

APPARATUS AND METHOD FOR PROVIDING CUSTOMIZED SERVICE

CROSS-REFERENCE TO RELATED APPLICATION

5 This application claims the benefit of Korean Patent Application No. 10-2024-0048950, filed on April 11, 2024, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein in its entirety by reference.

BACKGROUND

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1. Field

[0001] The disclosure relates to an apparatus and method for providing a user customized service.

2. Description of the Related Art

15 [0002] In light of the recent trend of rapidly increasing demand for Korean cosmetics worldwide under the name of K-beauty, the need to develop a market for exporting Korean cosmetics overseas has emerged. However, it is difficult to select an appropriate product for cosmetics because it is difficult to identify customized cosmetics for each user, information is not compared between numerous products, a
20 cosmetic product is a chemical composition and thus it is difficult for the general public to easily know ingredients of each cosmetic product in detail, and there is language limitations.

[0003] The aforementioned background technology is technical information possessed by the inventor for derivation of the disclosure or acquired by the
25 inventor during the derivation of the disclosure, and is not necessarily prior art disclosed to the public before the application of the disclosure.

SUMMARY

[0004] An aspect of the disclosure is to accurately analyze user's skin type and a
30 related issue, and recommend a most suitable beauty product.

[0005] An aspect of the disclosure is to gain user's trust and reduce uncertainty in selecting a beauty product by recommending a beauty product based on an experience and recommendation of a trendsetter.

5 [0006] Aspects of the disclosure are not limited to those mentioned above, and other aspects and advantages of the disclosure, which are not mentioned, will be understood from descriptions below and will become more apparent by embodiments of the disclosure. In addition, the aspects and advantages of the disclosure will be realized through means and combinations thereof in the claims.

10 [0007] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented embodiments of the disclosure.

[0008] According to an embodiment, a method of providing a user customized service, performed by a processor of an apparatus for providing a user customized service, includes generating user profile information personalized based on a result
15 of receiving user input information, extracting a plurality of pieces of trendsetter profile information similar to the user profile information, based on pre-stored profile information of trendsetters, extracting, from a plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile
20 information, a trendsetter beauty product corresponding to a recommendation desired beauty product included in the user input information, and determining the same as a recommendation result beauty product, and generating user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product.

25 [0009] According to an embodiment, an apparatus for providing a user customized service, includes a processor, and a memory operatively connected to the processor and storing at least one code performed by the processor, wherein the memory stores the at least one code which, when executed through the processor, causes the processor to generate user profile information personalized based on a result of
30 receiving user input information, extract a plurality of pieces of trendsetter profile

information similar to the user profile information, based on pre-stored profile information of trendsetters, extract, from a plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile information, a trendsetter beauty product corresponding to a recommendation desired beauty product included in the user input information, and determine the same as a recommendation result beauty product, and generate user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product.

[0010] In addition, provided are other methods, other apparatuses and other systems for implementing the disclosure, and computer-readable recording media having stored therein computer programs for executing the methods.

[0011] Other aspects, features, and advantages may become clear from the following drawings, the claims, and the detailed description of the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The above and other aspects, features, and advantages of certain embodiments of the disclosure will be more apparent from the following description taken in conjunction with the accompanying drawings, in which:

[0013] FIG. 1 is a diagram of an example of an environment for providing a user customized service, according to an embodiment;

[0014] FIG. 2 is a block diagram for schematically describing a configuration of an apparatus for providing a user customized service, according to an embodiment;

[0015] FIGS. 3 and 4 are diagrams of examples for describing provision of a user customized service, according to an embodiment; and

[0016] FIG. 5 is a flowchart of a method of providing a user customized service, according to an embodiment.

DETAILED DESCRIPTION

[0017] As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. Expressions such as "at least one of," when preceding a list of elements, modify the entire list of elements and do not modify the individual elements of the list.

5 [0018] Advantages and features of the disclosure and methods of accomplishing the same may be understood more readily by reference to the following detailed description of the embodiments and the accompanying drawings. However, it should be understood that the disclosure is not limited to the embodiments presented below, but may be implemented in various different forms, and include
10 all transformations, equivalents, and substitutes included in the spirit and scope of the disclosure. The embodiments presented below are provided to complete the disclosure and to fully inform one of ordinary skill in the art of the scope of the disclosure. In the description of the disclosure, certain detailed explanations of related art are omitted when it is deemed that they may unnecessarily obscure the
15 essence of the disclosure.

[0019] In the present specification, the term "beauty" may include anything related to enhancing and maintaining attraction or beauty of appearance. Beauty is not simply limited to appearance but includes overall health and wellbeing of an individual, and thus may encompass wide ranges of topics and activities related to
20 beauty in terms of physical, mental and emotional aspects. Products related to such beauty may include skin care products for maintaining and improving health and beauty of skin. The skin care products may include products that cleanse, moisturize, nourish, and address specific skin problems. Also, the products related to beauty may include makeup products that enhance appearance and highlight
25 certain features. The makeup products may include foundation, eyeshadows, lipsticks, and the like. The products related to beauty may include hair care products that maintain and improve health and beauty of hair. The hair care products may include shampoos, conditioners, hair masks, styling products, and the like. The products related to beauty may include body care products that care for and protect
30 skin throughout a body. The body care products may include body lotion, body

wash, body scrub, and the like. The products related to beauty may include nail care products that maintain and improve health and beauty of fingernails and toenails. The nail care products may include manicures, pedicures, nail supplements, and the like. The products related to beauty may include perfumes that improve scent of an individual. The perfumes may include eau de parfum, eau de toilette, and the like. In addition, the products related to beauty may include wellness and lifestyle products that enhance overall beauty and wellbeing, including physical and mental health. The wellness and lifestyle products may include products that help manage nutrition, exercise, and stress.

10 [0020] In the present specification, the term "trendsetter" may refer to a person or group that leads a new style, product, or culture, introduces the same to the public, and draw popularity. Trendsetters may be used for individuals or organizations that create new trends in various fields, such as fashion, technology, beauty, art, and lifestyle, and play roles in attracting public interest and acceptance. In the present
15 specification, the trendsetters may include influencers. Influencers may refer to individuals who influence the public primarily through social media or other online platforms. Influencers may have power to influence opinions, actions, and purchasing decisions through strong connections with followers or subscribers. Influencers may operate on various platforms, and each platform may influence
20 how the influencers create and share content. Here, platforms may include Instagram, YouTube, TikTok, Twitter, blogs, and the like. Influencers may produce various types of content to communicate with followers. Such content may be in various formats, such as photographs, videos, blog posts, and live streams, and may cover various topics, such as fashion, beauty, fitness, travel, cooking, and
25 technology. Influencers may influence their followers or subscribers. Influencers may gain trust of followers, based on their experience, expertise, style, or personality. Accordingly, influencers may have influence on product recommendations, brand awareness improvement, and suggestion of opinions on social issues. Types of influencers may include micro-influencers, macro-
30 influencers, mega-influencers, and celebrity influencers. Micro-influencers are

generally influencers with thousands to tens of thousands of followers and may have deep expertise and high engagement in a specific field or topic. Macro-influencers are influencers with hundreds of thousands of followers and may influence the wider public. Mega-influencers or celebrity influencers are famous people with million followers and may exert a very wide range of influence. Influencers represent a new form of fame and influence in the digital age, and may play an important role in communicating with the public and influencing their thoughts and actions through individual creativity and individuality. A trendsetter used hereinafter may refer to a micro-influencer, a macro-influencer, a mega-influencer, or a celebrity influencer.

[0021] Hereinafter, one or more embodiments according to the disclosure will be described in more detail with reference to the accompanying drawings. Those components that are the same or are in correspondence with each other are rendered the same reference numeral regardless of the figure number, and redundant explanations are omitted.

[0022] FIG. 1 is a diagram of an example of an environment 1 for providing a user customized service, according to an embodiment. Referring to FIG. 1, the environment 1 may include an apparatus 100 for providing a user customized service, a user terminal 200, and a network 300.

[0023] The apparatus 100 may generate user profile information personalized based on a result of receiving user input information. According to an embodiment, the user input information may include information input by a user, based on request information from the apparatus 100.

[0024] According to an embodiment, the user inputting information may indicate that the apparatus 100 provides the request information to the user terminal 200 and the user operates the user terminal 200 to generate response information to the request information.

[0025] The request information provided by the apparatus 100 may include information requesting a response to a survey, information requesting a photograph of the user's face by using the user terminal 200, and information requesting input

of a recommendation desired beauty product. Hereinafter, the request information provided by the apparatus 100 to the user terminal 200 will be referred to as first request information.

5 [0026] According to an embodiment, the user profile information may include results of classifying a plurality of first categories and one or more keywords included in the plurality of first categories through analysis of the received user input information, and assigning scores to respective keywords. Here, when the user profile information is generated, information requesting a beauty product to be recommended may be excluded.

10 [0027] The apparatus 100 may extract a plurality of pieces of trendsetter profile information similar to the user profile information, based on pre-stored profile information of trendsetters.

[0028] According to an embodiment, the apparatus 100 may generate profile information for the user terminal 200, based on a result of receiving trendsetter input information. According to an embodiment, the trendsetter input information may include information input by a trendsetter, based on second request information of the apparatus 100. According to an embodiment, the trendsetter inputting information may indicate that the apparatus 100 provides the second request information to a trendsetter terminal (not shown) and the trendsetter
15 operates the trendsetter terminal to generate response information to the second request information.

[0029] According to an embodiment, the second request information provided by the apparatus 100 may include information requesting a response to a survey, information requesting a photograph of the trendsetter's face by using the trendsetter
25 terminal, information requesting input of experience information of the trendsetter for one or more beauty products, and information requesting loading of the experience information of the trendsetter, which has been already generated for one or more beauty products. According to an embodiment, the trendsetter profile information may include results of classifying a plurality of second categories and
30 one or more keywords included in the plurality of second categories through

analysis of the received trendsetter input information, and assigning scores to respective keywords. Here, when generating the trendsetter profile information, the information requesting input of the experience information of the trendsetter for one or more beauty products and the information requesting loading of the experience information of the trendsetter, which has been already generated for one or more beauty products, may be excluded. The apparatus 100 may store such trendsetter profile information in a memory 130 of FIG. 2.

[0030] The apparatus 100 may extract a plurality of pieces of trendsetter profile information similar to the user profile information, based on profile information of trendsetters pre-stored in the memory 130 of FIG. 2.

[0031] The apparatus 100 may extract a trendsetter beauty product corresponding to the recommendation desired beauty product included in the user input information, from a plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the extracted plurality of pieces of trendsetter profile information, and determine the trendsetter beauty product as a recommendation result beauty product.

[0032] The apparatus 100 may generate user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product, and provide the same to the user terminal 200.

[0033] The apparatus 100 may combine various pieces of insight information generated through analysis of the user input information, the trendsetter profile information, and crawling information related to the recommendation result beauty product to generate the basis for determining the recommendation result beauty product. The basis for determining the recommendation result beauty product may be generated based on information obtained from various information sources, such as characteristics, efficacy, an actual usage experience of a trendsetter, and user reviews of a beauty product.

[0034] The apparatus 100 may provide a personalized shopping experience to each user by recommending a customized beauty product, based on the user's profile

information and preferences. In this regard, a user may discover a product that better suits his/her skin type, interests, and beauty goals.

[0035] The apparatus 100 may significantly improve credibility of product recommendation by generating the user customized beauty product information by using insight information obtained by analyzing an experience of a trendsetter and the crawling information. The user may make a more trustworthy decision through product information based on a direct experience of a trendsetter and public evaluations.

[0036] The apparatus 100 may support the user to quickly and easily find a product suitable for him/her in a complex beauty product market. The apparatus 100 provides user customized recommendation information including the basis for determining the recommendation result beauty product, thereby allowing the user to save time and effort required to compare and analyze various options when selecting a product.

[0037] According to an embodiment, the apparatus 100 may exist independently in the form of a server or may be mounted on the user terminal 200 by implementing a user customized service providing function provided by the apparatus 100 in the form of an application.

[0038] Also, the apparatus 100 may be a database server that provides data required to apply various artificial intelligence algorithms. The apparatus 100 may generate the user customized beauty product information by using such artificial intelligence.

[0039] The user terminal 200 may receive a user customized service by accessing a user customized service providing application provided by the apparatus 100 and/or a user customized service providing website.

[0040] The user terminal 200 may include a communication terminal for performing functions of a computing device (not shown), and may include, in addition to a desktop computer 201, a smartphone 202, and a laptop computer 203 operated by the user, a tablet personal computer (PC), a smart television (TV), a mobile phone, a personal digital assistant (PDA), a media player, a micro-server, a global positioning system (GPS) device, an electronic book terminal, a digital

broadcasting terminal, a navigation device, a kiosk, an MP3 player, a digital camera, a home appliance, and other mobile or non-mobile computing devices, but is not limited thereto. Also, the user terminal 200 may include a wearable terminal, such as a watch, glasses, a hair band, and a ring, including a communication function and a data processing function. The user terminal 200 is not limited by the above-described details, and a terminal capable of web browsing may be unlimitedly employed.

[0041] The network 300 may connect the apparatus 100 and the user terminal 200 to each other. The network 300 may encompass a wired network and a wireless network, but the scope of the disclosure is not limited thereto.

[0042] FIG. 2 is a block diagram for schematically describing a configuration of the apparatus 100, according to an embodiment, and FIGS. 3 and 4 are diagrams of examples for describing provision of a user customized service, according to an embodiment. Referring to FIGS. 2 to 4, the apparatus 100 may include a communication unit 110, a processor 120, and a memory 130.

[0043] The communication unit 110 may provide a communication interface required to provide, in the form of packet data, a transmission/reception signal between the apparatus 100 and the user terminal 200, in association with the network 300. In addition, the communication unit 110 may operate to receive a certain information request signal from the user terminal 200 and transmit information processed by the apparatus 100 to the user terminal 200. Here, the communication interface refers to a medium that operates to connect the apparatus 100 and the user terminal 200 to each other and may include a path that provides an access path for the user terminal 200 to transmit/receive information after accessing the apparatus 100. Also, the communication unit 110 may be a device including hardware and software required to transmit/receive a signal, such as a control signal or a data signal, through a wired/wireless connection with another network device.

[0044] The processor 120 may transmit the first request information to the user terminal 200 and receive the user input information from the user terminal 200.

[0045] According to an embodiment, the first request information transmitted by the processor 120 to the user terminal 200 may include information requesting a response to a survey, information requesting a photograph of the user's face, and information requesting input of a recommended desired beauty product.

- 5 [0046] According to an embodiment, the user input information received by the processor 120 from the user terminal 200, based on the first request information, may include name, affiliation, personal information, gender, age, contact information, nationality, email address, address, occupation, work experience, education, and the like. Also, the user input information may include the user's
10 hobbies, areas of interest, and preferred beauty products.

- [0047] In addition, the user input information may include information about eating habits, living environments, innate factors, beauty product absorption ability, items desired to be improved, and the like. Here, the eating habits may include one or more items from among fatty food habits, sweet food habits, spicy food habits,
15 vegetarianism (vegan), halal, drinking, and smoking. The living environments may include one or more items from among mountainous areas, coastal areas, outdoor work, indoor work, pregnancy, and childbirth. The innate factors may include determining whether a skin condition is influenced by one or more of a parent's skin condition and a grandparent's skin condition. The beauty product absorption ability
20 may include one or more items from among quickly absorbed, slowly absorbed, makeup is easily caked on, and makeup stays well.

- [0048] The user input information may also include the user's face captured image information. According to an embodiment, the processor 120 may analyze the user's face captured image information and generate an analysis result including the user's
25 skin surface condition, the user's skin condition, and the user's skin color. Here, the skin surface condition may include one or more items from among T-zone & U-zone trouble, T-zone & U-zone dryness, hyperpigmentation, spots, moles, freckles, and large pores. The skin condition may include one or more items from among skin aging, diet, sensitive skin, stress trouble, acne skin, fine wrinkles, decreased
30 elasticity, tightness after washing, excessive skin gloss, dry skin, oily skin, and

combination skin. The skin color may include one or more items from among light color, yellow, red, slightly dark color, dark color, warm tone, and cool tone.

[0049] According to an embodiment, the processor 120 may generate a result of analyzing pores by using the user's face captured image information (hereinafter referred to as a face image). Because pores are relatively dark compared to the surroundings and have round shapes, the processor 120 may first detect dark areas in a face image, separately detect hairs that are similarly dark, and remove the same. The processor 120 may use a morphology technique to separate pores that are small or detected by being stretched and connected. Since sizes and depths are important in determining dimensions of pores, the dimensions of pores may be calculated by multiplying the sizes and depths for each pixel and dividing by a result by a size value of the face image. The processor 120 may generate different analysis results depending on the dimensions of pores.

[0050] According to an embodiment, the processor 120 may generate results of analyzing wrinkles by using the user's face image. Because wrinkles, like pores, appear relatively dark compared to the surroundings, the processor 120 may first detect dark areas in the face image, separately detect hairs that are similarly dark, and remove the same. Because lengths and depths are important factors of wrinkles, the processor 120 may determine, as a wrinkle, an area where the length is less than a certain value or the depth is shallower than the average. For the depths of wrinkles, an S channel of HLS colors has a value similar to the actual depth, and thus, the S channel may be used. The processor 120 may calculate the length and depth of a wrinkle by multiplying the length and an average depth value in each area determined to be a wrinkle and dividing a result by the size value of the face image.

[0051] According to an embodiment, the processor 120 may generate a result of analyzing pigmentation by using the user's face image. The processor 120 may detect dark pigment areas by using a brightness value of the face image and then remove red pigments by using a color difference value, leaving only melanin pigments. Before that, hair may be detected and removed. Pigments may be calculated only based on brightness values. Accordingly, the processor 120 may

calculate pigmentation by firstly weighting darkness of melanin pigments and secondarily weighting darkness compared to the surroundings, then adding the two and dividing a result thereof by the size value of the face image.

5 [0052] According to an embodiment, the processor 120 may generate a result of analyzing the skin color by using the user's face image. The processor 120 may generate an analysis result including skin tone of the face image by converting RGB data of the face image into CIE LAB color data, mapping a LAB pixel value to color chart data, and matching the color chart data to Fitzpatrick classification grade or color chart data.

10 [0053] According to another embodiment, the processor 120 may transmit the user's face captured image information to an expert and receive the analysis result from the expert.

[0054] The processor 120 may generate the user profile information personalized based on the result of receiving the user input information. According to an
15 embodiment, the user profile information may include results of classifying a plurality of first categories and one or more keywords included in the plurality of first categories through analysis of the received user input information, and assigning scores to respective keywords.

[0055] The first category included in the user profile information may include a
20 skin surface, eating habits, living environments, innate factors, skin condition, product absorption ability, and a skin color. One or more keywords included in the first category are as follows. One or more keywords included in the skin surface may include T-zone & U-zone trouble, T-zone & U-zone dryness, hyperpigmentation, spots, moles, freckles, and large pores. One or more keywords
25 included in the eating habits may include fatty food habits, sweet food habits, spicy food habits, vegetarianism (vegan), halal, drinking, and smoking. One or more keywords included in the living environments may include mountainous areas, coastal areas, outdoor work, indoor work, pregnancy, and childbirth. One or more keywords corresponding to innate factors may include parents' skin condition and
30 grandparents' skin condition. One or more keywords included in the skin condition

may include skin aging, diet, sensitive skin, stress troubles, acne skin, fine wrinkles, decreased elasticity, tightness after washing, excessive skin gloss, dry skin, oily skin, and combination skin. One or more keywords included in the product absorption ability may include quickly absorbed, slowly absorbed, makeup is easily caked on, and makeup stays well. One or more keywords included in the skin color may include light color, yellow, red, slightly dark color, dark color, warm tone, and cool tone.

[0056] The processor 120 may identify a keyword matching the user input information. For example, when the user input information includes mountainous areas, a mountainous areas keyword may be identified and matched. The processor 120 may assign a score to each keyword, based on a degree of relevance of the keyword to the user input information. According to an embodiment, the processor 120 may assign a score between 0 and 1 to each keyword. The processor 120 may assign a high score (e.g., 1 point) when there is direct relevance. The processor 120 may assign a low score (e.g., 0 point) when there is no relevance. When there is partial relevance, the processor 120 may assign a score according to a proportion. For example, in a case of 3 hours of outdoor work and 5 hours of indoor work, 0.4 points may be assigned to an outdoor work keyword and 0.6 points to an indoor work keyword.

[0057] The processor 120 may complete the user profile information by assigning scores to keywords included in all first categories and then combining the scores.

[0058] According to an embodiment, the processor 120 may apply a same method to a trendsetter to generate trendsetter profile information and store the trendsetter profile information in the memory 130.

[0059] Here, the second request information may include the information requesting input of the experience information of the trendsetter for one or more beauty products and the information requesting loading of the experience information of the trendsetter, which has been already generated for one or more beauty products, which are not included in the first request information. The second request information may exclude the information requesting input of the

recommendation desired beauty product, from among the first request information. Accordingly, the trendsetter input information may include a result of inputting the experience information of the trendsetter for one or more beauty products and a result of loading the experience information of the trendsetter, which has been
5 already generated for one or more beauty products.

[0060] According to an embodiment, the experience information of the trendsetter may include reviews of beauty products that have been actually used by the trendsetter. The reviews may include detailed descriptions of product's efficacy, afterfeel, features, and pros and cons. The experience information of the trendsetter
10 may include how the product was actually used and changes or improvements resulting from using the product. The experience information of the trendsetter may include beauty tips, product usage instructions, and skin care routine guides for specific skin types or problems, based on his/her beauty-related knowledge and expertise. The experience information of the trendsetter may include the latest
15 beauty trends, popular products, and industry trends in the market. The experience information of the trendsetter may include DIY recipes or custom product usage instructions to solve specific beauty problems. The experience information of the trendsetter may include photographs or video footage of changes before and after using a specific product or beauty solution.

20 [0061] FIG. 3 is a diagram of an example for describing a result of generating the trendsetter profile information, according to an embodiment. Referring to FIG. 3, the processor 120 may include results of classifying the plurality of second categories and one or more keywords included in the plurality of second categories through analysis of the trendsetter input information, and assigning the scores to the
25 respective keywords. According to an embodiment, user profile information may also be generated in a same manner as in FIG. 3.

[0062] The processor 120 may extract the plurality of pieces of trendsetter profile information similar to the user profile information, based on the profile information of trendsetters, stored in the memory 130. The processor 120 may calculate a
30 similarity score between the user profile information and each piece of trendsetter

profile information. According to an embodiment, the processor 120 may calculate the similarity score by using various algorithms, such as cosine similarity, Euclidean distance, and Jaccard similarity. The processor 120 may select trendsetter profile information that is most similar to the user profile information, based on the
 5 calculated similarity score. At this time, by setting a specific standard (e.g., top N similarity scores), a plurality of pieces of trendsetter profile information that meets the standard may be extracted.

[0063] The processor 120 may extract the trendsetter beauty product corresponding to the recommendation desired beauty product included in the user input
 10 information, from a plurality of pieces of trendsetter input information corresponding to the extracted plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile information. The processor 120 may determine the extracted trendsetter beauty product as the recommendation result beauty product.

15 [0064] According to an embodiment, the processor 120 may generate a plurality of pieces of preliminary recommendation information corresponding to the recommendation desired beauty product from the plurality of pieces of trendsetter input information and the plurality of pieces of trendsetter profile information. Here, the plurality of pieces of preliminary recommendation information may include an
 20 image of a trendsetter, a name of the trendsetter, trendsetter profile information, an image of a beauty product used by the trendsetter, and a trendsetter experience result prepared about the beauty products used by the trendsetter.

[0065] The processor 120 may determine a beauty product included in any one preliminary recommendation information most similar to the user profile
 25 information from among the plurality of pieces of preliminary recommendation information, as the recommendation result beauty product.

[0066] The processor 120 may provide a result of determining the recommendation result beauty product to the user terminal 200. The processor 120 may move to a webpage where the recommendation result beauty product may be purchased, based

on receiving a selection signal for the recommendation result beauty product by the user from the user terminal 200.

[0067] FIG. 4 is a diagram of an example of providing, to the user terminal 200, a result of determining a beauty product, according to an embodiment. Referring to
5 FIG. 4, the result of determining the beauty product may include a plurality of pieces of preliminary recommendation information 410 and a result 420 of recommending a beauty product included in any one preliminary recommendation information that is most similar to user profile information.

[0068] The plurality of pieces of preliminary recommendation information 410 may
10 include images 411 of trendsetters, extracted from a plurality of pieces of trendsetter input information and a plurality of pieces of trendsetter profile information, names 412 of the trendsetters, the trendsetter profile information 413, images 414-1 and 414-2 of beauty products used by the trendsetters, and trendsetter experience results 415-1 and 415-2 prepared for the beauty products used by the
15 trendsetters.

[0069] The result 420 may include the name of the trendsetter most similar to the user profile information and an image of the beauty product used by the trendsetter. Here, when the user selects an image of a beauty product, he/she may move to a webpage where detailed information on a recommendation result beauty product
20 may be identified and the recommendation result beauty product may be purchased.

[0070] According to an embodiment, the result 420 may further include a basis for recommending the beauty product. The processor 120 may generate and output the basis for recommending the beauty product, based on the experience information of the trendsetter most similar to the user profile information.

[0071] According to another embodiment, the processor 120 may generate first
25 insight information for a recommendation desired beauty product through analysis of crawling information corresponding to the recommendation desired beauty product included in the user input information. The processor 120 may collect the crawling information corresponding to the recommendation desired beauty product.

30 Here, the crawling information may include online data related to the

recommendation desired beauty product. The crawling information may include, for example, reviews entered by an unspecified number of users who have used the recommendation desired beauty product, cosmetic ingredients and descriptions of the recommendation desired beauty product, Q&A and FAQ on the recommendation desired beauty product, a blog about the recommendation desired beauty product, and social media content about the recommendation desired beauty product. The processor 120 may extract an important keyword and topic by applying natural language processing (NLP) technology to the collected crawling information. During this process, information about the characteristics or effects related to the recommendation desired beauty product, such as moisturizing, whitening, and sensitive skin, may be identified. The processor 120 may perform a quantitative evaluation by analyzing positive and negative opinions, user satisfaction, and comments on product effectiveness regarding the recommendation desired beauty product. The processor 120 may generate first insight information about the recommendation desired beauty product by combining a results of extracting the important keyword and topic, and a result of performing the quantitative evaluation. The first insight information may include popularity, efficacy, and user experience of the recommendation desired beauty product.

[0072] The processor 120 may generate second insight information about the recommendation desired beauty product through analysis of one or more pieces of first non-crawling information including the plurality of pieces of trendsetter input information and the plurality of pieces of trendsetter profile information. According to an embodiment, the second insight information may be generated as many as the number of the plurality of trendsetters. The processor 120 may identify information about a trendsetter related to the recommendation desired beauty product from the first non-crawling information, and evaluate similarity and relevance of the information. The processor 120 may generate the second insight information about product characteristics, reasons for recommendation, and precautions for use, based on the trendsetter's expert knowledge and experience.

[0073] The processor 120 may generate third insight information about the recommendation desired beauty product through analysis of second non-crawling information including the user input information and the user profile information.

5 The processor 120 may generate, from the second non-crawling information, results of analyzing the user's skin type, preference, interest, and skin problems. The processor 120 may generate the third insight information from results of the analysis. The third insight information may include characteristics and efficacy of a product that is particularly suitable for the user's skin type or problem, and analysis and description of product ingredients that match the user's skin condition or
10 preference.

[0074] The processor 120 may determine, as the recommendation result beauty product, a trendsetter beauty product corresponding to the recommendation desired beauty product through analysis of the first insight information, the second insight information, and the third insight information. The processor 120 may assign
15 weights to the first insight information, the second insight information, and the third insight information. Here, a high weight may be assigned insight information that is considered important. The weights may be adjusted according to the user's selection. For example, when the user's personalized information is determined to be the most important, a higher weight may be assigned to the third insight information. The
20 processor 120 may calculate scores of the first to third insight information to which the weights are reflected, and add the scores to calculate a total score. The total score may be calculated as much as the number of the plurality of trendsetters. The processor 120 may determine a beauty product of a trendsetter, which has the highest total score, as the recommendation result beauty product.

25 [0075] The processor 120 may generate user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product, and provide the same to the user terminal 200.

[0076] The processor 120 may generate product performance information including
30 one or more of main ingredients, efficacy, and user reviews of the recommendation

result beauty product, from the first insight information and the second insight information. The processor 120 may generate the basis for determining the recommendation result beauty product by combining the user input information, the user profile information, and the product performance information. The basis for determining may include reasons, such as a product contains ingredients that may address the user's specific skin problem or a product fits the user's preferred product type. In addition, the basis for determining the recommendation result beauty product may include information about main characteristics of a recommended product, degree of matching the user's requirements, and actual efficacy and satisfaction based on user reviews and trendsetters' experiences.

[0077] According to another embodiment, the processor 120 may generate the user customized beauty product information by using an artificial intelligence algorithm. The processor 120 may predict attribute information of the recommendation desired beauty product corresponding to the crawling information related to the recommendation desired beauty product by using a first deep neural network model for predicting attribute information of a product by using crawling information about the product. According to an embodiment, the first deep neural network model may be a model trained through a supervised learning method using first training data including a first input and a first label. Here, the first input may include reviews of a product, ingredients of the product, a description of the product, Q&A, FAQ, a blog about the product, and social media content about the product. The first label may include a keyword and a topic, a sentiment analysis result, a product application condition, and problem-solving product recommendation.

[0078] The processor 120 may train the initially set first deep neural network model by using the labeled first training data, through a supervised learning method. Here, the initially set first deep neural network model is an initial model designed to be configured as a model that may predict attribute information of a product from crawling information about the product, and the parameter values thereof may be set to random initial values. The initial model is trained with the above-described first training data such that the parameter values are optimized, and may be

completed as a first prediction model for accurately predicting the attribute information of the product, corresponding to the crawling information about the product.

[0079] The processor 120 may predict the user customized beauty product information corresponding to the attribute information of the recommendation desired beauty product and non-crawling information about the recommendation desired beauty product, by using a second deep neural network model for predicting user customized product information by using attribute information of a product and non-crawling information about the product. Here, the attribute information of the product may be output from the first deep neural network model.

[0080] According to an embodiment, the second deep neural network model may be a model trained through a supervised learning method using second training data including a second input and a second label. Here, the second input may include attribute information of a product, user input information, user profile information, trendsetter input information, and trendsetter profile information. The second label may include user customized product information including a recommended product and a basis for determining the recommended product.

[0081] The processor 120 may train the initially set second deep neural network model by using the labeled second training data, through a supervised learning method. Here, the initially set second deep neural network model is an initial model designed to be configured as a model for predicting user customized product information by using attribute information of a product and non-crawling information about the product, and parameter values thereof may be random initial values. The initial model is trained with the above-described second training data such that the parameter values are optimized, and may be completed as a second prediction model for accurately predicting user customized product information by using attribute information or a product and non-crawling information about the product.

[0082] The processor 120 may control all operations of the apparatus 100. Here, a processor may denote a hardware-embedded data processing device including a

physically structured circuit to perform a function represented by an instruction or a code included in a program. Examples of the data processing device embedded in hardware may include processing devices, such as a microprocessor, a central processing unit (CPU), a processor core, a multiprocessor, an application-specific integrated circuit (ASIC), and a field programmable gate array (FPGA), but the scope of the disclosure is not limited thereto.

[0083] The memory 130 may be operatively connected to the processor 120, and may store at least one code in association with an operation performed by the processor 120.

[0084] Also, the memory 130 may temporarily or permanently store data processed by the processor 120, and may include data built in a database. Here, the memory 130 may include a magnetic storage medium or a flash storage medium, but the scope of the disclosure is not limited thereto. The memory 130 may include an internal memory and/or an external memory, and may include a volatile memory, such as a DRAM, an SRAM, or an SDRAM, a non-volatile memory, such as an OTPROM, a PROM, an EPROM, an EEPROM, a mask ROM, a flash ROM, an NAND flash memory, or a NOR flash memory, a flash drive, such as an SSD, a CF card, an SD card, a micro-SD card, a mini-SD card, an XD card, or a memory stick, or a storage device, such as an HDD.

[0085] FIG. 5 is a flowchart of a method of providing a user customized service, according to an embodiment. Hereinafter, descriptions about details that overlap those of FIGS. 1 to 4 are omitted. The method according to an embodiment will be described assuming that the method is performed by the processor 120 with assistance of other components of the apparatus 100.

[0086] Referring to FIG. 5, in operation S510, the processor 120 may generate the user profile information personalized based on the result of receiving the user input information.

[0087] In operation S520, the processor 120 may extract the plurality of pieces of trendsetter profile information similar to the user profile information, based on the pre-stored profile information of trendsetters.

[0088] In operation S530, the processor 120 may extract the trendsetter beauty product corresponding to the recommendation desired beauty product included in the user input information, from the plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile information, and determine the trendsetter beauty product as the recommendation result beauty product.

[0089] In operation S540, the processor 120 may generate the user customized beauty product information including the recommendation result beauty product and the basis for determining the recommendation result beauty product.

[0090] According to an embodiment, when determining the recommendation result beauty product, the processor 120 may generate the plurality of pieces of preliminary recommendation information corresponding to the recommendation desired beauty product from the plurality of pieces of trendsetter input information and the plurality of pieces of trendsetter profile information. The processor 120 may determine the beauty product included in any one preliminary recommendation information most similar to the user profile information from among the plurality of pieces of preliminary recommendation information, as the recommendation result beauty product. Here, the plurality of pieces of preliminary recommendation information may include an image of a trendsetter, a name of the trendsetter, trendsetter profile information, an image of a beauty product used by the trendsetter, and a trendsetter experience result prepared about the beauty products used by the trendsetter. After determining the beauty product as the recommendation result beauty product, the processor 120 may move to the webpage where the detailed information about the recommendation result beauty product may be identified and the recommendation result beauty product may be purchased, based on receiving the selection signal for the recommendation result beauty product.

[0091] According to an embodiment, when determining the recommendation result beauty product, the processor 120 may generate the first insight information about the recommendation desired beauty product through analysis of the crawling

information corresponding to the recommendation desired beauty product included in the user input information. The processor 120 may generate the second insight information about the recommendation desired beauty product through analysis of the one or more pieces of first non-crawling information including the plurality of

5 pieces of trendsetter input information and the plurality of pieces of trendsetter profile information. The processor 120 may generate the third insight information about the recommendation desired beauty product through analysis of the second non-crawling information including the user input information and the user profile information. The processor 120 may determine, as the recommendation result

10 beauty product, the trendsetter beauty product corresponding to the recommendation desired beauty product through analysis of the first insight information, the second insight information, and the third insight information.

[0092] According to an embodiment, when generating the user customized beauty product information, the processor 120 may generate the product performance

15 information including one or more of the main ingredients, efficacy, and user reviews of the recommendation result beauty product from the first insight information and the second insight information. The basis for determining the recommendation result beauty product may be generated by combining the user input information, the user profile information, and the product performance

20 information.

[0093] According to the disclosure, it is possible to support a user to easily find and purchase a beauty product that are most suitable for his/her skin type.

[0094] In addition, the user may save time and effort in selecting a desired beauty product from a variety of beauty products.

25 [0095] The effects of the disclosure are not limited to those mentioned above, and other effects that are not mentioned may be clearly understood by one of ordinary skill in the art from the scope of claims.

[0096] The embodiments according to the disclosure described above may be implemented in the form of a computer program executable by various components

on a computer, and such a computer program may be recorded on a computer-readable medium.

[0097] The computer program may be specially designed for the disclosure or well known to one of ordinary skill in the computer software field. Examples of the computer program include not only machine codes generated by a compiler, but also high-level language codes executable by a computer by using an interpreter or the like.

[0098] The term "the" and similar referential terms in the specification (specifically in the claims) of the disclosure may be used for both the singular and the plural. Further, when a range is described in the disclosure, the disclosure includes inventions to which individual values belonging to the range are applied (unless otherwise stated), and it is considered that each individual value configuring the range is described in the detailed description of the disclosure.

[0099] Unless an order is clearly stated or unless otherwise stated, operations configuring a method according to the disclosure may be performed in an appropriate order. the disclosure is not necessarily limited by an order the operations are described. In the disclosure, the use of all examples or exemplary terms (for example, "etc.") is merely for describing the disclosure in detail and the scope of the disclosure is not limited by those examples or exemplary terms unless defined in the claims. Also, it would be obvious to one of ordinary skill in the art that various modifications, combinations, and changes may be configured according to design conditions and factors within the scope of claims or equivalents.

[00100] Therefore, the scope of the disclosure should not be determined limitedly based on the above-described embodiments, and not only the appended claims but also all ranges equivalent to or equivalently changed from the claims are within the scope of the disclosure.

CLAIMS

1. A method of providing a user customized service, performed by a processor of an apparatus for providing a user customized service, the method comprising:

generating user profile information personalized based on a result of receiving user input information;

extracting a plurality of pieces of trendsetter profile information similar to the user profile information, based on pre-stored profile information of trendsetters;

extracting, from a plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile information, a trendsetter beauty product corresponding to a recommendation desired beauty product included in the user input information, and determining the same as a recommendation result beauty product; and

generating user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product.
2. The method of claim 1, wherein the determining as the recommendation result beauty product comprises:

generating a plurality of pieces of preliminary recommendation information corresponding to the recommendation desired beauty product from the plurality of pieces of trendsetter input information and the plurality of pieces of trendsetter profile information; and

determining a beauty product included in any one preliminary recommendation information most similar to the user profile information from among the plurality of pieces of preliminary recommendation information, as the recommendation result beauty product,

wherein the plurality of pieces of preliminary recommendation information comprise an image of a trendsetter, a name of the trendsetter, profile information of the trendsetter, an image of a beauty product used by the trendsetter, and a trendsetter experience result prepared about the beauty product used by the trendsetter.

3. The method of claim 2, further comprising, after the determining as the recommendation result beauty product, identifying detailed information of the recommendation result beauty product, based on receiving a selection signal for the recommendation result beauty product, and moving to a webpage for purchasing the recommendation result beauty product.

4. The method of claim 1, wherein the determining as the recommendation result beauty product comprises:

generating first insight information about the recommendation desired beauty product through analysis of crawling information corresponding to the recommendation desired beauty product included in the user input information;

generating second insight information about the recommendation desired beauty product through analysis of one or more pieces of first non-crawling information including the plurality of pieces of trendsetter input information and the plurality of pieces of trendsetter profile information;

generating third insight information about the recommendation desired beauty product through analysis of second non-crawling information including the user input information and the user profile information; and

determining, as the recommendation result beauty product, a trendsetter beauty product corresponding to the recommendation desired beauty product through analysis of the first insight information, the second insight information, and the third insight information.

5. The method of claim 4, wherein the generating of the user customized beauty product information comprises:

- generating product performance information including one or more of main ingredients, efficacy, and user reviews of the recommendation result beauty product,
- 5 from the first insight information and the second insight information; and
- generating the basis for determining the recommendation result beauty product by combining the user input information, the user profile information, and the product performance information.

10 6. A computer-readable recording medium having stored therein a computer program for executing the method of any one of claims 1 to 5, by using a computer.

15 7. An apparatus for providing a user customized service, the apparatus comprising:

- a processor; and
 - a memory operatively connected to the processor and storing at least one code performed by the processor,
- wherein the memory stores the at least one code which, when executed
- 20 through the processor, causes the processor to:
- generate user profile information personalized based on a result of receiving user input information;
 - extract a plurality of pieces of trendsetter profile information similar to the user profile information, based on pre-stored profile information of trendsetters;
 - 25 extract, from a plurality of pieces of trendsetter input information received to generate the plurality of pieces of trendsetter profile information and the plurality of pieces of trendsetter profile information, a trendsetter beauty product corresponding to a recommendation desired beauty product included in the user input information, and determine the same as a recommendation result beauty
- 30 product; and

generate user customized beauty product information including the recommendation result beauty product and a basis for determining the recommendation result beauty product.