User Manual

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1. To run the code, simply run the LichtenstienGenerator.py Python command 'python LichtenstienGenerator.py' when inside the correct directory using the command prompt. You can also make the file executable using the command 'chmod u+x LichtenstienGenerator.py' in Linux and double click the file to run it. Otherwise, you can run it by associating python.exe or pythonw.exe to the file to run it.
2. Once you have run the program, an Open File dialog window will appear which will ask you for a file. Select the image file you wish to open and click 'Open'. This will load the image into the program. If ImageTk is installed, you will get the image preview in the grey canvas. If not, then an error message will appear stating that Image previews aren't available on the machine.
3. You can cycle through the original image and the generated image (when created) using the two tabs in the top left of the screen. If ImageTk is not installed, you can use the 'Show Image' at the bottom of the preview to view that image dependent on what tab is shown.
4. You can zoom into the preview image if it is present using the scroll wheel, and the '100% Zoom' and 'Fit to Canvas' buttons will be enabled and do as labeled.
5. You can change the image in the program by using the 'Change Image' button on either of the tabs and this will create another Open File dialog to find a file for.
6. You can select a preset value under the 'Presets' combobox. This will change all the values currently in the program to the values stored in the preset. The default preset is the one specified in the brief.
7. Quantize Frame:
    a. Colours stores the number of colours the image will be reduced to. This can be changed from any value from 2 to 256.
    b. The Colour Table stores all the colours that will replace the existing colours from the quantized image and all that remain will be

halftoned. To change and already existing colour, double click the colour in the table and the option to change it will appear. The buttons ‘Add Colour’ and ‘Remove Colour’ are self-explanatory, except that the removed colour must be selected in the table.

c. Denoise Amount is the sigma amount applied to the quntize image from the Gaussian Blur filter.

8. Halftoning Frame:
    a. Box Width/Height is the value for the box sample to take place on the image. For example, if the value is 5, the box will be 5x5.
    b. The circle ratio is how much larger or smaller the circles created by the halftoning process will be scaled by relative to it’s original size.
    c. Foreground/Background colour are the colour of the circles and the colours behind them respectively. Double click the box to change the colour.
    d. Foreground Average Colour check box. If this value is checked, the value in the Forecground for the circles will now be average colours and not the specified colour in that box
9. Canny Edge Detect Frame:
    a. Denoise Amount is the sigma amount applied to the edge detect image from the Gaussian Blur filter.
    b. High edge threshold is the higher threshold used for the edge thinning process
    c. Low edge threshold is the higher threshold used for the edge thinning process
    d. The edge colour is what the colour the edges will be drawn as. Double click to change this value.
10. Anti-allias is the amount of Anti-aliasing resampling that will be applied to the image.
11. Generate creates the image and will either show the result in the Image viewer or show the result in a window. A progress bar will appear showing the progress of the generation.
12. Save will save the image file currently stored in the Image Viewer ‘Result’. This still happens when the module ‘ImageTk’ doesn’t exist.