
Subject: Bmp2DHR General DHGR Demo available for download

Posted by [Bill Buckels](#) on Wed, 27 Aug 2014 12:40:56 GMT

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Download it here:

<http://www.appleoldies.ca/cc65/programs/dhgr/generaldemo.zip>

I am wondering if this is something the Apple II Community wants to pursue... this is a demo of a cross-section of the DHGR images I have been processing with Bmp2DHR. Some good, bad, ugly.

To slow down or speed-up the slideshow use the numeric keys. 0 will wait for keypresses.

But since I am getting no feedback I haven't updated the utility on-line etc. In no rush to do so. I also haven't updated my cc65 stuff for awhile. I don't hear much about that either.

If nobody is interested then that's fine.

This seems a little like Harry Potter's fields, so I am wondering if anyone does anything with this besides me and Sheldon Simms.

If that's the case then who are we advancing this for? I'm having more fun using this than writing about it... or uploading it for anyone else.

David Shmidt, I know it sounds dumb... but seriously. Is there anyone left who is going to work with DHGR graphics?

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [David Schmidt](#) on Wed, 27 Aug 2014 13:56:32 GMT

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On 8/27/2014 8:40 AM, Bill Buckels wrote:

> David Shmidt, I know it sounds dumb... but seriously. Is there anyone left
> who is going to work with DHGR graphics?

I've said what I have to say on the subject. I have only this to add.

<http://i0.kym-cdn.com/photos/images/original/000/061/297/nickcage.jpeg>

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [Anton Treuenfels](#) on Wed, 27 Aug 2014 15:00:41 GMT

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"Bill Buckels" <bbuckels@mts.net> wrote in message
news:ltkjkj\$u7q\$1@speranza.aioe.org...

>

> This seems a little like Harry Potter's fields

Ouch! :-)

- Anton Treuenfels

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [STYNX](#) on Wed, 27 Aug 2014 15:51:37 GMT

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On Wednesday, August 27, 2014 3:56:32 PM UTC+2, schmidtd wrote:

> I've said what I have to say on the subject. I have only this to add.

I don't know what that means, but i like the results Bill has produced. Sadly i cannot split myself into 2 or more pieces to do all the stuff i want to do. Currently i have too much to do already and stupidly hope that christmas vacation will give me some more time ;-)

-Jonas

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [olivier.zardini](#) on Wed, 27 Aug 2014 16:16:09 GMT

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Le mercredi 27 août 2014 14:40:56 UTC+2, Bill Buckels a écrit :

> Is there anyone left who is going to work with DHGR graphics?

You work for future generations, in several years from now. Don't expect any return soon.

BTW where is the interest to TAG all pictures with a big Bmp2DHR ?

What is nice with Error Diffusion pictures is they look gorgeous if you are watching them from the neighbour's house... Sadly, at 15 inches of the screen, 160*200 pictures look like sometimes like Impressionist paints. Full of color but a little bit too grainy.

Olivier

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [David Schmidt](#) on Wed, 27 Aug 2014 16:30:12 GMT

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On 8/27/2014 11:51 AM, STYNX wrote:

> On Wednesday, August 27, 2014 3:56:32 PM UTC+2, schmidtd wrote:

>> I've said what I have to say on the subject. I have only this to add.

>> <http://i0.kym-cdn.com/photos/images/original/000/061/297/nickcage.jpeg>

> I don't know what that means [...]

It's an internet meme:

<http://knowyourmeme.com/photos/61297-your-argument-is-invalid>

It simply means I think Bill's restricting access to something solely based on popularity (or lack thereof) is nonsensical. Just because mass support isn't materializing today doesn't mean no one will ever be interested. It's the same advice I gave Harry Potter when he was lamenting the fate of Fields. Do what you love. Who cares what anyone else thinks?

I simply find it bewildering that someone like Bill who is so prolific, so skilled, and so free with absolutely everything else he does for the community would suddenly take this petulant stance (sorry, Bill).

Just think of how this will look a year or six from now. Some kid picks up a GS at a garage sale, has Schmenk-like intelligence with regard to graphics, and starts exploring DHGR. She looks on comp.sys.apple2.* for DHGR stuff - and finds Bill's posts: "Does anyone care? No? Ok then! No DHGR for you!" "But wait!" she pleads. "I care! Bill - come back!"

But Bill has taken his code and gone fishing. He dangled it in front of her, but then snapped it away. It's just sad.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [STYNX](#) on Wed, 27 Aug 2014 17:25:43 GMT

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On Wednesday, August 27, 2014 2:40:56 PM UTC+2, Bill Buckels wrote:

> ... but seriously. Is there anyone left who is going to work with DHGR graphics?

>

> Bill

The demos you have uploaded are perfectly usable on retro-meetings. I have one of these meetings from 12.09-14.09. SHR, DHGR and DLGR are nice things that get attention from folks not into Apple II-stuff (until now). Imagine your demos running on e IIgs, IIe and IIC there for 80-100 computer freaks to see.

I can understand your thoughts about the way people say they like or don't like something. Getting approval is very rare whereas getting rejection is somewhat more common but the most common 'reaction' is the lack of response ;-)

As a programmer i like to get bug reports and 'bad reviews' because this means people have used my programs and found these things. If none says anything it could mean the software is not in use or it works flawlessly.

Anyways, i hope you keep up your work with cc65. I know of at least 1 person from Germany who is very interested in your demos. He uses them in a "workshop" kinda way to get familiar with the Apple II.

-Jonas

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Kevin](#) on Wed, 27 Aug 2014 17:33:35 GMT
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On Wednesday, August 27, 2014 7:40:56 AM UTC-5, Bill Buckels wrote:

> Download it here:

>

>

>

> <http://www.appleoldies.ca/cc65/programs/dhgr/generaldemo.zip>

>

>

>

> I am wondering if this is something the Apple II Community wants to

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> pursue... this is a demo of a cross-section of the DHGR images I have been

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> processing with Bmp2DHR. Some good, bad,ugly.

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> To slow down or speed-up the slideshow use the numeric keys. 0 will wait for

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> keypresses.

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> But since I am getting no feedback I haven't updated the utility on-line

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> etc. In no rush to do so. I also haven't updated my cc65 stuff for awhile. I

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> don't hear much about that either.

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> If nobody is interested then that's fine.

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> This seems a little like Harry Potter's fields, so I am wondering if anyone
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> does anything with this besides me and Sheldon Simms.
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> If that's the case then who are we advancing this for? I'm having more fun
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> using this than writing about it... or uploading it for anyone else.
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>
>
> David Shmidt, I know it sounds dumb... but seriously. Is there anyone left
>
> who is going to work with DHGR graphics?
>
>
>
> Bill

Im interested, but always swamped tween life and work to do much with DHGR at this moment, though I am constantly fiddling around with it making images to see what kind of "quality" image I can get out of an apple II

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Wed, 27 Aug 2014 22:50:17 GMT
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<olivier.zardini@itn-group.eu> wrote:

> BTW where is the interest to TAG all pictures with a big Bmp2DHR ?

This is done using the overlay feature of this converter. It is an exercise for the reader to produce his own tagged or untagged images. Also it is an exercise for the reader to choose whether they will use any of the 8 error-diffusion dithers provided, or one of the 3 cross-hatches provided or if they will simply produce a pixel by pixel verbatim rendering.

It very much interests me to follow the tradition of the Apple II image producers like PC Paradies or Pixel Joint when they attached their logo to their images. I consider what I produced here of better quality and also it makes more sense to sign a demo with the program or programmer's name that produced the image than some company.

> Sadly, at 15 inches of the screen, 160*200 pictures look like sometimes

> like Impressionist paints. Full of color but a little bit too grainy.

The IIGs is very coarse as well. By my standards I was already working with 32,768 true-color images in RGB in 1989 and the following year in 16.7 million colors first with the Everex VGA and then with the pre-release versions of the ATI Wonder XL.

DHGR as an expression medium is fascinating despite its large pixel size. These diffused images are Art today... but not grainy when viewed on my RGB monitor on my Apple IIe. Just gigass beautiful pixels:)

I think Olivier beauty is sometimes just our moods and not what we really see which is the point in exploring psychovisual.

These are not merely dithers but dithers with options like what some of the other guys were doing around the time. Atkinson is what Apple did and in my opinion was very poor. The worst.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Wed, 27 Aug 2014 23:04:55 GMT
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"STYNX" <Jonas.Groenhagen@gmx.de> wrote:

> I don't know what that means, but i like the results Bill has produced.

The best part is that this converter will take a 320 x 200 bmp output by Simplify and produce a dithered DHGR file from the same bmp that the M2S converter accepts as input. In other words, you now have SHR and DHGR output capabilities in Simplify.

> Sadly i cannot split myself into 2 or more pieces to do all the stuff i
> want to do. Currently i have too much to do already and stupidly hope that
> christmas vacation will give me some more time ;-)

My wish is that someday I can clone myself into two or more parts but I haven't been able to find the algorithm... yet.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Wed, 27 Aug 2014 23:07:41 GMT
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"osgeld" <kevin@hackaday.com> wrote:

> Im interested, but always swamped tween life and work to do much with DHGR
> at this moment, though I am constantly fiddling around with it making
> images to see what kind of "quality" image I can get out of an apple II

This converter also accepts GIMP palettes *but* your ghetto converter used a really crappy conversion palette (AppleWin) for LGR... The Wikipedia palette works the best.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 00:29:57 GMT
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<olivier.zardini@itn-group.eu> wrote:
>160*200 pictures

These are DHGR pictures *NOT* SHR pictures. They are only 140 x 192 and have a fixed palette of only the 15 lo-res colors. Did you take a look? Can you do better?

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [datawiz](#) on Thu, 28 Aug 2014 01:36:36 GMT
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I've been enjoying your work, Bill, and it is very much appreciated -- albeit silently in most cases. I'm sure there are others so please, keep on going as far as you have interest and there will be those of us who have an interest in looking at it and learning from it, now and in the future.

That being said, you've sparked an interest in me to investigate the Apple 64k RGB/Video-7 RGB card's 16 color 160x196 special RGB mode. I don't own one yet, but I guess some of the emulators may support it. Have you done any work with this yet? I'd love to read some more technical detail on it, as anything I've seen written doesn't go into it all that much.

It would seem to me to be a really interesting and novel way to utilize the IIe, especially if someone wanted to port games over to the platform-- graphics would be easier to map over, and the animation/game code would be a lot more straightforward, if I understand it correctly.

Of course, there's the challenge of the fact that these cards are a bit scarce, as well as the monitors to use them with, which takes a small general audience of interested Apple II owners to an even smaller pool of Apple IIe owners with this specific card.

This might also present an opportunity to create a new hardware spin of the Apple 64k RGB/Video-7 RGB card with touches like output to VGA/DVI/HDMI, ability to upload alternative character sets and toggle them on/off from code running on the apple, programmable color palette that can be set/toggled from apple code, RAM beyond 64k with some sort of fast/direct access from the video card's firmware, potentially even support for sprites?

It would seem to me that having a card like that, plus a Mockingboard (or even better: a respin/updated version of a Mockingboard) would make a VERY interesting and fun platform for new and old coders alike, perhaps even bring some retro coders in from other platforms to see how far they could go with it.

It's still an Apple II at its heart and remains backwards compatible, but has some bolt ons that help push it past where it was.

The question is, how feasible is this? Could a new Carte Blanche provide the basis for this kind of video card? Would anyone be interested in creating something like this, and an updated sound card? I'd love to hear from folks, if so, and I'd be interested in helping any way I can.

Until then, I'll play around in an emulator until I hunt down a 64k RGB card and a monitor that it will work with.

And Bill, if you feel properly compelled to document this mode, you'll at least have one incredibly interested reader.

Rich

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 04:33:36 GMT
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"David Schmidt" <schmidtd@my-deja.com> wrote:
> I've said what I have to say on the subject. I have only this to add.
<http://i0.kym-cdn.com/photos/images/original/000/061/297/nickcage.jpeg>

And to that I say:
[http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.p df](http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.pdf)

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 05:00:49 GMT
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"Bill Buckels" <bbuckels@mts.net> wrote:

>> BTW where is the interest to TAG all pictures with a big Bmp2DHR ?
> This is done using the overlay feature of this converter. It is an exercise
> for the reader to produce his own tagged or untagged images.

This explains how the overlay feature is used:

<http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.p df>

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [olivier.zardini](#) on Thu, 28 Aug 2014 11:33:02 GMT
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Le jeudi 28 août 2014 07:00:49 UTC+2, Bill Buckels a écrit :

> These are DHGR pictures *NOT* SHR pictures. They are only 140 x 192 and
> have a fixed palette of only the 15 lo-res colors. Did you take a look?
> Can you do better?

160*200 or 140*192, that does not change the fact that the pixel are big & rectangle and the effect of dithering is de facto limited.

BTW, why only use 15 colors and not the 16 ?

I guess any modern graphic utility on Windows is capable, based on a fixed palette, to convert a 140*192 256 colors picture into a 140*192 16 colors pictures applying dithering.

Could you provide also your source pictures to see what Paint Shop Pro is doing ?

> This explains how the overlay feature is used:
> <http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.p df>
>
> Overlaying a dithered and rendered file with discrete pixel to pixel text from a
> separate image (as shown above) is the best way to present clear and readable
> titling on the Apple II DHGR display' coarse resolution of 160 x 192.

Hum, I though it was 140*192... I'm lost now. :-)

Olivier

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [David Schmidt](#) on Thu, 28 Aug 2014 12:00:48 GMT
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On 8/28/2014 12:33 AM, Bill Buckels wrote:

> "David Schmidt" <schmidtd@my-deja.com> wrote:

>> I've said what I have to say on the subject. I have only this to add.

> http://i0.kym-cdn.com/photos/images/original/000/061/297/nic_kcage.jpeg

>

> And to that I say:

> [http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.p df](http://www.appleoldies.ca/cc65/docs/dhgr/MyHairIsABirdDHGR.pdf)

Bravo, my fisherman friend. Bravo.

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 12:54:29 GMT

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"David Schmidt" <schmidtd@my-deja.com> wrote:

>Bravo, my fisherman friend. Bravo.

The use case is poorly worded, distracted, and editorial. The layout of the pdf is draft. So your feeling is that any documentation is better than none at all:) Tom De Marco in PeopleWare had a similar perspective on the Capability Maturity Model (CMM) and Chaos; paraphrased ... "Any process is better than none at all."

My first posture was that nobody will use any of this. The Harry Potter position is deliberate of course. In DeMarco's book the girl who brought coffee to the team was the most important of the Development Team's members. In my work, the Windows User is the most important of my Virtual Team's members.

Whether or not you wanted to read the tedious age-old lament of the ShareWare/FreeWare author, it proves that there is no girl standing with coffee in hand when it comes to any of this... my imaginary Windows User does not exist. 5 years ago when I wrote my BmpA2FC converter it was for the young son of an Apple II enthusiast. My work will be waiting for his grandson, but odds are that his grandson will have a better ipad and will not care about Apple II's or DHGR.

The documentation for all of this will be rough but usable. And better than what Apple Computer would have given any of us. And will be provided to the sound of one hand clapping.

There was never really a question of whether this source code would be put online. My budget for my websites far exceeds my ability to maintain them, so they are a rat's nest of files without pages (like doctors without borders). This stuff needs to go someplace.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 13:52:28 GMT
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Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [scott](#) on Thu, 28 Aug 2014 15:30:06 GMT
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In article <ltnc6q\$hob\$1@speranza.aioe.org>,
Bill Buckels <bbuckels@mts.net> wrote:

> <olivier.zardini@itn-group.eu> wrote:

>> BTW, why only use 15 colors and not the 16 ?

>

> Because the default conversion palette is for the Apple IIe.

>

> "There are 16 colors available for use in this mode (actually 15 in most
> cases, since the two shades of gray are identical in brightness on original
> Apple hardware, except on the Apple IIgs). Note that six of the colors are
> identical to the colors available in High-Resolution (Hi-Res) mode."

I was always under the impression that Lo-Res colors 5 & 10 were the same.
I was testing my RGB-to-component converter on another TV last night,
though, and noticed that 5 was a fair bit darker than 10.

I'd expect that composite output from the IIGS would be identical to what
you'd get from the 8-bit IIs, under at least some Control Panel settings.
What possessed Apple to make the RGB rendering different?

/
/ v \ Scott Alfter (remove the obvious to send mail)
(IIGS(<http://alfter.us/> Top-posting!
^ >What's the most annoying thing on Usenet?

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 16:20:32 GMT
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"Scott Alfter" <scott@alfter.diespammersdie.us> wrote:

>I was always under the impression that Lo-Res colors 5 & 10 were the same.

I don't know what to believe which is why when I wrote this converter I
included the Wikipedia Palette, Sheldon Simm's palette from todhr, both
AppleWin Palettes (the newer one is also used by the ghetto converter), the
CiderPress Viewer Palette, the Kegs32 palette, and for good measure I also

included stock mapping from the Windows 3.1 16 color BMP and the Windows XP/7 16 color Bmp, the standard VGA bios 16 color palette, and the Z-Soft PCX version of the 16 color VGA palette. I stopped short of including the kitchen sink. Of all these palettes, only Wikipedia and Sheldon's can be considered as psycho-visually correct for color balancing.

I decided to be majorative and use the 15 color palette for the Ile knowing full well that by eliminating one of 2 greys the other colors would still map correctly, and people with a Ilgs would still get a balanced image. This seems to be common sense. However, if people with a Ilgs use Sheldon's palette it will result in dark artifacts on Ile's that don't have the lighter grey.

Sheldon's renderings also suffer from clipping of errors and don't need any help to get darker.

If you read the Wikipedia article with tongue-in-cheek it is like a shoe salesman trying to sell you their theory based on a selected set of criteria. But if you take it seriously like I did and actually write the code, the 15 color model is the best. If you read a number of detailed articles on dithering you will see as I did that at a certain point each one falls apart based on cumulative error and color distance when you consider only 16 colors.

I intervened by cancelling dithering when I hit a pure color area on some variations of dithering and on some less-complex images the posterization can run back to an ega-like cartoonish appearance, so unless an arbitray palette is built for a a single area, this is where the whole notion of dithering can break.

Back to perception, the best palette for the Ile is Wikipedia, and the best one if that doesn't work is Sheldon's.

> I was testing my RGB-to-component converter on another TV last night,
> though, and noticed that 5 was a fair bit darker than 10.

I get the same sharpening on my RGB monitor on my Ile. But I think I am right for composite.

> I'd expect that composite output from the IIGS would be identical to what
> you'd get from the 8-bit IIs, under at least some Control Panel settings.
> What possessed Apple to make the RGB rendering different?

That question and many other similar questions seem to have come forward many times recently. I think the answer is that their shoe salesmen said one thing and delivered something else, but if I strip-off that mask, they needed to keep production costs down in order to stay in business so it was for the greater good. At least in their minds.

Engineering in any business starts-off with a spec that changes when production control tries to buy the parts, and obtains authorized substitution. Compromising the implementation within allowable tolerances does not always result in revised user documentation. In hardware, 3rd party developers are generally the last to know.

This attitude of any computer company that they have the best standards is a crock from my experience. We have never been guaranteed that a company like Apple or IBM has better quality, and higher standards than oem and third-party vendors. What we are guaranteed is that a company like Apple or IBM will not be worse than the worst oem and third-party vendors. Not very encouraging.

So your guess as to why Apple was possessed to make RGB rendering different probably had both parts procurement and look-and-feel considerations IIRC 'cause macophiles back in the day were always going on and on about "pleasing colors" and other such, and on the IBM side I was already matching dithers for printing with screen calibration and images for the very company that printed all the color standard for Pantone. It was about money, but we programmers never got rich here.

I suspect most programmers didn't:)

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 17:42:53 GMT
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"Bill Buckels" <bbuckels@mts.net> wrote:

> I decided to be majorative and use the 15 color palette for the Ile knowing
> full well that by eliminating one of 2 greys the other colors would still
> map correctly, and people with a Ilgs would still get a balanced image.

By mapping to only 1 grey, lighter greys will map to colors instead.

> However, if people with a Ilgs use Sheldon's palette it will result in dark
> artifacts on Ile's that don't have the lighter grey.

1. On a Ilgs Sheldon's palette will work great! Do not go by emulator colors. They are not balanced properly for the Apple Display.

2. There is one palette that I included in the gimp and did not include properly in PaintShop Pro, and that is my own palette from when I was just starting working with double lo-res. It's more or less as bad as any

emulator palette.

> Sheldon's renderings also suffer from clipping of errors and don't need any
> help to get darker.

This is simply based on my bench-check of how his code works. His closest color is somewhat different than mine as well. I am using double precision floating point and converting or clipping to integers at the end of my process based on several scaling factors. As it turns-out the 640 x 480 scaling to 140 x 192 survives better than 1 to 1 scaling.

> If you read the Wikipedia article with tongue-in-cheek it is like a shoe
> salesman trying to sell you their theory...

My theories are the same of course, since I bought Wikipedia's shoes. I also sneaked-in a black of 0,0,0 and a white of 255,255,255 even on the AppleWin palette to render pure black and white as undithered colors. This gets rid of too many spotty black and white areas on images with large chunks of black and white and cleans-up dithers. It breaks-down when a slightly off-white area creates a miniscule error that keeps accumulating.

It is valid to clip these tiny areas like some of the other guys do. My rationale is that you accumulate the error until it is actually time to write the pixel to disk. Then you clip the drained thing. If the error has become too negative the darkness becomes 0. If the area has become wildly bright, then the pixel is clipped at 255. This breaks down since I am not adjusting for gamma correction, although I match on advanced luma. Gamma Correction however is based on monitors.

So if your gamma needs to be adjusted during a dither, you need to track your cumulative gamma on the way-in, track your gamma loss or gain for the entire area and then adjust your gamma at the end of rendering to make sure that your gamma scales to the proportional values of the dither.

Since dither is redistribution of error the number of calculations for gamma is far too great for me to bother with. So I simply use linear scaling for the error and apply it forward either one or two lines. One works best on a tight resolution which is why Floyd-Steinberg is the best dithering.

The gamma on an RGB monitor and a composite monitor are totally different to an LCD or a VGA is my understanding thus far. So when I read that it is generally considered ok for some error to be lost during dithering I decided to avoid as much error loss as I can, but to ignore gamma which says that there will always be more darker colors in a dithered image that is darker than in a dithered image that is lighter. So I also provided a filter which upscales the rgb brightness linearly by a threshold percentage, since it is beyond my guess what it takes to balance an overall image for one monitor or another, and for one card or another. Upscaling this brings the darker

colors forward into the lighter range, so if this isn't extreme can be quite corrective. But can also clip. It's a crap-shoot!

When we used Kodak RGB monitors with a Targa Board clone we used a grey calibration strip, much like the idea behind a white balance for an analog TV camera. Today everything is different, but we could actually write a calibration print-out routine that a person could use to balance a composite monitor. However your printer would need to be calibrated first:) I am more confident in the Wikipedia article than in all this other rigamole.

> Back to perception, the best palette for the IIe is Wikipedia, and the best
> one if that doesn't work is Sheldon's.

That's the short answer. Some great minds have looked at all of this and reached no conclusions that they would put their names on, so all I know for sure is that error in dithering is not elliptical but color perception is which greatly affects analog but is forgiven when it comes to the tolerances of electronic parts.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 18:51:40 GMT
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"Scott Alfter" <scott@alfter.diespammersdie.us> wrote:

> I was always under the impression that Lo-Res colors 5 & 10 were the same.
> I was testing my RGB-to-component converter on another TV last
> night, though, and noticed that 5 was a fair bit darker than 10.

Scott, I wrote quite a bit on this, so didn't want this to get lost in the rest of it. There is one important piece of testing of colors that might be useful to you in this bmp2dhr utility.

You can convert using one palette and preview using another.

What this means is that you can see what images converted using Sheldon's 16 color Palette will look like displayed in the Wikipedia 15 color palette, and vice versa. According to my theory Sheldon's palette is for the IIgs and video that has 2 levels of grey and the Wikipedia Palette is for the IIe without 2 grey levels. Since this utility will also accept a user defined palette for either previewing or converting or both, it is possible for the thresholds for conversion to differ from the rendering colors.

Since the output of this is in Apple II format as well as in bmp format you also can load this up on a real apple II and see how they look.

If color theory is based on perception and images are created using LCD perception but displayed using RGB or composite perception, it seems to make sense that substituting a digital equivalent to the theoretical value would result in the best value for displaying an image on an rgb monitor, but that using a rendering palette that shows the actual results would allow a color match comparison on a target display.

Does that make sense to anyone else?

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [STYNX](#) on Thu, 28 Aug 2014 19:35:27 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thursday, August 28, 2014 8:51:40 PM UTC+2, Bill Buckels wrote:

> Does that make sense to anyone else?

> Bill

Most of it ;-)

I have had done some tests for different monitors with the Apple //e (a few months ago).

I used:

"Le Chat Mauve EVE" -> Apple //e RGB-Card

"Le Chat Mauve FELINE" -> Apple //e RGB-Card

Apple //e 64k digital -> Apple //e RGB-Card

Apple //e with VOC -> Apple IIgs, //e RGB-Card

no-name composite -> VGA converter

no-name composite -> HDMI converter

unmarked SONY composite -> RGB converter and amplifier

Monitors: several... i think at least 5 different manufacturers and some TFTs

Results (not scientific): Every card has slightly different colors :-P

The 'best' RGB result in my opinion was from the chat mauve FELINE card but it has died on me (some custom made chip also used in the //c RGB-converter) when i last tested it :-).

The best composite image was displayed on a JVC universal input monitor (i could look up the model number ... later ;-P). It accepts RGB from about 14khz-66khz but is very bulky and extremely heavy. Several settings regarding white-level and color-temperature are possible with this monster. I should make some photos of the actual color displayed ... if i find the time ...

The HDMI- and VGA-converters produced a very unstable NTSC image with wrong and smeared colors.

The PAL-Image was (strangely) acceptable although the flickering of the blues and greens was unnerving.

The SONY converter was ... bad. it could not display anything from either the NTSC nor the PAL signal.

My personal result: stick with you old CC-TV or CC-Monitor to get the correct display :-D
To get a smooth image of the dithered DHGR graphics, set the CRT to slightly out of focus...
(might need some tinkering with CRT HV)

-Jonas

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Payton Byrd](#) on Thu, 28 Aug 2014 20:15:23 GMT
[View Forum Message](#) <> [Reply to Message](#)

May I suggest adding the Commodore 1701 monitor to your test regimen? There may never have been a better display ever made.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 28 Aug 2014 20:41:02 GMT
[View Forum Message](#) <> [Reply to Message](#)

"Payton Byrd" <plbyrd@gmail.com> wrote:
> May I suggest adding the Commodore 1701 monitor to your test regimen?
> There may never have been a better display ever made.

I have a 1084 right here. How does that stack-up?

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Jeff Blakeney](#) on Thu, 28 Aug 2014 20:53:21 GMT
[View Forum Message](#) <> [Reply to Message](#)

On 28/08/2014 11:30 AM, Scott Alfter wrote:
> I was always under the impression that Lo-Res colors 5 & 10 were the same.
> I was testing my RGB-to-component converter on another TV last night,
> though, and noticed that 5 was a fair bit darker than 10.

If I remember correctly, the only difference between the two greys is that they use opposite bit patterns. They are both composed of alternating bit patterns and one is 0101 and the other is 1010. So the only real difference would be in how it affects the pixels next to it because it can alter the one to the right or left of it with the "1" bit that is on the edge.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Fri, 29 Aug 2014 03:05:53 GMT
[View Forum Message](#) <> [Reply to Message](#)

"Bill Buckels" <bbuckels@mts.net> wrote:
> I have a 1084 right here. How does that stack-up?

The csa2 FAQ covers the pinout for a 1084:

<http://apple2.org.za/gswv/a2zine/faqs/Csa2MONITOR.html>

The FAQ also contains some important information on the Ilgs, Ile, and Double Hi-Res:

038- When I play old hires games on my GS the RGB monitor display does not look as good as my old Amdek Color-1 connected to the Il+. What's wrong? Most hires displays look better on a composite color monitor, such as the Amdek Color-1, than they do on the GS's RGB monitor. The difference is even more striking for double-hires displays. (King's Quest and Air Heart look much better on a Color-1 connected to a Ilc+ than on an RGB monitor connected to the GS.)

What's wrong is that the GS's display circuits do just a passable job of translating hires and double-hires into RGB form.

x--- snip ---x

This says that the Ile is the standard, and the Ilgs does its own thing:) What it does not tell me is how the RGB card on my Ile stacks-up against the RGB card on my Ilgs.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Payton Byrd](#) on Fri, 29 Aug 2014 12:19:16 GMT
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Given that the 1084 was intended for three different computers (64, 128 8-columns, and Amiga 500/2000), it stands to reason that Commodore spent significant time and effort optimizing the monitor for each scenario. Indeed, in my experience the 1084 provides an excellent display of each system, though for pure composite or luma/chroma video, the 1701 is considered the gold standard.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [scott](#) on Fri, 29 Aug 2014 18:00:44 GMT

In article <lto4rs\$q22\$1@dont-email.me>,
Jeff Blakeney <CUTjeffrey_blakeney@yahoo.ca> wrote:
> On 28/08/2014 11:30 AM, Scott Alfter wrote:
>> I was always under the impression that Lo-Res colors 5 & 10 were the same.
>> I was testing my RGB-to-component converter on another TV last night,
>> though, and noticed that 5 was a fair bit darker than 10.
>
> If I remember correctly, the only difference between the two greys is
> that they use opposite bit patterns. They are both composed of
> alternating bit patterns and one is 0101 and the other is 1010.

That's it. On a composite display, big blocks of the two will look the same. On the RGB output from a IIGS, however, one is darker than the other.

Just tried KEGSWin...it mimics the latter behavior.

/
/ v \ Scott Alfter (remove the obvious to send mail)
(IIGS(http://alfter.us/ Top-posting!
_ ^ _ >What's the most annoying thing on Usenet?

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Anonymous](#) on Fri, 29 Aug 2014 19:15:33 GMT
[View Forum Message](#) <> [Reply to Message](#)

Originally posted by: Vladimir Ivanov

On Fri, 29 Aug 2014, Scott Alfter wrote:

> In article <lto4rs\$q22\$1@dont-email.me>,
> Jeff Blakeney <CUTjeffrey_blakeney@yahoo.ca> wrote:
>> On 28/08/2014 11:30 AM, Scott Alfter wrote:
>>> I was always under the impression that Lo-Res colors 5 & 10 were the same.
>>> I was testing my RGB-to-component converter on another TV last night,
>>> though, and noticed that 5 was a fair bit darker than 10.
>>
>> If I remember correctly, the only difference between the two greys is
>> that they use opposite bit patterns. They are both composed of
>> alternating bit patterns and one is 0101 and the other is 1010.
>
> That's it. On a composite display, big blocks of the two will look the
> same. On the RGB output from a IIGS, however, one is darker than the other.
>
> Just tried KEGSWin...it mimics the latter behavior.

The two grays are the same if they're the only color. When interacting with neighboring "pixels" - they're not. Check out King's Quest castle how they create nice artifacts even between themselves.

Ilgs's output does non-linear processing of the bitstream, and perhaps that's what makes the two slightly different. Again, surrounding pixels might affect this.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sun, 31 Aug 2014 02:10:24 GMT

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"Bill Buckels" <bbuckels@mts.net> wrote:

> So this utility is restricted to conversion only, and it does not dither.
> Not yet anyway.

The new version dithers rabidly but is not yet online. The documentation continues. These little documents are just side-bars... the User's Manual is the main thing... and is also not yet online but here's one doc that should tickle someone's interest:

<http://www.appleoldies.ca/cc65/docs/dhgr/TomThumbDHGR.pdf>

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Mon, 01 Sep 2014 08:56:12 GMT

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"Bill Buckels" <bbuckels@mts.net> wrote:

> David Shmidt, I know it sounds dumb... but seriously. Is there anyone left
> who is going to work with DHGR graphics?

In case there is, what I consider is the best DHGR converter on the planet is now available:

<http://www.appleoldies.ca/cc65/programs/dhgr/bmp2dhr.zip>

Updated with dithering etc.

Documentation still being finished and more demos to follow, but this gives you the source, and working executable.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [gids.rs](#) on Mon, 01 Sep 2014 14:33:35 GMT
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> My wish is that someday I can clone myself into two or more parts but I
> haven't been able to find the algorithm... yet.

> Bill

Why clone yourself? Just program your Apple II computer to think like you do then it will be able to do hundreds of times faster than even 2 of you can do. :)

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Mon, 01 Sep 2014 18:33:50 GMT
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<gids.rs@sasktel.net> wrote:

> Just program your Apple II computer to think like you do then it will be
> able to do hundreds of times faster than even 2 of you can do. :)

My Apple II already thinks like I do. That's why I get anything done at all:) I might get more done if I thought like Steve Wozniak, but being only average and MS-DOSsy I would think that somewhere in the neighborhood of 1000 or so clones might do it...

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 04 Sep 2014 01:32:45 GMT
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"Bill Buckels" <bbuckels@mts.net> wrote:

> what I consider is the best DHGR converter on the planet is now available:

<http://www.appleoldies.ca/cc65/programs/dhgr/bmp2dhr.zip>

> Updated with dithering etc.

So far its not just the best DHGR converter...

Preliminary tests indicate that the Floyd-Steinberg dithering in Bmp2DHR does a far better job than the FS dithering in the GIMP 2.8.

Also Bmp2DHR supports 8 dithering algorithms and the GIMP has only FS.

The GIMP seems to do a much poorer job all around. Windows Paint's scaling is superior to the GIMP's... even the 14 year old XP version. Exporting an unadorned BMP in the GIMP is a chore. It's still doable if you don't have Windows and if you like messy interfaces with tool palettes scattered all over the desktop.

I will be publishing a short case study showing the superior results of using my dithering and plain old Windows Paint as opposed to what the GIMP has to offer for DHGR conversion (i.e. palette matching, scaling)

I wonder if PhotoShop is also inferior. Since I am not going to buy it to find out, and Windows Paint is free, PhotoShop is not on my radar.

I am also running some tests with Photo Demon. I like it better than the GIMP so far. Preliminary results are promising. And the price is the same as Windows Paint and the GIMP.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [mmpnosis](#) on Thu, 04 Sep 2014 04:45:21 GMT

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Bill Buckels wrote:

> "Bill Buckels" <bbuckels@mts.net> wrote:

>> what I consider is the best DHGR converter on the planet is now available:

>

> <http://www.appleoldies.ca/cc65/programs/dhgr/bmp2dhr.zip>

>

>> Updated with dithering etc.

>

> So far its not just the best DHGR converter...

>

> Preliminary tests indicate that the Floyd-Steinberg dithering in Bmp2DHR
> does a far better job than the FS dithering in the GIMP 2.8.

>

> Also Bmp2DHR supports 8 dithering algorithms and the GIMP has only FS.

>

> The GIMP seems to do a much poorer job all around. Windows Paint's scaling

>

> is superior to the GIMP's... even the 14 year old XP version. Exporting an

>

> unadorned BMP in the GIMP is a chore. It's still doable if you don't
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>

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> over the desktop.

>
> I will be publishing a short case study showing the superior results of
> using my dithering and plain old Windows Paint as opposed to what the GIMP
>
> has to offer for DHGR conversion (i.e. palette matching, scaling)
>
> I wonder if PhotoShop is also inferior. Since I am not going to buy it to
> find out, and Windows Paint is free, PhotoShop is not on my radar.
>
> I am also running some tests with Photo Demon. I like it better than the
> GIMP so far. Preliminary results are promising. And the price is the same
> as
> Windows Paint and the GIMP.
>
> Bill
>

hmm. My PC was free, and downloading and installing Ubuntu for it was free.
In order to run MSPAINT.EXE, I would need to order a retail copy of say
Microsoft Windows 7 Professional with SP1 (32 bit & 64 bit) for US\$119.95
which is not free.

http://2.bp.blogspot.com/-6P6WfEIWFvE/T5q7od1JfgI/AAAAAAAAAS4Q/XfQpWvNEuUs/s320/article-2136075-12CB797D000005DC-141_634x_444.jpeg

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [bpiltz](#) on Thu, 04 Sep 2014 08:52:41 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Wednesday, September 3, 2014 6:32:45 PM UTC-7, Bill Buckels wrote:

> "Bill Buckels" <bbuckels@mts.net> wrote:
>
>> what I consider is the best DHGR converter on the planet is now available:
>
>
>
> <http://www.appleoldies.ca/cc65/programs/dhgr/bmp2dhr.zip>
>
>
>
>> Updated with dithering etc.

>
Bill, I'm very, very impressed with your DHGR converter, and feel your description as "the best on the planet" is apt.

However, are you able to provide an MS-DOS compile of your binary executable? I recall that you used to do this with your other converters. It would be very much appreciated, as I still work in

DOS a lot with ApplePC and other programs, so having a native DOS 16-bit (or 32-bit DGJPP) compile would be quite wonderful. Thanks.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 04 Sep 2014 18:55:45 GMT

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"mmphosis" <mmphosis@macgui.com> wrote:

> hmm. My PC was free, and downloading and installing Ubuntu for it was
> free.

I paid for my PC, but Windows XP was free for me... I think I still have 17 licences that I haven't used if I could find them in that pile of crap from Microsoft.

So was Windows 7 free for both my laptops, but again I paid for my laptops.

Windows Paint is part of the Windows Desktop.

I traded Catfish for my Apple IIe and paid for my Apple IIgs. My Commodore 64's were free, but I paid for my Commodore 128. Regardless, for Windows Users (the majority of desktops worldwide) Windows Paint is free.

> In order to run MSPAINT.EXE, I would need to order a retail copy of say
> Microsoft Windows 7 Professional with SP1 (32 bit & 64 bit) for US\$119.95
> which is not free.

Or you could do what most people do and buy a PC with a Windows bundle. Or become a Microsoft Partner or purchase an MSDN membership and try all the new Windows stuff before the rest of the planet gets to see it.

Well the GIMP does have superior scaling to Windows Paint, because the GIMP is pixel level and Windows Paint is by percentage. The best scaling of all is in Bmp2DHR but images need to be prescaled to sizes that make sense to Bmp2DHR.

But comparative testing will likely reveal other oddities besides the GIMP's dirty and inadequate dithering. Their Floyd Steinberg implementation looks like a kid took a black crayon and scribbled over colors that aren't within the lines. Could this be poorly implemented GAMMA correction, a poor understanding of diffused error clipping, or implementation of a color distance algorithm that is not psychovisual, or all of the above?

I think so.

Have a look at the code and tell me why I got it right and the army of gnats didn't...

Bill

..

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [Payton Byrd](#) on Thu, 04 Sep 2014 19:11:00 GMT

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On Thursday, September 4, 2014 1:55:45 PM UTC-5, Bill Buckels wrote:

> Have a look at the code and tell me why I got it right and the army of gnats didn't...

Be careful! If you view the GPL code and then coincidentally have something similar in your code, the GPL Nazi's could claim ownership of your code.

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [Bill Buckels](#) on Thu, 04 Sep 2014 19:57:42 GMT

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<bpiltz@gmail.com> wrote:

> Bill, I'm very, very impressed with your DHGR converter, and feel your
> description as "the best on the planet" is apt.

The gauntlet is down anyway... whether I am right or not can be an exercise for the reader. I was extremely impressed with Sheldon Simms' vision. But this implementation of mine made me smile... even the crappy Atkinson dithering made me smile...

> However, are you able to provide an MS-DOS compile of your binary
> executable?

The Microsoft C 16-bit compile is the easy part. It already compiles just fine with only one warning, but it won't run properly. The lack of long names is not addressed by conditional compilation for MSDOS in the source code. This would amount to considerable reprogramming and making this code even messier than usual, and I also don't have the time to test for MS-DOS.

> I recall that you used to do this with your other converters. It would be
> very much appreciated, as I still work in DOS a lot with ApplePC and other

> programs, so having a native DOS 16-bit (or 32-bit DGJPP) compile would be
> quite wonderful. Thanks.

I think a Linux and OSX compile would be wonderful too...

If I got some action on that I might be inclined to refactor the code for MS-DOS. My position on MS-DOS utilities is the same as my position on Aztec C65 programming; it's dead.

My position on Linux and OSX (and Microsoft C) is that the source is there but I only provide Win32 MinGW binaries... Users of those other systems can build the binaries themselves.

It goes back among other things to the Mac user on Apple II Enthusiasts that called me a Johnny Come-Lately and told me that Macophile Apps are more-better... duh! Ok then let it be so:) We all saw how well that worked in the past... but perhaps a jackboot in the arse is still the best approach.

Leave the MS-DOS stuff with me though... perhaps my disdain for the lack of interest by Linux Users and the lack of everything by OSX users does not need to be extended backwards, just sideways:) My position as always is flexible... except on the BMP file format... it's dead dumb simple so it stays.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Steve Nickolas](#) on Thu, 04 Sep 2014 20:34:52 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thu, 4 Sep 2014, Bill Buckels wrote:

> The Microsoft C 16-bit compile is the easy part. It already compiles just
> fine with only one warning, but it won't run properly. The lack of long
> names is not addressed by conditional compilation for MSDOS in the source
> code. This would amount to considerable reprogramming and making this code
> even messier than usual, and I also don't have the time to test for MS-DOS.

Could just use djgpp and reject 16-bit. It's GCC, so more likely to Just Work.

I never really used MSC, my 16-bit compiler of choice is Borland.

-USO.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 04 Sep 2014 20:42:14 GMT
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"Payton Byrd" <plbyrd@gmail.com> wrote in message
news:85d7d6af-acd2-4bca-add6-4a9677a35396@googlegroups.com...
On Thursday, September 4, 2014 1:55:45 PM UTC-5, Bill Buckels wrote:

> Have a look at the code and tell me why I got it right and the army of
> gnats didn't...

> Be careful! If you view the GPL code and then coincidentally have
> something similar in your code, the GPL Nazi's could claim ownership of
> your code.

I never had sex with that code:)

Besides, they can have it if they want it:) It's just schlock...
considerable amount of careful article reading, that's all... which is why I
find it hilarious that this GIMP thingy makes such a mess with exactly the
same palette that I am getting good results with.

It reminds me of Lemmings.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Thu, 04 Sep 2014 21:09:22 GMT
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"Steve Nickolas" <usotsuki@buric.co> wrote:
> Could just use djgpp and reject 16-bit. It's GCC, so more likely to Just
> Work.

That's probably true, but...

I already sent him an MSC compiled 16-bit MS-DOS version... I could just as
easily made it a BCC compile or whatever. Let him test it... it should be
ok, but short and stupid output file names... then OSX and Linux Users who
can't run a compiler can run b2d under DOSBox or DosEMU and convert BMP
files to DHGR files. Under MS-DOS:)

The thing to remember is to pack structures on 1 byte boundaries, and this
wants to be a large memory model program with a big stack if it's 16 bit.

> I never really used MSC, my 16-bit compiler of choice is Borland.

I never made a choice. They are both about the same. I was an embedded systems partner with Borland for years too. It's all just C code. But I still don't see what's so wonderful about bgi drivers, and the Borland DataBase Engine, and TWindow Classes and DDVT replacement for Message Queues and all the rest of it. This is all just because some people wanted something besides Microsoft's stuff even though Microsoft handed-out their compilers for free very chance they got. Most programmers couldn't tell the difference. It's like my old argument that K&R C and ISO C should not be an issue... C is C.

But for C++ the TrollTech Qt stuff was the best done ever, and the price was also the highest ever for business use:) So there is quality stuff out there too, but did most guys need it?

Still, we should consider Qt for open source GUI stuff, since it's free for that. Fat chance of that happening though, if a guy can't even get some OSX and Linux binaries built without building them himself! Sheesh...

If I ever get some of this other stuff out of the way, I may get a chance to get Qt and MinGW together and write some kind of cross-platform shell for some of these graphics commands.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Anonymous](#) on Fri, 05 Sep 2014 01:30:56 GMT
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Originally posted by: osgeld

> My position as always is flexible... except on the BMP file format...

just wondering, with the 10 billion other convoluted special case (well windows uses this one and os2 uses this one and everyone else uses this BMP) why stick with windows MS paint bmp files that windows 7 and 8 dont even fully support

on previous converters the only way I could get it to work was firing up paint shop pro 6 (from 1998) open an already working example, paste the image into that example and re-save it making sure my options were set correctly for MS windows version of bmp (and the colors would scramble anyway)

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [mmphosis](#) on Fri, 05 Sep 2014 04:41:57 GMT
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linUX and OSX .comPiles...

<http://hoop-la.ca/apple2/appleoldies/bmp2dhr/>

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Fri, 05 Sep 2014 09:11:14 GMT

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<osgeld@cheesefactory.us> wrote:

> on previous converters the only way I could get it to work was firing up
> paint shop pro 6 (from 1998) open an already working example, paste the
> image into that example and re-save it making sure my options were set
> correctly for MS windows version of bmp (and the colors would scramble
> anyway)

Try using this one... all previous DHGR converters were crap. Read my code comments.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Fri, 05 Sep 2014 09:17:28 GMT

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"mmphosis" <mmphosis@macgui.com> wrote in message
news:mmphosis-1409892115@macgui.com...
linUX and OSX .comPiles...

<http://hoop-la.ca/apple2/appleoldies/bmp2dhr/>

Perfect. Thanks.

Palettes for the Gimp:

<http://www.appleoldies.ca/cc65/programs/dhgr/palettes/gimp.zip>

Palettes for PaintShop Pro

<http://www.appleoldies.ca/cc65/programs/dhgr/palettes/act.zip>

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [STYNX](#) on Fri, 05 Sep 2014 13:03:49 GMT

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On Friday, September 5, 2014 11:11:14 AM UTC+2, Bill Buckels wrote:

> Try using this one... all previous DHGR converters were crap. Read my code comments.

>

> Bill

Mostly correct... you could archive a similar result as yours by a lot of handwork ;-)

I am most impressed by the possibilities of your converter. I have converted some images and am simply amazed by the quality you can get out of some of them. Not every picture is suited for the conversion though. Now you only have to make 'full motion video' at 1mhz and you will have your place in Apple II history. :-P

-Jonas

Subject: Re: Bmp2DHR General DHGR Demo available for download

Posted by [Anonymous](#) on Fri, 05 Sep 2014 17:46:00 GMT

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Originally posted by: awanderin

"Bill Buckels" <buckels@mts.net> writes:

> "mmphosis" <mmphosis@macgui.com> wrote in message

> news:mmphosis-1409892115@macgui.com...

> linUX and Osx .comPiles...

>

> <http://hoop-la.ca/apple2/appleoldies/bmp2dhr/>

>

> Perfect. Thanks.

>

> Palettes for the Gimp:

>

> [http://www.appleoldies.ca/cc65/programs/dhgr/palettes/gimp.z ip](http://www.appleoldies.ca/cc65/programs/dhgr/palettes/gimp.zip)

>

> Palettes for PaintShop Pro

>

> [http://www.appleoldies.ca/cc65/programs/dhgr/palettes/act.zi p](http://www.appleoldies.ca/cc65/programs/dhgr/palettes/act.zip)

So Bill, from the <http://www.appleoldies.ca/> page, how does one find the source code anyhow? I tried a couple of weeks ago to find it, but to no avail. Now I see mmphosis has found a way, but I don't know how he found the links to the source.

When I click on
http://www.appleoldies.ca/graphics/index.htm
it takes me to a page with no ZIP files, just PDF files.

Similarly, a google search:
site:appleoldies.ca filetype:zip
or
site:appleoldies.ca inurl:zip
returns no hits.

Is there some magic incantation required to find this stuff?

--
Jerry awanderin at gmail dot com

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Charlie](#) on Fri, 05 Sep 2014 18:47:43 GMT
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On 9/5/2014 1:46 PM, awanderin wrote:
> "Bill Buckels"<bbuckels@mts.net> writes:
>
>> "mmphosis"<mmphosis@macgui.com> wrote in message
>> news:mmphosis-1409892115@macgui.com...
>> linUX and OSX .comPiles...
>>
>> http://hoop-la.ca/apple2/appleoldies/bmp2dhr/
>>
>> Perfect. Thanks.
>>
>> Palettes for the Gimp:
>>
>> http://www.appleoldies.ca/cc65/programs/dhgr/palettes/gimp.zip
>>
>> Palettes for PaintShop Pro
>>
>> http://www.appleoldies.ca/cc65/programs/dhgr/palettes/act.zip
>
>
> So Bill, from the http://www.appleoldies.ca/ page, how does one find the
> source code anyhow? I tried a couple of weeks ago to find it, but to no
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> http://www.appleoldies.ca/graphics/index.htm

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> site:appleoldies.ca inurl:zip
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>
> Is there some magic incantation required to find this stuff?
>
>
> --
> Jerry awanderin at gmail dot com

I clicked on Bill's first link:

<http://hoop-la.ca/apple2/appleoldies/bmp2dhr/>

and that brought up a small page with a link to bmp2dhr.zip which contains his well documented source code as well as a PC executable, Apple disk image and bmp files, etc.

Charlie

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Fri, 05 Sep 2014 21:06:52 GMT
[View Forum Message](#) <> [Reply to Message](#)

"STYNX" <Jonas.Groenhagen@gmx.de> wrote:
> Bill Buckels wrote:
>> all previous DHGR converters were crap..
Hi Jonas,

I mean all of them, not just my MS-DOS converters that Kevin was complaining about. You found the bug in my old BMP routines and I fixed it for SimpliFly...

Together we suffered until I added a simple seek past this other crap that some BMP creators insert in their files. That bug wasn't fixed in the stuff I wrote for MS-DOS, some of it years ago. It wasn't even a bug back when this stuff was first written.

The reason I work with BMPs is because they are simple. People should be thankful that I don't work with my own PHA format or my friend John Bridges' Pictor Paint format, or I may be tempted to insist on it.

I think that's a fair deal and at least I am working with something that can

be created outside the GIMP which is perfectly capable of working with BMP's. My latest converters are compatible with the GIMP 2.8 and Windows 7 BMP's so anyone that says otherwise can get stuffed!

I didn't hear about any problems with my old converters. Common sense would have been to report a problem instead of sitting on it for a couple of years... then announcing it when something truly wonderful actually worked.

> Mostly correct... you could archive a similar result as yours by a lot of
> handwork ;-)

I think the GIMP's dithering is coarse and too busy and dark, and not well suited to the DHGR display. So perhaps ImageMagick can do better, but in the meantime SimpliFly can now provide a second DHGR conversion along with the SHR conversion using a 320 x 200 format...

> I am most impressed by the possibilities of your converter. I have
> converted some images and am simply amazed by the quality you can get out
> of some of them.

I am extremely impressed as well... the keys are in 3 areas; the Palettes are better than any emulator palette... the color mapping is better than anything that I know of... perfect perception using double precision floating point, and the error in the dithering is carried forward without truncating it... the common practice of clipping an error is incorrect. Rounding is OK but clipping of errors should never be done during diffusion.

I also avoid dithering through pure color areas... you may have noticed that. It is especially apparent in black and white areas. I really hate it when I see a dither that kills a pure colored area. It looks like hell on a small display like the Apple II. There are many crummy practices that people do not notice on large graphics... but when you get down to 140 x 192 you can't B*llshit! Oloiver is right about one thing... when viewed from your neighbor's house my DHGR dithering looks exactly like the color balance in a large photo.

> Not every picture is suited for the conversion though.

Give me some bad examples. Private mail. Your OrionIII has too much red in it but if I split the red using a different conversion palette which can be loaded from disk, an entirely acceptable result can be achieved. Cross-hatching at low thresholds such as 5 or 10 or 15% can also draw-out some additional colors when combined with error diffusion dithering.

> Now you only have to make 'full motion video' at 1mhz and you will have
> your place in Apple II history. :-P

I should have had my place in Apple II history years ago based on the junk

that I have seen. That includes Atkinson dithering.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Fri, 05 Sep 2014 21:20:45 GMT

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"Charlie" <charlieDOTd@verEYEzon.net> wrote:

> I clicked on Bill's first link:

> <http://hoop-la.ca/apple2/appleoldies/bmp2dhr/>

> and that brought up a small page with a link to bmp2dhr.zip which contains
> his well documented source code as well as a PC executable, Apple disk
> image and bmp files, etc.

Thanks Charlie... this is textbook stuff, I have invented nothing here, and it was Jonas that got me back into this dithering stuff... and lots of good references on the Internet. I didn't need to go ripping-off some code from the creative communists:)

Since the textbooks are written for geniuses, I dummied-it down considerably in code so even I could understand it...

But alas I fear I have traded-in elegant and more efficient code for something I can read and show everyone else... so now the secrets that were shrouded in techno-babble actually might make sense to the average guy:) I cannot describe the pain of memorizing this pice by piece to decompose it. I wish I was 40 years younger.

Jonas tipped his hand abit when he mentioned full motion video in DHGR... but I need to stop there, since this stuff still needs doucmentation to be used to its potential.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sat, 06 Sep 2014 00:23:06 GMT

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"Steve Nickolas" <usotsuki@buric.co> wrote:

> I never really used MSC, my 16-bit compiler of choice is Borland.

I'll go you one older... this compiled in Turbo C after I removed the C++

comments and the long filenames... seems to work too:) But this is the last MS-DOS compile of any of my utilities if I can help it. MS-DOS is squarely dead...

<http://www.appleoldies.ca/cc65/programs/dhgr/bmp2dhrMSDOS.zip>

```
C:\AppleX\PROGRAMS\DHGR\bmp2dhr>make
MAKE Version 2.0 Copyright (c) 1987, 1988 Borland International
```

Available memory 578645 bytes

```
TCC -n.\ -ml -DMSDOS -DTURBOC b2d.c
Turbo C Version 2.01 Copyright (c) 1987, 1988 Borland International
b2d.c:
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
```

```
Available memory 215554
del ..\b2d.obj
```

This has a Microsoft 16 bit C MAKEFILE and a Turbo C 2.01 MAKEFILE included.

In the future, re-use this for MS-DOS. If you must:)

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sat, 06 Sep 2014 00:53:20 GMT
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<osgeld@cheesefactory.us> wrote:

> on previous converters the only way I could get it to work was firing up
> paint shop pro 6 (from 1998) open an already working example, paste the
> image into that example and re-save it making sure my options were set
> correctly for MS windows version of bmp
(and the colors would scramble anyway)

You never told me that.

So what is more important; a retro-challenge or having something that works?
I don't understand why you would accept crap.

I had no idea these idiots were all embedding crap in their BMP files or I would have seeked past it as I do now, ever since Jonas and I banged-off our SHR work To me there's no fun in opening a million different formats just because someone makes a new telephone to take pictures.

So way long time ago, I picked a non-compressed format that is easy to read

and some legacy formats that nobody supports anymore.

I have no dependence on third-party libraries at all in these converters. This one compiled in Turbo C from 1988 and on OSX and Linux as well as in Windows in MinGW. It would also have compiled in MicroSoft's Win32 compiler whatever that version is now, but it would have been HUGE and MinGW is tiny.

I think that's pretty fair... it's more important to have something that works everywhere than something that reads a gimp file with a palette that is just plain wrong and based on emulator colors instead of something real.

It's also more important to provide something that dithers properly for the Apple II display rather than someone's notion of what error diffusion dithering is on the gnat display. The source code clearly shows what it's supposed to be. I am also extremely confident in the color space.

If after studying the code and the results you are able to challenge my position, then tell me quickly, because the HGR converter comes next. Believe me, it will be as startling as this one.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [STYNX](#) on Sat, 06 Sep 2014 05:06:50 GMT
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On Friday, September 5, 2014 11:20:45 PM UTC+2, Bill Buckels wrote:
> Jonas tipped his hand abit when he mentioned full motion video in DHGR...
> but I need to stop there, since this stuff still needs doucmentation to be
> used to its potential.

Bill, i agree... documentation is very important. The way you get things done can be complicated and time consuming. Its hard for non-programmers to understand the 'inner workings' of software if there is no docu.

<-----

The FMV-comment was not meant as a call for you to actually try it. I have made some calculations and though of some ideas, but the normal //e is a bit too slow and has not enough memory for buffer. A DMA based approach might work with HGR at 15 frames/s though. A 16mb AUX-memory expansion might enable DHGR FMV (i doubt it). A real hack at ASM might get something done that is watchable with DHGR on the //e. Sadly i lack the knowledge of the hardware, ASM and have too little time to spare to do that.

----->

-Jonas

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Anthony Lawther](#) on Sat, 06 Sep 2014 10:26:34 GMT
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"Bill Buckels" <bbuckels@mts.net> wrote:

> "STYNX" <Jonas.Groenhagen@gmx.de> wrote:

>> Bill Buckels wrote:

>>> all previous DHGR converters were crap..

> Hi Jonas,

>

> I mean all of them, not just my MS-DOS converters that kevin was complaining
> about. You found the bug in my old BMP routines and I fixed it for
> SimpliFly...

>

> Together we suffered until I added a simple seek past this other crap that
> some BMP creators insert in their files. That bug wasn't fixed in the stuff
> I wrote for MS-DOS, some of it years ago. It wasn't even a bug back when
> this stuff was first written.

>

> The reason I work with BMPs is because they are simple. People should be
> thankful that I don't work with my own PHA format or my friend John Bridges'
> Pictor Paint format, or I may be tempted to insist on it.

>

> I think that's a fair deal and at least I am working with something that can
> be created outside the GIMP which is perfectly capable of working with
> BMP's. My latest coneverters are compatible with the GIMP 2.8 and Windows 7
> BMP's so anyone that says otherwise can get stuffed!

>

> I didn't hear about any problems with my old converters. Common sense would
> have been to report a problem instead of sitting on it for a couple of
> years... then announcing it when something truly wonderful actually worked.

>

>> Mostly correct... you could archive a similar result as yours by a lot of
>> handwork ;-)

>

> I think the GIMP's dithering is coarse and too busy and dark, and not well
> suited to the DHGR display. So perhaps ImageMagick can do better, but in the
> meantime SimpliFly can now provide a second DHGR conversion along with the
> SHR conversion using a 320 x 200 format...

>

>> I am most impressed by the possibilities of your converter. I have
>> converted some images and am simply amazed by the quality you can get out
>> of some of them.

>

> I am extremely impressed as well... the keys are in 3 areas; the Palettes
> are better than any emulator palette... the color mapping is better than
> anything that I know of... perfect perception using double precision
> floating point, and the error in the dithering is carried forward without
> truncating it... the common practice of clipping an error is incorrect.

> Rounding is OK but clipping of errors should never be done during diffusion.
>
> I also avoid dithering through pure color areas... you may have noticed
> that. It is especially apparent in black and white areas. I really hate it
> when I see a dither that kills a pure colored area. It looks like hell on a
> small display like the Apple II. There are many crummy practices that people
> do not notice on large graphics... but when you get down to 140 x 192 you
> can't B*llshit! Oloiver is right about one thing... when viewed from your
> neighbor's house my DHGR dithering looks exactly like the color balance in a
> large photo.
>
>> Not every picture is suited for the conversion though.
>
> Give me some bad examples. Private mail. Your OrionIII has too much red in
> it but if I split the red using a different conversion palette which can be
> loaded from disk, an entirely acceptable result can be achieved.
> Cross-hatching at low thresholds such as 5 or 10 or 15% can also draw-out
> some additional colors when combined with error diffusion dithering.
>
>> Now you only have to make 'full motion video' at 1mhz and you will have
>> your place in Apple II history. :-P
>
> I should have had my place in Apple II history years ago based on the junk
> that I have seen. That includes Atkinson dithering.
>
> Bill

I think it's fair to say that Bill has his place in Apple II history. While there may not be a flood of responses regarding use of his software, there is no doubt about his capability and his work ethic.

My hat is off to you Bill; perhaps when I leave the office behind for good I too will have some time to produce something worthy of praise for the Apple II.

Anthony.

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Anonymous](#) on Sat, 06 Sep 2014 18:16:29 GMT
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Originally posted by: osgeld

> I think that's pretty fair... it's more important to have something that
>
> works everywhere than something that reads a gimp file with a palette that
>

> is just plain wrong and based on emulator colors instead of something real

I wrote my little converter as a 10 min hack during a game competition not as a point of pride.

as far as accepting crap, at the time there wasnt much choice in the realm of DHGR, but I have to try your new converter out

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sun, 07 Sep 2014 01:11:34 GMT

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"Anthony Lawther" <alawther@spammenot.mac.com> wrote:

> no doubt about his capability and his work ethic.

Work harder not smarter is my motto:)

> My hat is off to you Bill

And mine to Sheldon Simms for jotting down his ideas... the domino effect is in effect here... thank you.

> perhaps when I leave the office behind for good I too will have some time

> to produce something worthy of praise for the

Apple II.

You'll need to balance that out unless you're getting younger. No need to wait:)

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sun, 07 Sep 2014 01:27:01 GMT

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<osgeld@cheesefactory.us> wrote:

> I wrote my little converter as a 10 min hack during a game competition not

> as a point of pride.

I used the same colors too. I wasn't criticizing your colors... I was criticizing the emulator colors, and not just AppleWin. Sheldon Simms palette and the Wikipedia Palette are the only two that work properly psychovisually.

I also don't think code is a point of pride.

> as far as accepting crap, at the time there wasnt much choice in the realm
> of DHGR, but I have to try your new converter out.

It's not really mine. The algorithms are standard stuff. It is surprising
that I stumbled around for so many years before realizing what was going on.

I think we can do better with HGR too. Then comes the hard part; segmented
palettes for SHR using the same simple techniques.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Mon, 08 Sep 2014 01:51:48 GMT
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"Payton Byrd" <plbyrd@gmail.com> wrote:
> Be careful! If you view the GPL code and then coincidentally have
> something similar in your code, the GPL Nazi's could claim ownership of
> your code.

I am still working on my error diffusion dithering routines.

The GIMP only has a couple (I have 8) and one of them they call Floyd
Steinberg Reduced Color Bleed.

Atkinson (Bill Atkinson) developed reduced color bleed as far as I know. I
had previously said it was the worst... but after some thought I wondered
what would happen if I put in a color bleed variable setting based on
percentage.

My latest development version now has either reduced or increased color
bleed for all 8 of my error-diffusion dithers. The gnats cannot claim
ownership of course since mine is different (and better, and based on what
Atkinson did.)

But the bonus is that by increasing Atkinson to 8/8 (full diffusion) instead
of 6/8 (reduced color bleed) it works really decently for DHGR images. The
added bonus is that with this new feature you can increase or reduce color
bleed by a percentage of your liking which makes for a very powerful filter.

The GIMP can go ahead and add this to their program at any time. It may
benefit their users as well as having more than one diffusion dither which
is all they have.

I should also add that Frankie Sierra's original dither with an increased
color bleed is a really nice dither for DHGR now as well.

This DHGR dithering of mine has a softer smoother appearance than the GIMP's dithering.

Bill

Subject: Re: Bmp2DHR General DHGR Demo available for download
Posted by [Bill Buckels](#) on Sun, 14 Sep 2014 00:15:04 GMT
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"STYNX" <Jonas.Groenhagen@gmx.de> wrote:

> Bill, i agree... documentation is very important. The way you get things
> done can be complicated and time consuming. Its hard for non-programmers to
> understand the 'inner workings' of software if there is no docu.

I was doing some comparisons between Sheldon Simm's tohgr and Bmp2DHR for my documentation project. Until now I had never run Sheldon's Windows version.

<http://wsxyz.net/tohgr.html>

It certainly creates some bizarre looking DHGR images. Something is really out of wack with the colors. Did anyone else try this yet? The xpm output seems ok unless the file is too large then the GIMP chokes on it. But the Apple II output itself is munched.

Bill
