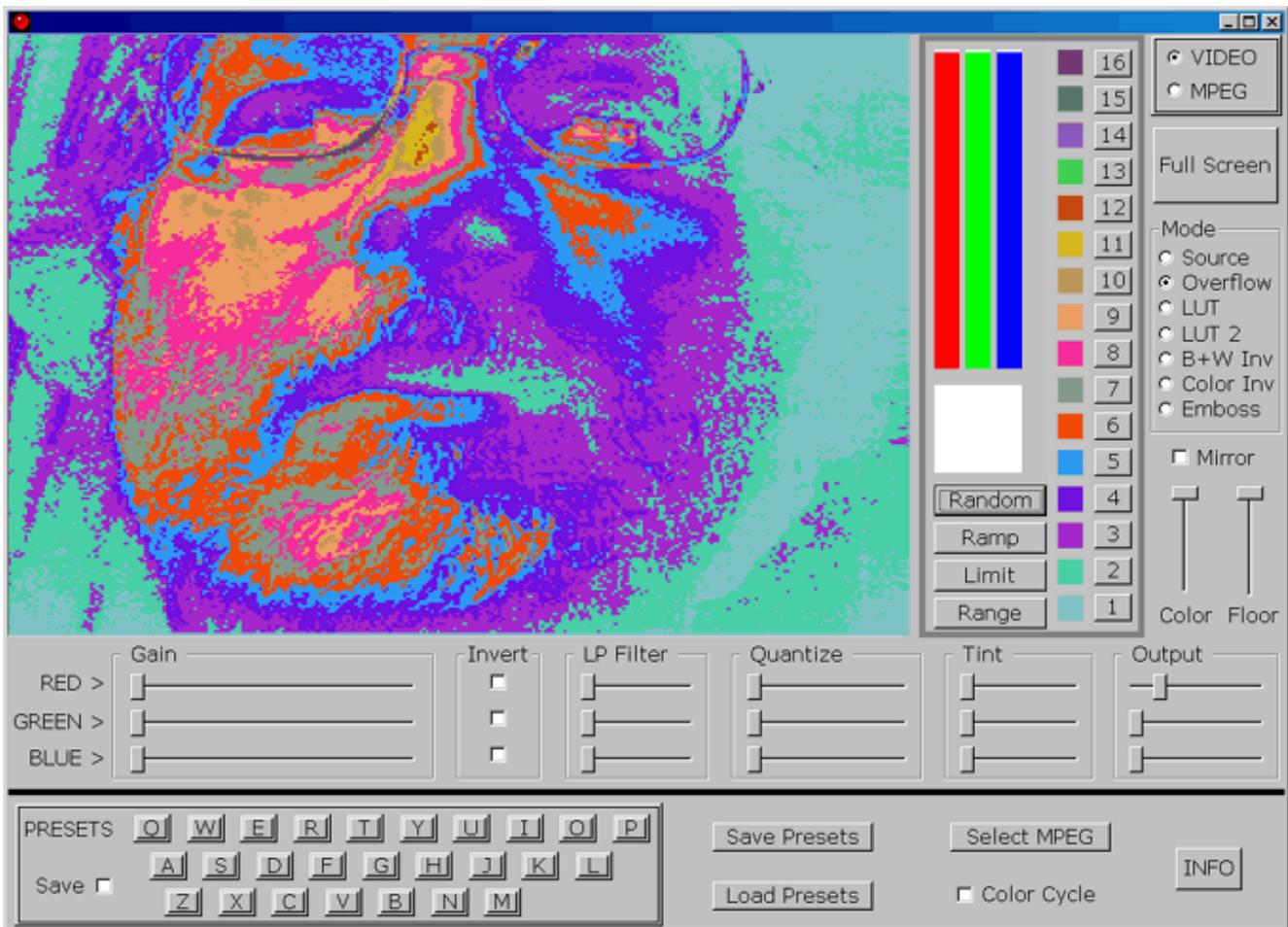


Video ColorToy



REQUIREMENTS:

Windows XP
Minimum 1024 x 768 display resolution
Video Capture Device (Windows DirectX)

QUICK STARTUP

- 1) Run the program. When it starts up, it will default to "unprocessed video" that is coming from your video capture device. You should see an active video window in the upper left corner of the control panel.
- 2) Press the button "Load Presets" on the lower center panel window. Using the file selector, load the file "demo.coz" that is included with the program.
- 3) Press the keyboard keys A through Z to select colorizer presets. (Or select the virtual keys with the mouse)
- 4) Using the mouse, select the "Full Screen" button in the upper right of the colorizer control panel window. (press the ESC key to return back to the window controls.)
- 5) Continue pressing keys A through Z...

OPERATION

The program can get its source 'video' from either a 'live' video capture device or a MPEG (*.mpg) file. In the upper right corner of the control panel is a **VIDEO** or **MPEG** radio selector.

The "**Mode**" radio selection buttons determine which colorizer mode will be used. There are seven different modes. The mode that is selected will determine which controls (sliders) are available. Some modes have more controls than other modes.

MODES:

"**Source**" shows the original unprocessed video.

"**Overflow**" is a simple colorizing 'model' that is explained below.

"**B + W**" shows the video in "black & white" with a single "invert" check box.

"**LUT**" uses a lookup table to colorize the video that is explained below.

"**Color Inv**" provides 3 check boxes to invert the RGB components.

"**LUT 2**" another lookup table model.

"**Emboss**" creates a black & white embossed effect.

The "**Overflow**" mode takes advantage of a virtual overflow-wrap-around model to create visual 'banding' of normal video... Using the RED input component to explain how this works, consider that a normal range of the RED input might go from zero (black) to one hundred (maximum red). The normal red component is suppose to stay within this range. Anything above 100 would be clipped so that it is forced to be a value of 100. If we boost the gain of the input so that it now spans a range of 0 to 1000, we will end up with with most everything above 100 and clipped -- resulting in a mostly bright red image. However, using a little register manipulation we can cause the value to start over at 0 every time it exceeds the value of 100. So as it moves across the range of zero to 1000, the actual RED value will go from "zero to 100 to zero" a total of ten times -- ten bands of brightness. Although difficult to do with analog electronics, it is very simple in the digital world. Using this method, each of the RGB inputs has its own "gain" control that is followed by controls that invert, smooth, quantize, tint, and set the brightness. With different gain levels for each of the RGB inputs, results are very colorful and similar to lookup tables.

There are two lookup table modes **LUT and LUT 2**. In both modes the input video is converted to B&W and then divided into 16 levels of brightness -- with each level given a unique color that is defined by a lookup table. The table is controlled using the panel controls: Clicking the mouse cursor over each of the three R G B vertical bars will change the values for the 'chosen' color that is displayed in the square area directly below the R G B bars. Once a color has been selected using this method, selecting one of the 16 small buttons will set that particular level (1-16) to the chosen color. Each member of the table can be set this way, or by using the Random, Ramp, Limit, and Range buttons to automate color palettes (the table). Use the Random button to select colors randomly -- based on the current color selection which is used to set the absolute limits of R, G, and B. Use the Ramp button to create palettes that range from dark to bright using the 'selected' color to effect random variations in the individual members of the palette. Use the Limit button to create palettes that are similar to the Ramp method except that the 'chosen color' is ignored and the random variations are calculated so that the brightness always increases as you move up through the table -- unlike the Ramp method. Use the Range button to create a range of colors that are based on two end points: Use the color chooser to select a color and place it in one of the 16 levels. Select a different color and place it in a different level. With both end points now setup, press the Range button followed by pressing each of the two levels where the end points are set. A graduated range between the two end points will result.

PRESETS are selected by using either the keyboard keys A through Z -- or the virtual screen keyboard keys A through Z. Banks of presets are loaded and saved to disk using the Load Presets and Save Presets buttons. To save individual presets into an existing bank: Setup the controls to the desired colorizing effect. Set the check box labeled "Save" that is next to the virtual keyboard. While this check box is set, any virtual key A through Z that is selected using the mouse will have a copy of the current effect saved into it. Remember to uncheck it when you are done. Then use the Save Presets button to save the whole bank to disk.

Controls.

The "**LP Filter**" control smooths the video using a low pass filter. The image is filtered twice -- once on the x axis and again on the y axis.

The "**Quantize**" control quantizes the range. Results in 2, 4, 8, 16, 32, 64, 128, or 256 levels of brightness.

"**Tint**" shifts the color. May depend on how the other R G B channel outputs are set.

"**Output**" sets the brightness level.

"**Color**" and "**Floor**" are located on the right side in the center. "**Color**" is used to set the 'color saturation'. Turn it all the way down to turn the image black and white. "**Floor**" is used to set the bottom of the brightness range (the black point).

"**Mirror**" reflects the right half of the image to the left side. Works in all modes.

The "**Select MPEG**" button is used to select an MPEG file to use as input.

The "**Color Cycle**" check box will 'cycle' the colors in Overflow, LUT, and LUT 2 modes.. This check box is not controlled by presets.

KNOWN PROBLEMS:

When selecting the "MPEG" radio button, it may take a second or three before the MPEG file begins to play.

CPU pig... The different "modes" use different amounts of processor time. Use the Task Manager to observe actual CPU usage.

Full Screen mode only works on the "primary" monitor for systems with multiple monitors.

Full Screen mode will force the aspect ratio to whatever the "primary" monitor is – regardless of the aspect ratio of the source video.

Not selecting a Video Capture Device may crash the program.

LEGAL:

This program is provided "as is" and no representation regarding it is made or implied.

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