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(54) Title: VIRTUAL MAKEOVER

(57) Abstract: A method and apparatus is provided for virtual colour makeover of a customer's face. A digital image is taken of the customer's face. Natural skin colour is determined by a differential analysis among at least two different sites along the face to identify an area without colour. The identified area without colour is then used as a basis for projecting the customer's face with the natural skin colour. Consultant's choice of pre-programmed colour palettes matching the measured natural skin colour is then projected on the facial image. A customer's personal choice such as fashion, natural or go-to-work looks can be registered for modifying the consultant's choice colour palette. The selected colour palette can then be identified as a set of colour cosmetic products, which are provided to the customer.

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VIRTUAL MAKEOVER

Field of the Invention

The present invention relates to a method and apparatus for allowing a consumer at point-of-sale to evaluate colour cosmetic products on their virtual facial image prior to purchase.

BACKGROUND OF THE INVENTION AND PRIOR ART

Colour cosmetics encompass among others lipsticks, eyeliner, blush, lipliner, eye shadow and facial foundation. A vast array of colours and shades are available to consumers. Often the consumer finds it difficult to select among this vast array of choices. It is difficult to decide how a particular colour or shade will look when actually spread on the skin. Even more difficult to assess is how a combination of colour cosmetic products such as facial foundation, lipstick and eye shadow will work together for a particular individual.

Systems have been developed to assist the decision process. Clinique and Clarion have installed computers at sales counters for use by the consumer. Information on colour shade, oiliness and other properties of a consumer's skin are punched into the computer which then determines the company's most closely matching product.

Another point of sale technique has been that of custom blending. Two major companies, Prescriptives (division of Estee Lauder) and Visage (division of Revlon) begin a sale by manually evaluating a subject's skin colour. The sales person then adjusts existing finished foundations so as to

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match the evaluated skin colour for a perfect facial foundation. Unfortunately, the system is time consuming, requires extensively trained sales persons, and has poor reproducibility.

U.S. Patent 5,854,850, U.S. Patent 5,825,941 and U.S. Patent 5,687,259 all to Linford et al. assigned to the Mirror Software Corporation disclose a system for digital image capture of a particular person's face and software to manipulate facial structures. The system is intended for reconstructive plastic surgery.

It is evident that relatively unsophisticated systems are available for colour matching. The technology also exists for digital recording of individual faces. To date there has been no disclosure of systems, which utilise digital imagery for cosmetic products. Neither has there been reported any systems for obtaining virtual makeover of a consumer's image whereby the consumer can see the effect of different colour cosmetic products on their own face.

Accordingly, it is an advantage of the present invention to provide a method and apparatus for forming a virtual makeover of a person's face on an image monitor so as to allow selection of the best colour combinations.

Another object of the present invention is to provide a method and apparatus for virtual makeover at a point of sale counter wherein colour makeup can be electronically painted over the consumer's image without requiring actual removal of make-up prior to obtaining a baseline natural skin colour image.

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These and other objects of the present invention will become more apparent from the following summary and detailed description.

5   **SUMMARY OF THE INVENTION**

According to a first aspect, the present invention provides a method for applying a virtual makeover to a person's face, the method involving:

10   (i)   directing a digital camera at a person's face to register an image of at least a portion thereof;

               (ii)   calculating colour parameters on two or more areas of the image to identify a natural colour

15   of the skin;

               (iii)   transmitting the image to a monitor for displaying the face;

               (iv)   correlating the natural skin colour with a predetermined palette of colours appropriate to

20   the calculated natural skin colour;

               (v)   locating areas of the face for application of a colour cosmetic;

               (vi)   displaying the facial image with the predetermined colour palette on the located

25   areas; and

               (vii)   optionally placing an order for colour cosmetics corresponding to the predetermined colour palette.

30   According to a further aspect, the present invention provides apparatus for applying virtual makeover to a person's face, the apparatus including:

               (i)   a digital camera for acquiring information on

35   the person's facial image;

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(ii) a program for calculating colour on two or more different areas of the facial image not normally covered by cosmetics to identify a natural colour of the person's skin;

5 (iii) a monitor for displaying the facial image;

(iv) a program for painting a predetermined colour palette correlated with the natural skin colour onto certain located areas of the face normally subject to colour cosmetic treatment; and

10 (v) a printer delivering a printout of the predetermined colour palette.

DETAILED DESCRIPTION OF THE INVENTION

15 A problem with prior attempts to visualise colour cosmetics for customers has been the inability to determine their natural skin colour. Now it has been found that natural skin colour can be determined via digital imaging by comparing L*a*b colour values on at least two different 20 areas of the facial image. Consumers do not place makeup over 100% of their face. The digital scan identifies those areas of skin which are not covered by makeup, provides a colour value for that area and utilises the value as a baseline colour for re-imaging a cosmetically stripped face 25 onto a monitor.

Another challenge for the system was to locate those areas of the face upon which colour cosmetics can be applied electronically. The program locates colour requiring areas 30 such as the lips, cheeks and eyes.

A digital image of a customer's face may be taken at a point-of-sale department store counter for storage into a central memory and then made available at a website. The 35 image may also be storable locally at the store or within an

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intranet system of the cosmetic supplier. Also envisioned
is the alternative possibility for the customer scanning
their own actual image from their home computer. Many of
these customers now have relatively inexpensive digital
5   imaging cameras interfaceable with personal computers and
thereby can connect directly to the internet.

Once the natural skin colour has been identified, a
consultant's choice is automatically determined from a
10   software stored set of 12-20 colours matching the person's
skin type. This provides a colour matching facial
foundation for building the first stage of colour makeover.
Feedback is then accepted into the program on the customer's
own preferences. For instance, these preferences can be
15   with respect to three possible "looks" such as fashion,
natural or go-to-work types.

A lipstick can then be provided as a consultant's best
choice. The customer can also provide input for her
20   favourite colour. The pick may be a natural or dramatic
look. These choices are then fed directly into the program
for facial display on the monitor.

Other colour cosmetics can be applied in the same
25   consultant's choice and consumer preference feedback mode.
These cosmetics can include eye shadow, eyeliner, lipliner
and blush. The monitor can display images from no makeup to
full makeup with all products or any step in between.

When a particular look including all the necessary colour
30   cosmetics have been selected, a printer is activated with an
ordering slip for the selected cosmetics. The customer is
identified by a number and the selected products given a
barcode symbol or other designation correlating the product
35   with the customer.

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The customer's image can be placed on an internet site. At some subsequent time, the customer can view the Internet site and from the comfort of their own terminal evaluate various makeovers on their face. Cosmetics to accomplish the actual makeover can then be ordered on the web site or through any other channel.

Equipment for the method includes a digital camera available from several sources. Nikon provides a suitable high resolution digital camera under the trademark Coolpix 900™ providing an image size of 1080 x 960 pixels, VGA mode 640 x 480. Another digital camera, which may be utilised, is the PhotoGenie™ sold with the ePHOTO 1680 camera by the Agfa Corporation. Image size is 1280 x 1200 pixels, VGA mode 640 x 480. Software for operating the system can be obtained from Torchlight Corporation of Seattle. Programs upon which this software is based are found in U.S. Patent 5,854,850, U.S. Patent 5,825,941 and U.S. Patent 5,687,259 all herein incorporated by reference.

The foregoing description illustrates selected embodiments of the present invention and in light thereof variations and modifications would be suggested to one skilled in the art, all of which are within the scope of this invention.

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CLAIMS:

1.   A method for applying a virtual makeover to a person's face, the method comprising:

(i)   directing a digital camera at a person's face to register an image of at least a portion thereof;

(ii)   calculating colour parameters on two or more areas of the image to identify a natural colour of the skin;

(iii) transmitting the image to a monitor for displaying the face;

(iv)   correlating the natural skin colour with a predetermined palette of colours appropriate to the calculated natural skin colour;

(v)   locating areas of the face for application of a colour cosmetic;

(vi)   displaying the facial image with the predetermined colour palette on the located areas; and

(vii) optionally placing an order for colour cosmetics corresponding to the predetermined colour palette.

2.   An apparatus for applying virtual makeover to a person's face, the apparatus comprising:

(i)   a digital camera for acquiring information on the person's facial image;

(ii)   a program for calculating colour on two or more different areas of the facial image not normally covered by cosmetics to identify a natural colour of the person's skin;

(iii) a monitor for displaying the facial image;

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(iv) a program for painting a predetermined colour palette correlated with the natural skin colour onto certain located areas of the face normally subject to colour cosmetic treatment; and

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(v) a printer delivering a printout of the predetermined colour palette.