent product instance matching results based on that product element more accurate. For example, for the cardigan sweater shown at reference numeral 31 in FIG. 3(A), after the user performs a long-press operation, the segmented and inpainted image content of that product element may be as shown at reference numeral 32 in FIG. 3(B), where the missing back portion of the image of the product element has been inpainted. The capability for this type of image inpainting may also be provided by an AI large model, and the AI large model may likewise be trained in advance using images and other materials related to various product elements to enhance its capability to perform image inpainting on the image content of various types of product elements.

[0080] S203: based on the segmented image content of the target product element, performing matching calculation against product instances in the product instance collection, and providing information on at least one successfully matched product instance.

[0081] After segmenting the image content of the target product element, matching calculation may be performed based on such image content with product instances in the product instance collection, so as to determine information on at least one successfully matched product instance and return it to the user. Here, a so-called product instance is a product that has been published to the product information service system, is associated with a unique identifier such as a product ID provided in the product information service system, and has product attributes defined in the product information service system.

[0082] In specific implementations, after the image content of the target product element is segmented, the above-mentioned matching-related processing for product instances may be automatically triggered, or alternatively, it may also be manually triggered by the user. There are also multiple ways for the user to manually trigger the process. For example, in one approach, after the image content corresponding to the target product element is segmented, a search

operation option for initiating a search or other operations may be provided at a position near the image content, and the user may trigger the specific matching process by clicking on the search operation option. In actual applications, when performing matching calculation for product instances, the specific search scope may also vary. For example, matching may be performed within a store, or matching may also be performed on a platform-wide scope, and so on. In the case where such search operation options are displayed, operation options for different search scopes may also be provided, so that matching calculation with product instances in a corresponding product instance collection can be performed within the user-selected search scope. For example, as shown at reference numeral 33 in FIG. 3(B), multiple different options such as "identical style within this store" and "identical style across the entire platform" may be provided, and the user may select one of the options according to their needs to initiate a search.

[0083] Alternatively, in another approach, if the current product information page has a search condition input control for initiating a product search, such as a search input field, then after segmenting the image content of the target product element, the image content of the target product element may be set to a draggable state, and the user may perform an operation of dragging the segmented image content of the target product element to the search condition input control, thereby triggering a specific search process, that is, the step of performing matching calculation with product instances in the product instance collection based on the segmented image content of the target product element. For example, as shown in FIG. 3(C), after the user performs a long-press operation on the image shown in FIG. 3(A) to segment the image content of the target product element, the user may drag that image content into the search input field indicated by 34 in FIG. 3(C), thereby triggering the search process.

[0084] In the aforementioned approach of automatically triggering the search process, the specific search scope may also be dynamically determined based on the type of the product information page from which the request is initiated. That is, different types of product information pages generally correspond to different contexts, and accordingly, the needs or demands of users may differ. For example, if the current product information page is a product detail page of a certain product instance, at this point, the specific target image contains the image content of that product instance as well as the image content of other product elements used to coordinate with that product instance, and the segmented target product element is one of those other product elements. In this case, the user may need to search for identical style/similar style products within the same store (i.e., product instances having identical or similar characteristics to the target product element), or may need to search for identical style/similar style products on a platform-wide scope. Therefore, matching calculation for product instances may be performed within the same store scope of the store to which the product belongs, or on a

platform-wide scope, and information about at least one successfully matched product instance may be provided. Of course, in the case of a platform-wide search, if there are also successfully matched identical style/similar style products within the store to which the current product belongs, those successfully matched identical style/similar style products within that store may be displayed with priority, and so on.

[0085] If the product information page is a product information aggregation page associated with a target store, the specific target image includes at least one product element from the target store and may also include product elements from stores other than the current store. In this case, it is also possible to perform matching calculation of product instances within the same store scope of the target store or on a platform-wide scope, and provide information on at least one successfully matched product instance. Alternatively, it is also possible to preferentially search for identical style/similar style product instances within the same store scope, and if no matching product instances exist within the store, or the number of matching product instances is relatively small, then search for identical style/similar style product instances on a platform-wide scope, and so on.

[0086] In addition, if the product information page is a cross-store product information aggregation page, such as the client home page containing a product recommendation feed, or the event venue page of certain marketing campaigns, then it is possible to perform matching calculation of product instances on a platform-wide scope, and provide information on at least one successfully matched product instance.

[0087] Specifically, when performing matching calculation of product instances based on the segmented image content of the product element, there can be multiple implementation approaches. For example, in one approach, keyword recognition can first be performed based on the segmented image content of the product element, and then matching of product instances can be performed based on the keywords. Here, the matching of product instances based on keywords can be implemented in a traditional manner, for example, by determining the matching degree between the title of the product instance, the text content in the graphic and textual details, and the like, and the extracted keywords, to determine the matched product instances. Alternatively, in another approach, the process of product matching can also be performed by an AI large model. In this case, since an AI large model typically requires input prompt text (Prompt), which is a type of text input used to guide the large model to generate specific content, its function is to tell the large model what it is expected to do, and to provide it with necessary information and constraints, and so on. Therefore, after performing keyword recognition on the image content of the segmented target product element, it is also possible to construct prompt text expressed in natural language for conducting dialogue with the AI large-scale parameter

model using the recognized keywords, so as to determine, from the product instance collection, at least one matched product instance through the AI large-scale parameter model.

[0088] In different types of scenarios, specifically during keyword recognition, different subdivision granularities of keywords may correspond to different scenarios, and when constructing prompt text, constraint conditions with different degrees of restriction may also be set in the prompt text. For example, in scenarios such as product detail pages and store pages, there may be a greater need to match identical or similar style product instances within the same store. In this case, the granularity of keywords may be relatively fine. For example, for the product elements segmented in FIG. 3(B), the granularity may be refined to style, color, material, fabric type, collar type, whether there are buttons, and so on. When constructing prompt text, constraint conditions with a higher degree of restriction may also be set, for example, "I want to find a cardigan sweater within the same store, short style, red, cashmere, round neck, with buttons." In public domain scenarios such as the client homepage, there may be a greater need to match identical or similar style product instances across the entire platform. In this case, the granularity of keywords may be relatively coarse, for example, only down to the category level. When constructing prompt text, the constraint conditions may also be relatively loose, for example, "I want to find a cardigan sweater, short style," and so on.

[0089] In summary, through the embodiments of the present disclosure, during the process of displaying a target image in a product information page, if the target image includes image content of multiple product elements, the user can perform a target operation on a target area in the target image. Correspondingly, the AI (artificial intelligence) large-scale parameter model can segment the image content of the target product element associated with the target area. Thereafter, based on the segmented image content of the target product element, matching calculation can be performed against product instances in the product instance collection, and information about at least one successfully matched product instance can be provided. In this way, traffic can be directed from a target image containing image content of multiple product elements to specific product instances, without relying on operations such as hotspot area selection and link configuration performed by the publisher of the target image. In addition, the successfully matched product instances may be one or more, so compared to the prior art where traffic can only be directed to a single product corresponding to a pre-configured link, traffic diversion efficiency for product instances can also be improved, while providing users with a new and fast way to obtain product search results.

[0090] Embodiment 2

[0091] In the foregoing Embodiment 1, the specific interaction approaches were introduced primarily from the perspective of the first user. In specific implementations, an implementation

solution for conducting product searches based on image content segmented by an AI large model can also be provided. That is, in the prior art, users either enter keywords to initiate a product search, or take a photo of a physical product or select an image from a local album before initiating a product search. However, in Embodiment 2 of the present disclosure, a user can click or long-press a position in a specific target image from a specific product information page. Correspondingly, the AI large model can segment the image content of the target product element associated with that position, after which the user can drag the segmented image content to the search input field on the current product information page to initiate a product search request.

[0092] Specifically, Embodiment 2 provides a product search method. Referring to FIG. 4, the method may include:

[0093] S401: displaying a target image in a product information page, where the target image includes image content of at least one product element;

[0094] S402: in response to a click or long-press operation performed by a first user on a target position in the target image, segmenting, by an AI large-scale parameter model, the image content of the target product element associated with the target position;

[0095] S403: in response to an operation of the first user dragging the segmented image content to the search input control of the product information page, initiating a request for product search based on the segmented image content, and providing corresponding product search results.

[0096] Embodiment 3

[0097] This embodiment 3 also provides another product search method from the perspective of a first user performing a product search. Unlike embodiment 2, after the user clicks or long-presses a position in an image and the AI large model segments the image content of the target product element from it, search operation options for initiating a product search request can be provided directly at positions near the image content, so that the first user can initiate a search request through such operation options without having to drag the segmented image content to the search input field. Specifically, as shown in FIG. 5, the method may include:

[0098] S501: displaying a target image in a product information page, where the target image includes image content of at least one product element;

[0099] S502: in response to a click or long-press operation performed by a first user at a target position in the target image, segmenting the image content of the target product element associated with the target position by using an AI large-scale parameter model;

[0100] S503: providing a search operation option for initiating a product search request;

[0101] S504: in response to a product search request initiated by the first user through the search operation option, providing search results of a product search performed based on the

image content of the segmented target product element.

[0102] Specifically, the search operation options include different search operation options corresponding to multiple different search scopes, for example, "identical style within the store" or "identical style across the entire platform," and so on. In this way, product search results can be provided within the search scope selected by the user.

[0103] Embodiment 4

[0104] This fourth embodiment primarily from the perspective of a second user (i.e., a merchant or seller user, etc.) provides a store page design method. Here, since the capability to perform image segmentation and to carry out product matching or product search based on the segmented image is available, when a second user is performing store page design (also referred to as store page "decoration," which includes page layout design for products listed for display in the store, marketing and promotional content, etc.), for a target image that needs to display the coordination relationship or coordination effect among multiple products, it is no longer necessary to configure hotspot links one product at a time; instead, the target image can be directly placed in a resource slot on the store page. Of course, in order to allow the second user to more intuitively perceive the functionality provided by the embodiments of the present disclosure for searching based on AI-segmented image content, and also to verify the effect or accuracy of AI segmentation, after the second user uploads a target image, the AI large model may also recognize the image content of multiple target product elements that can be segmented from the target image and present this information to the second user. In this way, after the user confirms the segmentation result, the target image may be formally published to the store page. Specifically, this fourth embodiment provides a store page design method; referring to FIG. 6, the method may include:

[0105] S601: receiving a target image uploaded by a second user during a store page design process, where the target image includes image content of at least one product element;

[0106] S602: recognizing and prompting the image content of multiple target product elements that can be segmented from the target image by using an AI large-scale parameter model;

[0107] S603: after receiving a confirmation operation from the second user regarding the image content segmentation result, publishing the target image to the store page, so that while a first user is browsing the store page, in response to a target operation performed by the first user at a target position in the target image, the AI large-scale parameter model segments the image content of the target product element associated with the target position, and product search results are provided based on the image content of the segmented target product element.

[0108] For parts not described in detail in embodiments 2 through 4 above, reference may be made to embodiment 1 and other parts of this specification, and details are not repeated here.

[0109] It should be noted that the embodiments of the present disclosure may involve the use of user data. In practical applications, user-specific personal data may be used in the solutions described herein within the scope permitted by applicable laws and regulations, provided that the requirements of applicable laws and regulations of the relevant jurisdiction are met (for example, the user explicitly consents, the user is effectively notified, etc.).

[0110] Corresponding to embodiment 1, the embodiments of the present disclosure also provide an apparatus for providing product information, and the apparatus may include:

[0111] an image display unit, configured to display a target image in a product information page, where the target image includes image content of at least one product element;

[0112] an image content segmentation unit, configured to, in response to a target operation performed by a first user at a target position in the target image, segment the image content of the target product element associated with the target position by using an artificial intelligence AI large-scale parameter model;

[0113] a product matching unit, configured to perform matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, and provide information of at least one successfully matched product instance.

[0114] The apparatus may further include:

[0115] an image completion unit, configured to, during the process of segmenting the image content of the target product element, perform image inpainting on the occluded portion of the target product element in the target image by using the AI large-scale parameter model, so as to perform matching calculation against product instances in the product instance collection based on the inpainted image content.

[0116] In addition, the apparatus may further comprise:

[0117] a search operation option providing unit, configured to, after segmenting the image content of the target product element, provide operation options regarding multiple selectable search scopes, so as to perform matching calculation with product instances in a corresponding product instance collection within a user-selected search scope.

[0118] Alternatively, if the product information page further includes a search condition input control for initiating a product search, the product matching unit may specifically be configured to:

[0119] After segmenting the image content of the target product element, in response to an operation of dragging the segmented image content of the target product element to the search condition input control, triggering the step of performing matching calculation based on the segmented image content of the target product element against product instances in the product

instance collection.

[0120] The at least one successfully matched product instance comprises: a product instance having identical or similar characteristics to the target product element.

[0121] Specifically, the product information page includes a product detail page of a certain product, the target image includes image content of the product as well as image content of other product elements used to coordinate with the product, and the segmented target product element is one of the other product elements;

[0122] In this case, the product matching unit may specifically be configured to :

[0123] performing matching calculation of product instances within the same store scope to which the product belongs or within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0124] Alternatively, the product information page includes a product information aggregation page associated with a target store, and the target image includes at least one product element in the target store;

[0125] In this case, the product matching unit may specifically be configured to :

[0126] performing matching calculation of product instances within the same store scope of the target store or within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0127] Alternatively, the product information page includes a cross-store product information aggregation page;

[0128] In this case, the product matching unit may specifically be configured to :

[0129] performing matching calculation of product instances within a platform-wide scope, and providing information on at least one successfully matched product instance.

[0130] Specifically, the product matching unit may specifically be configured to

[0131] performing keyword recognition on the segmented image content of the target product element;

[0132] constructing, using the recognized keywords, prompt text expressed in natural language for conducting dialogue with the AI large-scale parameter model, so as to determine, through the AI large-scale parameter model, at least one matched product instance from the product instance collection.

[0133] According to different types of the product information page, different subdivision granularities are used during keyword recognition, and different degrees of restrictive conditions are used when constructing the prompt text.

[0134] Corresponding to Embodiment 2, the embodiments of the present disclosure further provide a product search apparatus, which may comprise:

[0135] an image display unit, configured to display a target image in a product information page, where the target image includes image content of at least one product element;

[0136] an image content segmentation unit, configured to, in response to a click or long-press operation performed by a first user on a target position in the target image, segment the image content of the target product element associated with the target position by using an AI large-scale parameter model;

[0137] a first search unit, configured to, in response to an operation by the first user of dragging the segmented image content to a search input control of the product information page, initiate a request to perform a product search based on the segmented image content, and provide corresponding product search results.

[0138] Corresponding to Embodiment 3, the embodiments of the present disclosure further provide a product search apparatus, which may comprise:

[0139] an image display unit, configured to display a target image in a product information page, where the target image includes image content of at least one product element;

[0140] an image content segmentation unit, configured to, in response to a click or long-press operation performed by a first user on a target position in the target image, segment the image content of the target product element associated with the target position by using an AI large-scale parameter model;

[0141] a search operation option providing unit, configured to provide a search operation option for initiating a product search request;

[0142] a second search unit, configured to, in response to a product search request initiated by the first user via the search operation option, provide search results for a product search performed based on the image content of the segmented target product element.

[0143] The search operation option comprises different search operation options corresponding to a plurality of different search scopes, so as to provide product search results within a user-selected search scope.

[0144] Corresponding to Embodiment 4, the embodiments of the present disclosure further provide a store page design apparatus, which may comprise:

[0145] an image receiving unit, configured to receive a target image uploaded by a second user during a store page design process, where the target image is used to display the coordination relationship or coordination effect among multiple product elements;

[0146] a prompting unit, configured to recognize and prompt the image content of the multiple target product elements that can be segmented from the target image by using an AI large-scale parameter model;

[0147] an image publishing unit, configured to, after receiving a confirmation operation by the

second user on the image content segmentation result, publish the target image to the store page, so that during the first user's browsing of the store page, in response to a target operation performed by the first user on a target position in the target image, the image content of the target product element associated with the target position is segmented by the AI large-scale parameter model, and product search results are provided based on the image content of the segmented target product element.

[0148] In addition, the embodiments of the present disclosure further provide a computer-readable storage medium having a computer program stored thereon, which when executed by a processor, implements the steps of any one of the method embodiments described above.

[0149] And an electronic device, comprising:

[0150] one or more processors; and

[0151] a memory associated with the one or more processors, the memory configured to store program instructions that, when read and executed by the one or more processors, perform the steps of the method described in any one of the foregoing method embodiments.

[0152] Here, FIG. 7 exemplarily shows the architecture of an electronic device; for example, device 700 may be a mobile phone, a computer, a digital broadcast terminal, a messaging device, a gaming console, a tablet device, a medical device, a fitness device, a personal digital assistant, an aircraft, or the like.

[0153] Referring to FIG. 7, device 700 may include one or more of the following components: processing component 702, memory 704, power component 706, multimedia component 708, audio component 710, input/output (I/O) interface 712, sensor component 714, and communication component 716.

[0154] Processing component 702 generally controls the overall operation of device 700, such as operations associated with display, telephone calls, data communications, camera operations, and recording operations. Processing component 702 may include one or more processors 720 to execute instructions to complete all or part of the steps of the method provided by the technical solution of the present disclosure. In addition, processing component 702 may include one or more modules to facilitate interaction between processing component 702 and other components. For example, processing component 702 may include a multimedia module to facilitate interaction between multimedia component 708 and processing component 702.

[0155] Memory 704 is configured to store various types of data to support operation of device 700. Examples of such data include instructions for any application or method operating on device 700, contact data, phonebook data, messages, pictures, videos, and the like. Memory 704 may be implemented by any type of volatile or non-volatile storage device or a combination

thereof, such as static random access memory (SRAM), electrically erasable programmable read-only memory (EEPROM), erasable programmable read-only memory (EPROM), programmable read-only memory (PROM), read-only memory (ROM), magnetic memory, flash memory, magnetic disk, or optical disk.

[0156] Power component 706 provides power to the various components of device 700. Power component 706 may include a power management system, one or more power supplies, and other components associated with generating, managing, and distributing power for device 700.

[0157] The multimedia component 708 includes a screen that provides an output interface between the device 700 and a user. In some embodiments, the screen may include a liquid crystal display (LCD) and a touch panel (TP). If the screen includes a touch panel, the screen may be implemented as a touch screen to receive input signals from a user. The touch panel includes one or more touch sensors to sense touches, swipes, and gestures on the touch panel. The touch sensor may sense not only the boundary of a touch or swipe action, but also the duration and pressure associated with the touch or swipe operation. In some embodiments, the multimedia component 708 includes a front-facing camera and/or a rear-facing camera. When the device 700 is in an operating mode, such as a shooting mode or a video mode, the front-facing camera and/or rear-facing camera may receive external multimedia data. Each front-facing camera and rear-facing camera may be a fixed optical lens system or one having focal length and optical zoom capabilities.

[0158] The audio component 710 is configured to output and/or input audio signals. For example, the audio component 710 includes a microphone (MIC) that, when the device 700 is in an operating mode such as a call mode, a recording mode, or a voice recognition mode, is configured to receive external audio signals. The received audio signals may be further stored in the memory 704 or transmitted via the communication component 716. In some embodiments, the audio component 710 further includes a speaker for outputting audio signals.

[0159] The input/output (I/O) interface 712 provides an interface between the processing component 702 and peripheral interface modules, which may be a keyboard, a click wheel, buttons, and the like. These buttons may include, but are not limited to: a home button, a volume button, a start button, and a lock button.

[0160] The sensor component 714 includes one or more sensors for providing status assessment of the device 700 in various aspects. For example, the sensor component 714 may detect the open/closed state of the device 700, the relative positioning of components such as the display and keypad of the device 700; the sensor component 714 may also detect a change in position of the device 700 or a component of the device 700, the presence or absence of contact between a user and the device 700, the orientation or acceleration/deceleration of the device 700,

and temperature changes of the device 700. The sensor component 714 may include a proximity sensor configured to detect the presence of nearby objects without any physical contact. The sensor component 714 may also include a light sensor, such as a CMOS (Complementary Metal-Oxide-Semiconductor) or CCD (Charge-Coupled Device) image sensor, for use in imaging applications. In some embodiments, the sensor component 714 may further include an acceleration sensor, a gyroscope sensor, a magnetic sensor, a pressure sensor, or a temperature sensor.

[0161] The communication component 716 is configured to facilitate wired or wireless communication between the device 700 and other devices. The device 700 can access a wireless network based on communication standards, such as WiFi (Wireless Fidelity), or mobile communication networks such as 2G (Second Generation), 3G (Third Generation), 4G (Fourth Generation)/LTE (Long Term Evolution), 5G (Fifth Generation), and the like. In an exemplary embodiment, the communication component 716 receives a broadcast signal or broadcast-related information from an external broadcast management system via a broadcast channel. In an exemplary embodiment, the communication component 716 further includes a near field communication (NFC) module to facilitate short-range communication. For example, the NFC module may be implemented based on radio frequency identification (RFID) technology, Infrared Data Association (IrDA) technology, ultra-wideband (UWB) technology, Bluetooth (BT) technology, and other technologies.

[0162] In an exemplary embodiment, the device 700 may be implemented by one or more application-specific integrated circuits (ASICs), digital signal processors (DSPs), digital signal processing devices (DSPDs), programmable logic devices (PLDs), field-programmable gate arrays (FPGAs), controllers, microcontrollers, microprocessors, or other electronic components, for executing the methods described above.

[0163] In an exemplary embodiment, there is also provided a non-transitory computer-readable storage medium comprising instructions, such as the memory 704 comprising instructions, executable by the processor 720 of the device 700 to complete the method provided by the technical solution of the present disclosure. For example, the non-transitory computer-readable storage medium may be a ROM, a random access memory (RAM), a CD-ROM, a magnetic tape, a floppy disk, an optical data storage device, or the like.

[0164] The embodiments of the present disclosure further provide a computer program product comprising a computer program/computer-executable instructions that, when executed by a processor in an electronic device, implement the steps of the method described in any one of the foregoing method embodiments.

[0165] From the description of the above embodiments, those skilled in the art can clearly

understand that the present disclosure may be implemented by means of software plus a necessary general hardware platform. Based on such understanding, the technical solution of the present disclosure, in essence or the part that contributes to the prior art, may be embodied in the form of a software product, and the computer software product may be stored in a storage medium, such as a ROM/RAM, a magnetic disk, an optical disk, or the like, and includes a number of instructions for causing a computer device (which may be a personal computer, a server, or a network device, etc.) to execute the methods described in the various embodiments or certain parts of the embodiments of the present disclosure.

[0166] Each embodiment in this specification is described in a progressive manner, and the same or similar parts among the various embodiments may be referred to each other, with each embodiment focusing on the differences from other embodiments. In particular, for system or system embodiments, since they are basically similar to method embodiments, the description is relatively simple, and relevant parts may be referred to the partial description of the method embodiments. The systems and system embodiments described above are merely illustrative, where the units described as separate components may or may not be physically separated, and the components shown as units may or may not be physical units, i.e., they may be located in one place or distributed over multiple network units. Some or all of the modules may be selected according to actual needs to achieve the purpose of the solution of the present embodiment. Those of ordinary skill in the art can understand and implement the same without any creative effort.

[0167] The foregoing has provided a detailed introduction to the method for providing product information and the electronic device provided by the present disclosure. Specific examples have been used herein to illustrate the principles and implementations of the present disclosure. The description of the above embodiments is only intended to help understand the method of the present disclosure and its core ideas. At the same time, for those of ordinary skill in the art, based on the ideas of the present disclosure, there will be changes in the specific implementations and scope of application. In summary, the content of this specification should not be construed as limiting the present disclosure.

CLAIMS

1. A method for providing product information, comprising:

displaying a target image in a product information page, wherein the target image includes image content of at least one product element;

in response to a target operation performed by a first user at a target position in the target image, segmenting, by an artificial intelligence (AI) large-scale parameter model, image content of a target product element associated with the target position;

performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, and providing information of at least one successfully matched product instance.

2. The method of claim 1, further comprising:

during the process of segmenting the image content of the target product element, performing, by using the AI large-scale parameter model, image inpainting on an occluded portion of the target product element in the target image, so as to perform matching calculation against product instances in a product instance collection based on the inpainted image content.

3. The method of claim 1 or 2, further comprising:

after segmenting the image content of the target product element, providing operation options regarding multiple selectable search scopes, so as to perform matching calculation against product instances in a corresponding product instance collection within a user-selected search scope.

4. The method of claim 1, wherein

the product information page further comprises a search condition input control for initiating a product search;

the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

after segmenting the image content of the target product element, in response to an operation of dragging the segmented image content of the target product element to the search condition input control, triggering the step of performing matching calculation based on the segmented image content of the target product element against product instances in the product instance collection.

5. The method of any one of claims 1 to 4, wherein

the at least one successfully matched product instance comprises: a product instance having identical or similar characteristics to the target product element.

6. The method of any one of claims 1 to 5, wherein

the product information page comprises a product detail page of a product, the target image includes image content of the product and image content of other product elements used for coordination with the product, and the segmented target product element is one of the other product elements;

the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

performing matching calculation of product instances within the same store scope to which the product belongs or within a platform-wide scope, and providing information on at least one successfully matched product instance.

7. The method of any one of claims 1 to 5, wherein

the product information page comprises a product information aggregation page associated with a target store, and the target image includes at least one product element in the target store;

the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

performing matching calculation of product instances within the same store scope of the target store or within a platform-wide scope, and providing information on at least one successfully matched product instance.

8. The method of any one of claims 1 to 5, wherein

the product information page comprises a cross-store product information aggregation page;

the performing matching calculation based on the segmented image content of the target product element against product instances in a product instance collection, comprises:

performing matching calculation of product instances within a platform-wide scope, and providing information on at least one successfully matched product instance.

9. The method of any one of claims 1 to 8, wherein

the performing matching calculation based on the segmented image content of the target product element against product instances in the product instance collection comprises:

performing keyword recognition on the segmented image content of the target product element;

constructing, using the recognized keywords, prompt text expressed in natural language for conducting dialogue with the AI large-scale parameter model, so as to determine, through the AI large-scale parameter model, at least one matched product instance from the product instance collection.

10. The method of claim 9, wherein

based on different types of the product information page, different subdivision granularities are used in keyword recognition, and different levels of restrictive conditions are used in constructing prompt text.

11. A product search method, comprising:

displaying a target image in a product information page, where the target image includes image content of at least one product element;

in response to a click or long-press operation performed by a first user on a target position in the target image, segmenting, through an AI large-scale parameter model, the image content of the target product element associated with the target position;

in response to an operation of the first user dragging the segmented image content to a search input control of the product information page, initiating a request for performing a product search based on the segmented image content, and providing corresponding product search results.

12. A product search method, comprising:

displaying a target image in a product information page, where the target image includes image content of at least one product element;

in response to a click or long-press operation performed by a first user on a target position in the target image, segmenting, through an AI large-scale parameter model, the image content of the target product element associated with the target position;

providing a search operation option for initiating a product search request;

in response to a product search request initiated by the first user through the search operation option, providing search results of a product search performed based on the segmented image content of the target product element.

13. The method of claim 12, wherein

the search operation option comprises different search operation options corresponding to multiple different search scopes, so as to provide product search results within a user-selected search scope.

14. A store page design method, comprising:

receiving a target image uploaded by a second user during a store page design process, the target image being used to display coordination relationships or coordination effects among a plurality of product elements;

recognizing and prompting image content of a plurality of target product elements segmentable from the target image through an AI large-scale parameter model;

after receiving a confirmation operation from the second user on the image content segmentation result, publishing the target image to the store page, so that during the first user's browsing of the store page, in response to a target operation performed by the first user on a target position in the target image, the image content of the target product element associated with the target position is segmented by the AI large-scale parameter model, and product search results are provided based on the segmented image content of the target product element.

15. A computer-readable storage medium having a computer program stored thereon, wherein the program implements the steps of the method according to any one of claims 1 to 14 when executed by a processor.

16. An electronic device, comprising:

one or more processors; and

a memory associated with the one or more processors, wherein the memory is configured to store program instructions that, when read and executed by the one or more processors, perform the steps of the method according to any one of claims 1 to 14.

17. A computer program product comprising a computer program /computer-executable instructions, wherein the computer program/computer-executable instructions, when executed by a processor in an electronic device, implement the steps of the method according to any one of claims 1 to 14.