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Image All

1 Overview:

1.1 Description

This program will present a convenient interface to organizing images. It will have a graphical user interface so that it will be easy to see the images being organized. There will also be tools built into the interface that will make it easy to do simple modifications to the images, individually or in groups. This will replace using any file manager or a shell to edit image files. And no separate viewer is necessary because it is built in.

2 System Model Components:

2.1 GUI:

Everything will be done through the user interface. All the input will be going through the GUI and all output will be displayed on it. On the left side there will be a collapsible folder view so that it is possible for one to navigate around one's image files. There will be a toolbar on along the top of the screen where one will be able to select which viewing tools, editing tools, correction tools, as well as any other tools needed to use. The GUI will be mainly mouse driven. In the bulk of the GUI space, there will be rows of picture thumbnails all the images in the current folder that one is viewing. The thumbnails will be of adjustable size so that people with different resolution screens won't be limited to too many or too few thumbnails viewable at once.

An important aspect to having tools available within the image viewer will be the right click function on the mouse. Many common file managing features(copy, cut, paste, delete, rename, properties), editing features(rotate, resize, flip, convert, crop), and correction features(gamma, brightness, contrast, RGB adjustments) will be selectable on the current highlighted image(s). Multiple images will be able to be selected with the mouse just by clicking and dragging.

The GUI is the gateway to all the tools and features available in the program. So it will be important to have a solid GUI that integrates well with all the modules.

2.2 Editing Module:

This will be the module that controls all the editing features that are passed onto it in the program. The GUI will pass to it the image to be edited and parameters to be changed with it. There will be five main features: rotate, resize, flip, convert, crop.

Rotate – There will be three rotate options. Rotate 90 degrees clockwise, 90 degrees counter-clockwise, 180 degrees. An optional feature to consider later might be an arbitrary rotate but that would have to be followed with a crop or just white space to fill the empty areas that comes with an arbitrary rotate.

Resize – This will be a constrained image resize feature. There will be two parameters, width and height. But because it will be a constrained resize, when you adjust either width or height the complimentary attribute will automatically change. An optional feature to consider adding on will be to do unconstrained resizes.

Flip – This will be a mirror image flip. Either the image can be flipped horizontally or vertically. There will be no parameters for this. There will only be two options, flip horizontally or vertically.

Convert – When the user desires to change the format of the image he will have the option to convert it to whatever type he wants. The available options will be .jpeg, .bmp, .tiff, and .gif.

Crop – Using the mouse to click and drag a rectangular area of selection on the image, one will then be able to click on the crop feature to crop the image within the rectangle. This will have no adjustable parameters other than the rectangle selected by the user which defines an area.

An optional feature that all of these may include if there is that there will be a preview feature that will show them a real-time preview as one adjusts parameters for the editing options.

2.3 Correction Module:

This module will allow the user to correct the images in terms of color, gamma, brightness and contrast. The GUI will allow the user to do these corrections which will then pass on the image as well as the selected correction along with the parameters to the module. The module will then return the new corrected image to the GUI to display.

Color – The user will be able to adjust red, green, and/or blue(RGB) values for the given image. There will be three sliders, one for each color to adjust the values. An optional feature will be to select an area with the rectangular selection tool and then adjust just the RGB values in that space.

Gamma – For gamma correction, the user will have one slider that will adjust the gamma value in the image. Like the color correction feature, an optional feature to add on will be adjusting the gamma in a rectangular selected area.

Brightness/Contrast – There will be two sliders for this. Brightness and contrast always seem to be adjusted together in programs, hence I am combining these two into one box. Again, an optional feature is to adjust brightness and contrast in a selected area.

2.4 Viewing Module

This is the module that the GUI will access to view images and display them on the screen. The features available in this will be zoom, fit-on-screen, move (as in move the image around while it is zoomed in), thumbnail viewing.

Zoom – This is just to zoom in and out of the picture. The GUI will incorporate a magnifying glass tool and then every click will zoom in while every alt+click will zoom out.

Fit-on-screen – This is a one click feature just to fit the image back onto the screen in its entirety. This is a convenience feature so that the user will not have to continuously zoom in or out to fit the image.

Move – If the image is zoomed in and the user wishes to move around, it would be inconvenient to zoom out and then zoom into the region that he wishes to view. The move tool will allow the user to move around the view area when the image is zoomed in.

Rectangular selection tool – This tool will be mainly be used to select areas to manipulate in editing and correction. Basically it's clicking and dragging to select the desired area.

Thumbnail viewing – Thumbnail viewing will be controlled by the viewing module. It will take the images in the directory and shrink them to the correct thumbnail sizes and spit out the images to the GUI to display. This will be rather CPU intensive, especially if there are more images in the folder.

3 Integration

3.1 GUI and Viewing Module

The GUI will have the viewing tools for the user to click on and manipulate. When the tools are used, the appropriate parameters as well as the function calls will be sent to the Viewing Module so that it can return the appropriate image to be viewed, whether it has been zoomed, moved, etc.

3.2 GUI and Editing Module

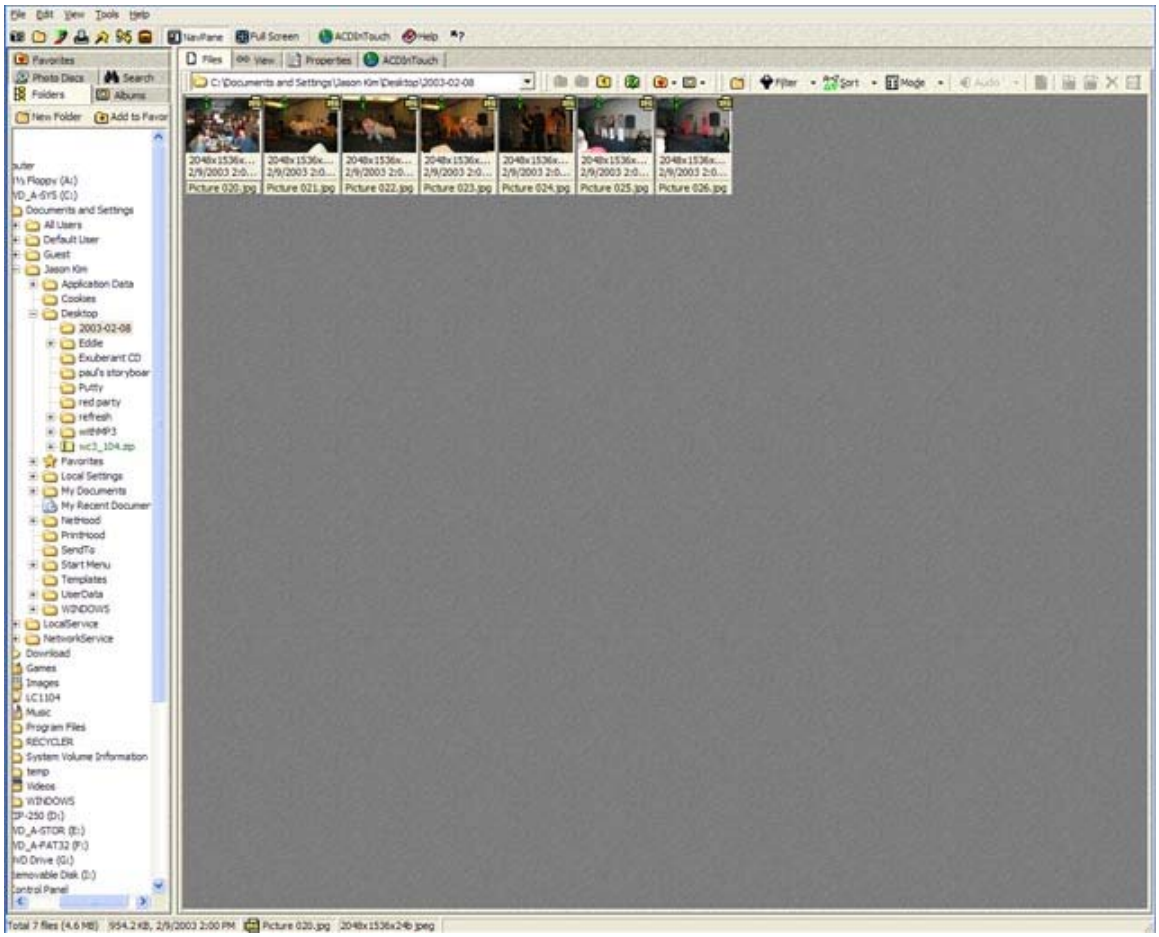
The GUI will pass the image as well as the editing function call with the parameters the user has set. Parameters sent to the editing module would depend on the specific function call in the editing module,

3.3 GUI and Correction Module

This will be very similar to the editing module in that the GUI will pass parameters as well as the image to the module and then the module will return the corrected image.

4 User Interface

4.1 Diagram



4.2 Description

The program will have three basic sections: 1) Top toolbar 2) Large section of thumbnails of the pictures 3) List of folders on the left in a column.

Top Toolbar – This toolbar will have buttons for often-used editing and correction features, such as brightness/contrast, rotate, resize, etc. Also, there will be navigation buttons very similar to Mozilla such as back, home (for a home folder that one chooses the program to always open to), up (if one is in a collapsed folder), arrange by, rename, etc. For less often-used features that weren't put on the toolbar button row because of space constraints, we will use a pull down meny along the very top row of the program, seen often in programs these days. Also importantly, the settings/preferences will be in the pull down menu so that you can edit settings such as thumbnail display size, cache size, etc.

Thumbnails – This will take up the bulk of the display area. The pictures in the folder that one is currently browsing will have all of its image files displayed in thumbnails. This is a huge feature of this program because then it enables the user to view all the pictures quickly. So instead of memorizing file names to find the correct picture or opening pictures one at a time, they will be able to browse through multiples pictures at once by just glancing at thumbnails. A powerful feature is the right click function for the program. The user can put their cursor over the picture and by right clicking, a menu will appear beside the picture for editing, correcting, file managing, and viewing. This takes away a lot of time every time the user would have to otherwise go to the toolbars to apply a modification to the selected image.

Folder List – this is for convenient and efficient navigation around the drive for searching out pictures and folders. This will be very similar to the folder viewing feature in explorer in Windows XP.

5 Nonfunctional Requirements

5.1 Performance

5.2 Testing

5.3 Reliability

5.4 Ease of Use

5.5 Portability

5.6 Documentation

5.7 Dependencies

6 Risks

6.1 Risk Description