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## # Modes of the program. Using of the tools

Hair-style selection is the computer processing of the initial, working and resulting portraits. For this purpose there is a set of tools and functions.

### **# *Initial portrait loading***

This function is activated by pressing the button of the same name in the upper left corner of the main window. By activating this function all previous portraits are deleted and, if they have not been saved, the access to them will be lost. The warning is displayed. After pressing the button "load initial portrait" in the working area of the main window 3 pictograms appear, they open access to the library portraits, file of the bmp-format or to the contents of the clipboard.

### **# *Loading of a library portrait***

After clicking the corresponding pictogram the window of the library portraits appears. Minimum one haircut of each style corresponds to any face shape. The style is selected by the left hand buttons of the library window, face shape - by the right hand buttons.

If a portrait, situated in the working area of the portrait library, corresponds to the selected style, blue frame appears around the portrait. If a portrait corresponds to the selected face form, red frame appears around it. To view all the portraits from the library there is a scale on the right hand. Click the selected portrait to transfer it from the library into the working region of the main window.

### **# *Loading of a file portrait***

Any portrait can be loaded from any file of the bmp-format. To activate this function from the mode "loading initial portrait" click the corresponding pictogram in the working region. Standard dialog appears.

**# *Loading of a portrait from the clipboard***

To activate this function from the mode "loading initial portrait" click the corresponding pictogram in the working region.

# ***Portrait scaling. Example.***

Upon entering this mode in the working area of the main window appears a copy of the loaded portrait with 2 vertical and one horizontal line above it. Scaling consists in combining vertical lines with the centers of the right and left eye, horizontal - with the level of both eyes. If the distance between vertical lines is less than some critical value, a rectangle of the image selection appears inside the scaling window. By placing cursor inside and pressing the left mouse button you can move cursor and the rectangle up and down. This is the way to select the best area for the initial picture.

{bmc himg\km01.bmp} Having set the scaling lines and the rectangle, press the button "Initial portrait": the scaling window closes, initial portrait of the desired dimensions appears and you can start working with the initial portrait.

## # Initial portrait editing

The main thing to be done with the initial portrait is to mark the contour of the useful part of the image which will be used later on. It can be done either automatically or by hand, or by combined method.

Initial portrait may be also used to determine automatically face shape of the client. Face shape will be useful on all the later stages.



# ***Automatic contour drawing.*** Example\_1, Example\_2, Example\_3.

Automatic contour drawing consists of 2 steps: on the first stage color range of the dots which are to be inside the contour is formed, the second stage in drawing up the contour.

To form the color range click the left button of the mouse in several (preferably in the darkest and the lightest places) in the area round which the contour will be formed.

{bmc himg\kcind.bmp} In the down left part of the main window is an indicator showing which part of the whole diversity of shades constitutes the current range. To delete the current range there is a button near the indicator. Use it if the contour embraces too great an area it includes much extra space.

To form the contour click the right button in the area round which it should be formed.

**Notice:** specificity of the algorithm obliges you to click the right button of the mouse nearer to the left margin of the area.

Bear in mind that clicking on a dot, that lies outside the given color range, produces a contour consisting of a single dot. So you are advised to expand the color range or to try clicking in another place.

If the resulting contour embraces a very small area, expand the color range: click the left mouse button in the places which should be included into the area. If great extra areas go inside the contour, delete the current range, and form a new one.

If the resulting contour is close enough to the desired, you can improve it by hand.

# ***Drawing of the contour by hand. Example.***

{bmc himg\klasso01.bmp} To form a contour by hand, press the central part of the button, consisting of three parts, situated near the lower margin of the window.

To form the contour draw the cursor to the desired place and click the left mouse button, draw the cursor to another place and click the mouse again and soon.

The contour be closed, so to set the last dot click the right mouse button. This dot is connected with the preceding and the first dots, and the contour becomes closed.

{bmc himg\klasso02.bmp} Then opens access to all other buttons. To include or exclude any new area press one of this buttons: "Plus" button adds newly formed space to the existing area, "Minus" button excludes newly formed space from the existing area.

{bmc himg\km02.bmp} After completing the useful area, press the button "Working portrait" in the left part of the working area to shift to the working portrait.

**Notice:** if using of two methods is intended, first draw the contour automatically and then correct it by hand.

# ***Automatic face shape determination. Example.***

{bmc himg\kfface.bmp} One more operation can be performed upon the initial portrait. There is a button in the right upper part which brings in the working area a polygon for face shape determination. Place the polygon above the face. To shift the polygon place the cursor on its vertical axis, and, pressing the left mouse button shift it to the desired place.

The polygon has eight apexes. To shift one of them, place the cursor on the apex and pressing the left mouse button shift it to the desired place.

For precise face shape determination four dimensions are necessary: face height from chin to the place where hair starts growing , forehead width, cheek- bone width, chin width. These dimensions are determined by three pairs of dots, connected by horizontal lines, while face height is assessed between the lowest and the highest dots. Correlation between this parameters determines the face shape.

{bmc himg\kfoval.bmp} As a result the corresponding button near the right margin becomes lighted. Face shape will be considered later on in the process of hairstyle selection. However, a desired face shape may be given without using the polygon: you can just press the corresponding button in the right part of the working area.

## # Working portrait edition

{bmc himg\km02.bmp} Access to the set of tools for working portrait editing opens when you shift to the working portrait from the initial or the resulting portrait. To shift to the working portrait press the central button of the three situated in the left part of the working area.

Access to the tools for the working portrait editing opens you can use buttons in the left part of the main window:

{bmc himg\kiblack.bmp} use it to bring the polygon for head form restoration into the working area blank;

{bmc himg\kiblack1.bmp} activation of this button opens access to the button for painting of the polygon for head form restoration;

{bmc himg\kilasti.bmp} if blank has not been selected, access opens to the button for eraser width selection. Eraser consists of 3 parts, the current part is painted. Access to the eraser opens at once upon entering the working portrait mode.

{bmc himg\kibrush.bmp} still lower there is a button for painting mode selection: any elliptic area may be painted in the color of surrounding dots.

{bmc himg\kizoom.bmp} The lowest button is double one used to magnifying / diminishing of the image in the working area.

First only diminishing function can be activated When the image is diminished, access to the magnifying function opens. Remember that editing is possible only when the dimensions of the image are maximum. If the portrait has been diminished, access to the tools for editing becomes closed, till the portrait is maximum magnified.

{bmc himg\kiprich.bmp} upon shifting to the working portrait opens access to the button for hair style selection.

## # *Eraser*

Using eraser is possible when the working portrait has maximum dimension and no hairstyle. Place the cursor into the working area, and pressing any mouse button draw the cursor by the desired way to the desired spot. The way of the cursor will be painted in black. If the left button was pressed, the black line is changed for the part of the initial portrait. If the right button was pressed, the black line is changed for background. The eraser's width can be thin, normal and wide. To select the desired width press one of the three parts of the button situated near the left margin of the main window.

By pressing "Step back" you can delete an unsuccessful operation.

# ***Head form restoration. Example.***

After deleting extra details from the initial portrait, head shape in most cases is far from being natural. Right head form is important for the correct hairstyle selection.

{bmc himg\kiblack.bmp} To activate the tool for the head form restoration use the button near the left margin of the main window: a polygon above the working portrait appears. It (or its parts) can be shifted along the working area by pressing the left mouse button and drawing the cursor to the desired place. Black should be installed in the lacking part of the head. By shifting its apexes restore the natural head form. Lower parts of the black should contact with the parts of the initial portrait, while upper parts should form the natural color of the restored head.

{bmc himg\kiblack1.bmp} To paint the completed part of the head press the corresponding button in the tools menu. Inside of the black is painted in the color of surrounding dots. You can repaint the black several times.

**Notice:** To reach best result in the head form restoration, use eraser to delete all traces of the former hair style.

# ***Painting of the area. Example.***

Use the paint brush to cover defects in the working portrait. This function is activated by pressing the corresponding button near the left margin of the main window. The specific feature of this brush is that the area painted is always elliptical. To determine the area to be painted draw the cursor in the desired direction all the while pressing the left mouse button. The ellipse to be painted appears. When its form covers the area in the best way stop pressing the button. All the dots inside the ellipse will be painted in the color of the surrounding dots.

**# *Scaling of the working portrait***

{bmc himg\kizoom.bmp} When the hairstyle cannot be fitted into the working area, use this button to diminish it. After diminishing, opens access to the magnifying button.



# ***Hair-style selection. Example.***

{bmc himg\kiprich.bmp} To open the hairstyle selection window press the button situated on the upper left near the button "Portrait loading". This window opens above the main window, in its working area samples of haircuts from the library are given. Use the round buttons along the left margin of window to select a style of a haircut, buttons along the right margin - to select a face shape. Appearance the blue frame around the sample in the working area signifies correspondence of the haircut and the style selected, red frame signifies correspondence between the haircut and the face shape. To transfer a hairstyle from hairstyle selection window into the working area of the main window just click the sample you've selected and it will appear in the working area of the main window above the working portrait. A rectangle round the haircut appears. If you draw the cursor to one of the sides of the rectangle, its form changes and shows the possible direction of the side transition. Transition of the sides leads to transformation of the haircut. Transformation of the angle of the rectangle leads to proportional changes in the height and width of the haircut. To shift the haircut place the cursor inside the rectangle and pressing the left mouse button draw the cursor to the desired place.

To delete a haircut from the working portrait place the cursor on the haircut and click the right button.

# *Haircut dyeing. Example.*

{bmc himg\colorpal.bmp} If the working portrait has a haircut on, access opens to the colour gammut situated in the lower left corner of the main Window. To due a haircut place the cursor on the selected sector of the color gammut and click the left mouse button.

### # Working with the created portrait. Example.

{bmc himg\km03.bmp} Having completed the working portrait, i.e. selected the hairstyle and its color you may form the resulting portrait: press the lower button near the left margin of the working area.

The resulting portrait contains the head and the haircut as the whole. Dots of the haircut, face and background along the contour of the haircut are softened, so that the resulting portrait seems more natural.

To removing of hair from the face, draw the cursor to the part of the haircut which covers up the face and pressing the left mouse button cover by the ellipse the extra piece of the hair (Example). The hair within the ellipse becomes lighter. By repeating this operation 2-3 times it becomes invisible.

## # Saving the results

{bmc himg\kisave.bmp} The initial, working and resulting portraits can be saved in any moment as bmp file on the disk. Contents of the working area in the current moment will be saved. To activate this function press the corresponding button in the right lower corner of the main Window.

## # Printing of the results

`{bmc himg\kiprint.bmp}` You may print the contents of the working area at any moment. To do it, just press the corresponding button in the right lower corner of the main Window.

## # Step back

{bmc himg\kisback.bmp} Step back function allows to cancel last maded operation.

## # Background music control

{bmc himg\kisound.bmp} If your computer has a sound card, the background music sound in the beginning of the program. To turn it on or off use the button near the right margin of the main Window.

## # Exit

To quit the program press the button in the right lower corner of the main Window.



## # About the program

*Beauty Center*

### **Ladies' Hairdresser**

Computer Hair-style selection

Version 1.1

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**# *Portrait scaling.Example.***

{bmc himg\r000001.bmp}

1. Set vertical lines on the centers of both eyes.
2. Set Horizontal line on the level of both eyes.
3. If a rectangle appears set it in the optimal way.
4. Press the button "Initial Portrait".

In this way the initial portrait is formed.

**# Automatic contour drawing. Example**

Example of a small contour.

{bmc himg\r010101.bmp}

Widen the color range and form a new contour.

# ***Automatic contour drawing. Example***

Example of an extra large contour.

{bmc himg\r010102.bmp}

Press the button for color range deleting and form a new contour.

# *Automatic contour drawing. Example*

{bmc himg\b010101.bmp}

Example of a normal contour.

# *Drawing of the contour by hand. Example*

{bmc himg\b010201.bmp}

Combining of the contours formed automatically and by hand.

# *Automatic face shape determination. Example*

{bmc himg\b010001.bmp}

Position of the polygon for face-shape determination.

**# *Head form restoration. Example***

{bmc himg\b020101.bmp} {bmc himg\b020102.bmp}

Position of the polygon for head form restoration and the result of its painting.



**# *Painting of the area. Example***

{bmc himg\b020303.bmp} {bmc himg\b020304.bmp}

Selection of an area and its painting.

# ***Hair-style selection. Example***

{bmc himg\b020702.bmp} {bmc himg\b020701.bmp}

During hairstyle transition only its contour is visible.

**# *Haircut dyeing. Example***

{bmc himg\b020601.bmp} {bmc himg\b020603.bmp}  
{bmc himg\b020604.bmp} {bmc himg\b020602.bmp}

# *Working with the created portrait. Example*

{bmc himg\b030101.bmp} {bmc himg\b030102.bmp}

The contour before and after softening.

**# *Removing of hair from the face. Example***

{bmc himg\b030211.bmp}

{bmc himg\b030212.bmp}

{bmc himg\b030213.bmp}

# MastRegm  
# LdImg  
# LdImgL  
# LdImgF  
# LdImgB  
# Mashtb  
# PSrc  
# CntAuto  
# CntHand  
# DefForm  
# EditWork  
# WLast  
# WRest  
# WBrush  
# WMasht  
# WHead  
# WColor  
# Result  
# SSave  
# SPrint  
# SUndo  
# SSound  
# SExit  
# About  
# KelMashtb  
# KelCntAuto1  
# KelCntAuto2  
# KelCntAuto3  
# KelCntHand  
# KelDefForm  
# KelWRest  
# KelWBrush  
# KelWHead  
# KelWColor  
# KelResult  
# KelResult4