Envision Toolbox Manual

Chapter 3

Editcmap

Editing Colormaps

Chapter 3 - Editcmap

A. Introduction

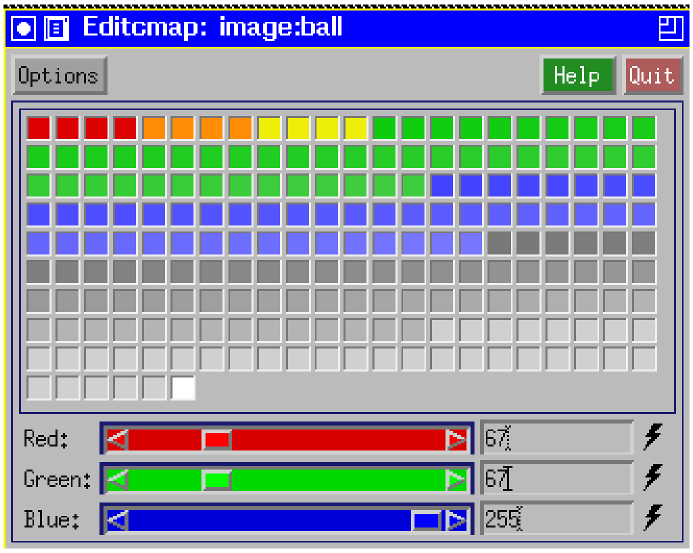

Figure 1: Editcmap is used to interactively modify the colormap of a data object. Here, the pseudocoloring method of colormap modification is used.

Editcmap is an application for interactively changing the colormaps of data objects. It supports two different methods of colormap editing: pseudocoloring and thresholding.

On creation, the main editcmap window may be placed manually (the default method), or placed automatically. For automatic placement of the main editcmap window, specify the desired location in device (screen) coordinates, using the [-x] and [-y] arguments.

While the main editcmap window should be created with a default size that is appropriate to the type of colormap modification (pseudocoloring or thresholding) being used, a width and height for the main editcmap window can be specified explicitly using the [-width] and [-height] arguments. Alternatively, you may allow the main editcmap window to size itself initially, and then use the window manager to interactively modify its size as desired.

B. Command Line Options

Editcmap can be executed from within cantata, or directly from the command line. The data object containing the colormap to be modified must be specified at the time of execution.

```
% editcmap
```

```
Required Loose Group - Specify at least one of the 2 options:
  [-i]    (infile) file with initial value data
          (default = {none})
  [-cmap] (infile) file with initial colormap
          (default = {none})

Required Mutually Exclusive Group - Specify exactly one of the 2 options:
  [-pseudo] (flag) PseudoColor method for editing colormap
  [-thresh] (flag) Threshold method for editing colormap

[-use_cmap] (boolean) use colormap?
            (default = true)
[-x]        (integer) x location of GUI
            (-1 <= x <= 1000, default = -1)
[-y]        (integer) y location of GUI
            (-1 <= y <= 1000, default = -1)
[-width]    (integer) The window width
            (-1 <= width <= 1000, default = 512)
[-height]   (integer) The window height
            (-1 <= height <= 1000, default = 512)
[-update]   (float)   initial update time
            (update > 0.0, default = 2)
[-o]        (outfile) file in which to store the modified colormap
            (default = {none})
```

[-i {input value data}]

This is the data object containing the value data which uses the colormap to be modified. If this data object *also* contains the colormap to be modified, the [-i] argument may be substituted for the [-cmap] argument. You may provide either [-i] or [-cmap], or both.

[-cmap {input colormap}]

This is the data object containing the colormap to be modified. You may provide either [-cmap] or [-i], or both.

[-pseudo]

Specifying this flag will cause editcmap to use the pseudocolor method of colormap editing.

[-thresh]

Specifying this flag will cause editcmap to use the threshold method of colormap editing.

[-use_cmap {t/f}]

While the default action of editcmap is to use the colormap associated with the currently displayed image, no colormap is required to be used. If the [-use_cmap] option is specified as false, the value data contained in the data object specified by the [-i] argument will be considered to be greyscale. The colormap editing procedure will be started with the greyscale values.

[-x {value}] [-y {value}]

The x and y arguments are always provided as a pair. Together, they indicate that the GUI of the xvroutine is to be placed automatically at the (x,y) location specified, where x and y are given as device (screen) coordinates. By default, x and y are both -1, indicating that manual placement of the GUI will take place.

[width {value}] [-height {value}]
The width and height arguments are usually provided as a pair. Together they specify the size of the editcmap window.

[-update]
Suppose that while you are editing a colormap with editcmap, file containing the colormap is over-written. When the [-update] flag is specified as some number greater than zero (the default), this indicates to editcmap that it should automatically register the fact that the input file has been changed, and update the currently displayed image accordingly. The value of the [-update] flag specifies (in seconds) how often the input file is to be checked for any potential modifications. It should be specified as a floating point value which is greater than zero. When the value of the [-update] flag is zero (the default value), editcmap will NOT check the input file for modifications.

[-o] Using this argument, provide the name of the output file that the modified colormap will be written to. If no output filename is provided, the modified colormap will *not* be written out; it will be considered that the session with editcmap was for visual information purposes only.

C. Using the Pseudocolor Method of Colormap Modification

When the pseudocoloring method of colormap modification is used, a pseudocolor visual object is created and mapped to the screen. The pseudocolor display includes a toggle from which you may select the colorspace model, a palette of the colors in which image pixels appear, and a set of Red, Green, and Blue scrollbars.

Pseudocolor Palette
The middle portion of the pseudocolor subform contains a palette, in the form of a grid of color cells. Each color cell represents a pixel in the input image, and appears in the same color as the pixel does in the image. The color cells are arranged in the order that the pixels appear in the image's colormap; ie, the upper leftmost colorcell is the first color in the colormap and lower rightmost pixel box is the last color in the colormap. When a range of colors from the palette is chosen for alteration, all colors that lie sequentially between those two color cells in the colormap are altered.

The Red/Green/Blue Scrollbars
The three color bars below the palette will reflect the three different components that define the color of the selected pixel. These scroll bars are used to change the colormap of the input image.

Using the PseudoColor Object to Modify the Colormap
First, select a single pixel value or a range of pixel values to have their color changed. To select a single pixel value, click once on the corresponding color cell. To select a range of pixel values, click once on the colorcell representing the first pixel in the range, and then click once on the colorcell representing the last pixel in the range.

After you have selected the pixels to be changed from the pseudocolor palette, use the Red, Green, and Blue scrollbars to specify the color in which that range of pixel values should appear. The colorcell(s) will immediately reflect the color as represented by the Red, Green, and Blue scrollbars.

Options of the PseudoColor Object

Click on the "Options" button to display the internal menuform which is associated with the pseudocolor object. Using the menuform of the pseudocolor object, you may change the palette type used by the psuedocolor object from Color Cell to Color Bar or Color Wheel. For more details on the features offered by the threshold object, click on the "Help" button of the pseudocolor object menuform.

D. Using the Thresholding Method of Colormap Modification

When the thresholding method of colormap modification is used, a threshold visual object is created and mapped to the screen. The threshold display includes a palette of pixels representing the values of the colormap, and and a set of Lower, Upper, and Range scrollbars.

Threshold Palette

The middle portion of the pseudocolor subform contains a palette, in the form of an ordered range of vertical lines representing pixel values. Each color line in the palette represents an entry in the colormap, and appears in the same color as the corresponding pixel does in the image. The color lines are arranged in the order that the pixels appear in the image's colormap; ie, the leftmost color line is the first color in the colormap and the rightmost color line box is the last color in the colormap.

The Upper/Lower/Range Scrollbars

The three scrollbars below the palette will reflect the lower bound, the upper bound, and the range of the thresholded values. These scroll bars are used to change the colormap of the input image.

Using the Threshold Object to Modify the Colormap

First, move the "Lower" scrollbar to the pixel value representing the lower bound of the range to be thresholded. Then, move the "Upper" scrollbar to the pixel value representing the upper bound of the range to be thresholded. Pixel values outside the range will be changed to appear in black. The "Range" scrollbar can be used to move the "Lower" and "Upper" values synchronously.

Options of the Threshold Object

Click on the "Options" button to display the internal menuform which is associated with the threshold object. Using the menuform of the threshold object, you may change the policy of the threshold object from Pixel Clipping to Pixel Thresholding and vice versa. When pixel clipping is being done, the clipped region may be accepted or rejected; when pixel thresholding is being done, the threshold region may or may not be inverted. For more details on the features offered by the threshold object, click on the "Help" button of the threshold object menuform.

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