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The Joy Using TUFKAP

A simplified introduction



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1 Preface

It all started with the presentation of the mini project during one particular lesson on one particular monday. We were shown the requested functions and some extras, i.e. the hoover effect. We just thought it looked nice, and decided to try something similar. We, that's Moritz Kobel and Tomi Cvetic, who are the authors of TUFKAP.

We had some ideas for a few functions. Those that we could work out are now available in this utility: TUFKAP, which stands for *The Utility Formerly Known As Painter*.

The following few pages are going to explain the built in functions of this tool. Read them carefully. They contain some really useful tips!

2 Compulsary part

2.1 Invert function

This function inverts a free selectable area inside the picture frame.

Press the "I" button on your keyboard to select the invert function. Choose a starting point by pressing the left mouse button. Hold the button pressed and move the cursor over the screen until you have reached the desired end point. Release the left mouse button.

You can easily change the shape to be inverted by pressing the "," button for rectangular, or the "." button for elliptical selection.

***Note:** As you know, you can select the mode (rectangle or ellipse) prior to inverting. If you try to switch the mode after you have started to invert an area, the program might do something you're not intending to.*

2.2 Gray draw mode

This function fills a free selectable area with an also free selectable gray-scale value.

Press the "G" button on your keyboard to activate the draw function. Proceed as if you would do to invert an area. Releasing the left mouse button will fill the selected area with the predefined gray-scale color.

You can change the shape as seen in the "invert"-section. Choose your fill-color by pressing the "P" button.

2.3 Copy mode

Guess, what could the copy function do? Clean up your home directory? No, it should simply copy some pixels.

Press "C" to switch to the copy mode. Select the source area you want to copy. Click on the image to set the upper left corner of the destination area.

2.4 Flood-fill mode

In the flood-fill mode, an area of pixels which are in between certain tolerance boundaries will be filled up with a free selectable gray-scale color.

Press the "F" button on your keyboard to select the flood-fill mode. Click anywhere inside the Picture. The selected area should now be filled up with the chosen color.

Choose the color by pressing the "P" button, or change the tolerance level by pressing "T".

3 Voluntary part

The following functions are known to be quiet compute-intensive. Therefore we recommend you to

1. buy a new computer or
2. use at least a Intel Pentium III 1200MHz or equivalent machine with graphic acceleration (or a Pentium IX 750THz when using a MS Windows operating system).

3.1 Flip function

You're tired of Adeltraut looking at the right side of your screen? Try the "H" (horizontal) or "V" (vertical) button on your keyboard to expand her point of view!

3.2 Brightness adjustment

If by any means the picture becomes too dark or too bright, you can manipulate it by pressing the "+" or the "-" key.

3.3 Crystallization effect

Hit "L" and observe the image. After a few seconds, there are going to grow some kind of iceicles all over the picture. You might think, the original contours are gone for good, but after another few seconds, they will reappear. It's a kind of magic!

3.4 Game of life function

First, after you press "K", the function removes the six superfluously bits in order that you get a black and white picture. Now, the actual function comes into play: You will see the white pixels acting in the game of life, following the rules of this well known cellular automaton.

This function looks especially nice when being used right after the crystallization effect.

3.5 Gravity tool

The first of our optical functions is the gravity function. You can activate it by pressing "B". It will virtually attract the surrounding pixels. We used the physical formula, to abstract our function from:

$$G \frac{m_1 m_2}{r^2}$$

To apply it, simply click on a point inside the picture, and move the cursor around.

3.6 Magnifying tool

Choosing this tool by pressing "M" enables you to magnify the image-cutout underneath the mouse pointer by the factor 4. It works just like the gravity tool.

3.7 Waterdrop mode

Imagine you have reached the point, where the magnifying mode just doesn't give you the thrill you need anymore. Then it's high time for you to try the new and improved waterdrop mode. Instead of just magnifying a part of the image, it simulates a waterdrop or a glass lens being laid onto the picture. You can use it as simple as the gravity tool, only that you have to press "D" prior to using it.

3.8 Fold Function

Because Mr. Pink hasn't taught us enough maths to develop an own compression algorithm, we had to realize it in a more – let's say – conventional manner. Unluckily, in many cases, the loss of information has been reported :-).

3.9 Wave tool

You know this: You're about to manipulate a picture and suddenly you feel nostalgic about your chemistry lessons way back in the past. What can you do? Press "W" and try to use your mouse button like a pipet over the image. Click somewhere to let one drop touch the surface and watch the waves that it generates.

You can also click and move the cursor around whilst holding the mouse button pressed. But be aware not to fall off your chair!

3.10 Fallout

The fallout function simply extracts some pixels. After you press the "X" button, the program will start to remove pixels. If one pixel was removed, it's mates above will fall down by one line and in the top line a white pixel will be added in the top line. Every turn the program will remove darker pixels until a dark leftover will stay.

You can stop this process pressing "A".

4 Special Keys

4.1 Abort

Press "A" to abort any current animation or leave any active function.

4.2 Quit

Press "Q" to leave the program.

4.3 Save

Press "S" to save the current state of the picture. The image will be stored in "Out.tif"

4.4 Help

Press "?" to call a listing of all possible functions. "F1" will remind you of this function.

4.5 Reload

If you have altered the image in an unpleasant way, you can reload the file from your hard drive. Just press "F5".

4.6 Color palette

If you feel like choosing a color, try the "P" button.

4.7 Tolerance level

To adjust the tolerance level in the flood-fill mode, press "T" and enter a value between 1 and 127.