Read Me — HyperDither 1.3

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http://www.tinrocket.com/software/hyperdither/

Author: John Balestrieri, Tinrocket, LLC

Introduction

What does HyperDither do?

Short Answer: HyperDither implements the "Atkinson" dithering matrix as an OS X application.

Long Answer: HyperDither is an OS X image processing utility that converts color or grayscale images to 1 bit black & white using a sophisticated dithering routine. Specifically, HyperDither implements the "Atkinson" dithering filter.

Years ago, during the development of the first Macintosh, Bill Atkinson (of HyperCard, QuickDraw, MacPaint & now nature photography fame) discovered a very elegant dithering filter to convert greyscale image data to the 1 bit black & white Mac video display. The dithering produced by this routine was much higher quality than the now-a-days ubiquitous Floyd-Steinberg or "Error-diffusion" filter (used by QuickTime, PhotoShop).

The dither matrix was implemented as an option in Apple's long-lost HyperScan software (A HyperCard stack with some XCMDs/XFCNs) that would connect an early Mac to a flatbed scanner. HyperScan, and hence the most-excellent Atkinson dithering routine, has been unavailable for many, many years — but not forgotten! I was able to email Bill Atkinson in January, 2003 and inquire about the details of the algorithm; he was kind enough to respond with a brief write up of the routine — 15 minutes later I had it up and running.

It's taken a few spare afternoons since 2003 to pack everything into a nice little application with documentation and an icon — better late than never!

The implementation is not as efficient as the original assembly language code, since it was written in a higher-level language and compiled without optimizations. That said, it should still be plenty fast enough.

Pricing

The cost of HyperDither is $0.00. (Free to use and own, but not in the public domain)

System Requirements

HyperDither was developed on OS X 10.4.10 through 10.5.7 — earlier system versions back to OS X 10.3 *should* work, but have not been tested. HyperDither is a Universal application, which means it will run natively on PowerPC and Intel Macs.

Installation

Drag the HyperDither application icon to your Applications folder.

Usage

HyperDither is pretty straight-forward to use. Launch it and drag or paste an image into the main window! If the picture you've pasted in is bigger than the window, the mouse cursor will turn to a hand cursor and let you scroll the image.

A few menu options will now be available:

File Menu:

New Window — Makes a new HyperDither window for you to paste/drag images or a drag folder into.

Open — Select an image for processing

Batch Process a Folder — Select a folder for batch dithering. Once you select your folder, you will be prompted for the save location. The batch processed images will be placed into a new folder.

Save — Saves the current HyperDither image as a PNG file in the location of your choosing.

Options menu:

Sharpen — When this item is checked, the image will be run through an edge-detection filter before it is dithered.

Contrast — This item is checked by default. When it is checked, the software will use Bill Atkinson's original "error propagation term", which basically means, the final image ends up a bit more contrasty — about 33% more. This can be nice, as solid areas of white and black play nicely against the dithered areas. If you want to keep the full dynamic range of the image — the original contrast — uncheck this item.

View menu:

25%, 50% — HyperDither was not meant to create dithers meant to be viewed at these reduction levels, but these views are handy if you have very

large images, such as images destined for high-resolution printers.

100%, 200% — Original or Double size the image (not quite as powerful as FatBits ;) but still useful for seeing what's going on).

Show Original — Toggle this item to switch between the original image and the dithered image.

Finally, you can use the Edit menu to Cut/Copy/Paste/Clear the image in the main window.

Support

Since this is free software, we (Tinrocket, LLC) can't offer any type of support other than consolations if something goes bad. Also, the standard disclaimer for disaster applies: we will not be responsible for Anything Bad™ that happens when this software runs, so use it at your own risk.

However, I would be interested in *hearing* about any crashes or bugs you run into; please send them to bugs@tinrocket.com and try to include as much system information and steps-to-reproduce as you can.

Credit

This application was written by John Balestrieri of Tinrocket, LLC, and is copyright © 2006-2008 Tinrocket, LLC. Thanks to Bill Atkinson for his dithering matrix!

The Future

There are a few items on HyperDither's horizon that would be interesting to implement:

•More brightness & contrast controls
•Color dithering

However, there are no plans at the present time to expand HyperDither, but please feel free to let us know what you think about the software or if there are any features you would like to see. Given some spare time & inspiration, they might be worth pursuing. Thanks!

Version History

1.3.0, May 14, 2009
• 12.5%, 25% & 50% reduced views
• Optimized PNG export -- tiny, loss-less files!
• Several redraw bugs related to the view menu have been fixed.

1.2.0, Mar 1, 2008
• Implemented batch processing. Batch processing also works with drag and drop: drag a folder of image into the main window; you will be prompted for a save location.
• New keyboard shortcut to clear the main window (Command-Delete)
• Can now have multiple HyperDither windows
• Image scrolling now works when the window view is zoomed
• Removed QuickTime Graphics export options when saving images; PNG is now the default file type for all save and batch operations.

1.1.0, Oct 7, 2007
• Universal Binary build
• Implemented image scrolling in the main window for big pictures (The cursor will turn into a hand, allowing you to pan the image)

1.0.1, Aug 12, 2006
• First public release
• Minor bug fixes & optimizations
• New icon

1.0.0, July 27, 2006
• Final 1.0 version