
DIGITAL ART AND DESIGN

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Abstract: *The desire to create unique things and give free rein to one's imagination served as a powerful impetus to the development of digital art and design software. The commoner was the use of computers the wider variety of professional software was developed. Nowadays the creators and computer designers are receiving more and more new and advanced programs that allow their ideas becoming virtual reality. This research paper looks at the history of the development of graphic editors from the simplest to the most modern and advanced. This brief survey includes the history of different graphic editors' creation, their features and abilities. This paper highlights the two basic branches of graphic editors – these that are in free use and commercial graphic editors design software. The researcher selected the most powerful and influential graphic editors design software brands like Paint.NET and GIMP among free software and commercial Adobe Photoshop. This paper also dwells upon the way digital art transferred from the exclusively professional business into the hobby for ordinary users. This research paper bears implications for those who are interested in features and potentiality of most popular graphic editors design software.*

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ACM Classification Keywords: *I.4 Image processing and computer vision, I.4.1 Digitization and image capture, I.4.10 Image representation, I.5.2 Design methodology.*

1. Introduction

Imagination is extremely refined work of the human mind. It is the easiest medium for to creation out of nothing. Human mind constantly works on creating something that has never existed before and does not now exist. This is the approach with which any professional creator of Digital Art, or in other words, creator of design will gain success. Digital culture is neither new nor determined by technology, but rather that technology is a product of digital culture. The term "digital" originally referred to data organized in discreet units in any system, linguistic, and numerical systems included.

Since the use of computers became an everyday occurrence the wide variety of software has been emerging to assist designers. From the simplest and primitive up towards professional graphics editors computer software has undergone the complicated evolution and development. I shall not mention vector graphics editors; however I'd prefer to concentrate on bitmap graphics editors, which are mainly used to produce images.

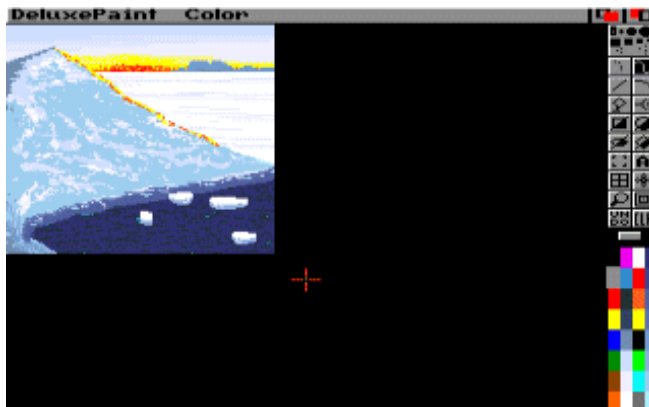
Graphic information is stored in computer memory in "bitmap" or "raster" formats such as JPEG, PNG, GIF and TIFF. Besides that, every company that creates graphics editor sets up its own format of storing raster graphics.

I would like to start the review of graphics editors with RIP editors, those that currently represent solely historical interest. Among the first editors the following deserve mentioning Deluxe Paint, Personal Paint and Photogenic.

2. Deluxe Paint

Deluxe Paint (DPaint) is a bitmap graphics editor created by Dan Silva for Electronic Arts (EA) [1]. The original version was created for the Amiga OS and was released in November 1985.

DPaint was the product of an in-house art development tool called Prism. As Silva added more features to Prism, it started to have market-place potential. When the Amiga was released in 1985, DPaint was quickly released for it. It was quickly embraced by the Amiga community and became the standard graphics development tool for the platform. Amiga manufacturer Commodore International later struck a deal with EA to have DPaint (and later its four "sequels", versions 2, 3, 4 and 5) bundled with every new Amiga sold. This deal lasted until Commodore's bankruptcy in 1994.



Screenshot and image designed in Deluxe Paint.
Taken from <http://amiga.emucamp.com/dpaint4.htm>.

The program DPaint enables us to create gradients, draw in anti-alias mode, change the palette, make "stencils", and transform any group of pixels into a "brush." It also allows special brush techniques "smooth" and "smear," features that are also found on Adobe Photoshop. The maximum number of colors we can work with is 256, which makes it satisfactory program for altering GIF images.

Other two programs Personal Paint and Photogenics had similar characteristics. Thus I will not dwell on them.

3. Free Graphics Design Software

Some significant position is occupied by graphics editors considered as free software. One can mention here Paint.NET i GIMP.

Paint.NET [2] is a project developed at Washington State University and mentored by Microsoft. It is a free graphics editing program for use on Windows XP and 2000 based operating systems, with the source freely available for download. It is programmed in C# and is released under the open source MIT License. Paint.NET is the unofficial successor to the older Microsoft Paint graphics program.

Graphics editors GIMP [3] deserve more particular attention. At the same time I am going to draw up some comparison of its abilities with those of Adobe Photoshop. The GNU Image Manipulation Program or The GIMP is a bitmap graphics editor and also has some support for vector graphics. The project was started in 1995 by Spencer Kimball and Peter Mattis and is now maintained by a group of volunteers; it is licensed under the GNU General Public License.

Overview

GIMP originally stood for General Image Manipulation Program; in 1997, the name was changed to GNU Image Manipulation Program. It is an official part of the GNU project.

The GIMP can be used to process digital graphics and photographs. Typical uses include creating graphics, resizing and cropping photos, changing colors, combining images using a layer paradigm, removing unwanted image features, and converting between different image formats.

The GIMP is also notable as perhaps the first major free software end-user application. Previous work, such as GCC, the Linux kernel, and so on, were mainly tools by programmers for programmers.

Features

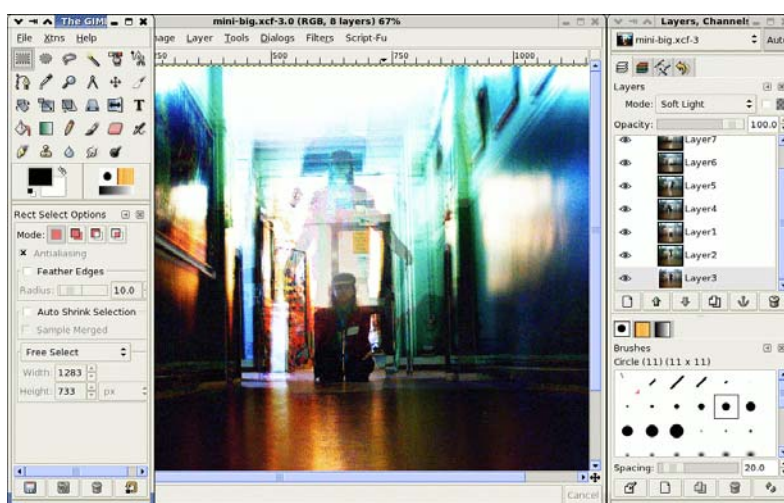
The GIMP was intended as a free (as in speech) alternative to Adobe Photoshop, but the latter still dominates in the printing and graphics industries:

- Photoshop includes licensed support for the Pantone color matching system.
- The number of plugins and other add-ons available for Photoshop is larger.
- GIMP has only experimental CMYK separation support
- GIMP has almost no spot color support.
- GIMP has limited gamma support.
- GIMP has limited color management through LCMS

There is a plugin called PSPI for the Microsoft Windows version of the GIMP only, which allows the use of the 8bf Adobe Photoshop filters in the GIMP.

The peculiarity of graphic design is the ability of graphics to interact with different projects. It is necessary to mention that such feature became indispensable at Internet technologies development. As well as interactive use, the GIMP can be automated with macro programs. The built-in Scheme can be used for this, or alternatively Perl, Python and Tcl can also be used. This allows the writing of scripts and plugins for the GIMP which can then be used interactively; it is also possible to produce images in completely non-interactive ways (for example generating images for a webpage on the fly using CGI scripts) and for batch color correction and conversion of images.

The current (as of March 2005) stable version of the GIMP is 2.2.7. Major changes compared to version 1.2 include a more polished user interface and further separation of the user interface and back-end. For the future it is planned to base GIMP on a more generic graphical library called GEGL, thereby addressing some fundamental design limitations that prevent many enhancements such as native CMYK support.



Screenshot of The GNU Image Manipulation Program 2.0.0 running on Xfce on Linux

4. Adobe Photoshop

The most outstanding graphic image editor is Adobe Photoshop [4]. Adobe Photoshop is a bitmap graphics editor (with some text and vector graphics capabilities) developed and published by Adobe Systems. It is the market leader for commercial bitmap image manipulation. As with most of Adobe's other applications, Photoshop is available for Mac OS and Microsoft Windows; versions up to Photoshop 7 can also be used with operating systems such as Linux using software such as CrossOver Office. Past versions of the program were ported to the SGI IRIX platform, but official support for this port was dropped after version 3.

Features

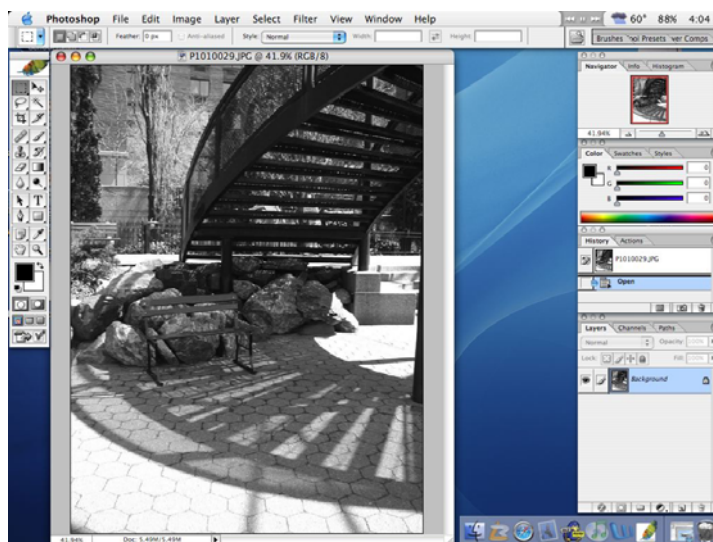
Although primarily designed to edit images for paper-based printing, Photoshop is used increasingly to produce images for the World Wide Web. Recent versions bundle a related application, Adobe ImageReady, to provide a more specialized set of tools for this purpose.

Photoshop also has strong links with software for media editing, animation and authoring. It works with Adobe Illustrator, Adobe Premiere, Adobe After Effects & Adobe Encore DVD to make professional standard DVDs, provide non-linear editing and special effects services such as backgrounds, textures and so on for television, film and the web. Photoshop's native file format (PSD or PDD) can be exported to and from Adobe Illustrator, Adobe Premiere, After Effects and Adobe Encore DVD. Photoshop CS broadly supports making menus and buttons for DVDs. For PSD or PDD files exported as a menu or button, it only needs to have layers, nested in layer sets with a cueing format and Adobe Encore DVD reads them as buttons or menus.

PSD or PDD is a widely accepted file format. Competing bitmap image editing programs (such as Macromedia Fireworks, Corel Photo-Paint, Discreet Combustion, WinImages, GIMP, etc.) can import and edit layered PSD or PDD files.

The most recent version, as of 2006, is version 9. This iteration of the program is marketed as "Photoshop CS2". In an effort to break away with previous versions of the application and to reinforce its belonging with the new line of products, Photoshop even dropped one classic graphic feature from its packaging: the Photoshop eye, which was present in different manifestations from versions 4 to 7. Photoshop CS versions now use feathers as a form of identification.

Photoshop CS features a revolutionary command: 'Shadow/Highlight' which allow user to 'suppress' highlights and/or 'push out' shadows while maintaining most of the 'image details' (i.e. the histogram would remain virtually unchanged).



Screenshot of the Photoshop CS under Mac OS X

5. From Novelty To Everyday Use

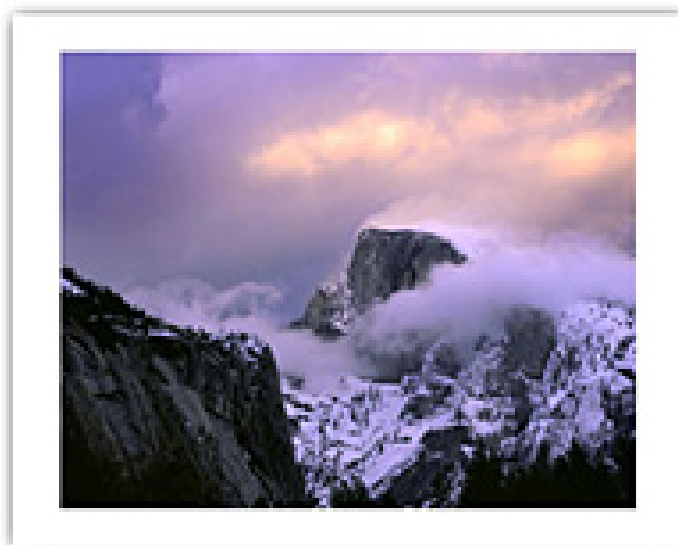
Only one and a half decade ago paint programs were treated like novelty and something very exquisite. But the development of such software turned out to be extremely rapid. Thus for comparatively short period they became an every-day need for representatives of a fine art community. Even more, the development of graphics editors caused the emergence of a new term "photoshopping". The term photoshopping is a neologism, meaning "editing an image", regardless of the program used. The name comes from Adobe Photoshop, the image editor most commonly used for the practice, although other programs, such as *Paint Shop Pro*, *Photopaint*, or the *GIMP* may be used.

The practice of photoshopping is possible because modern image editors made the work of altering images extremely easy, particularly with the clone tool. Nowadays actually anyone who possesses elementary computer skills can use photoshopping to edit his photographs.

Professional photographers also use photoshopping in their work. Thus, practically, no photograph in the magazines *Popular Photograph*, *Nature Photographer*, *Close Up* and others is free of retouch. The example of professional photograph, retouched with the help of Photoshop is presented below:

Photographer Richard Seiling captured this image in Yosemite Valley, as sunlight broke through the clouds of a winter storm. Taken on 4x5 transparency film, Rich scanned the image into the computer, and performed traditional darkroom techniques, such as dodging and burning, using Adobe Photoshop. This image comes matted and overmatted on 8-ply white Archival Mat Board.

It also should be mentioned that today no well-colored magazine can do without the imaged edited in graphics editors. The results of such work are apparent everywhere – from ads in the magazines to the billboards.



Fine Art Photograph by Richard Seiling Breaking Clouds, Half Dome (20 x 24 inches)
Image is take from <http://www.yosemitestore.com/>

Conclusion

The present study presents a concise review of historical development of graphic editors with the particular consideration of the most representative examples. The comparative approach to the most powerful graphic editors that represent two different, in principle, branches of software - free (Paint.NET and GIMP) and commercial (Adobe Photoshop) revealed that potentialities of commercial software is still leading on software market due to its advanced and newest features that satisfy the most refined aspirations of professional users. That's why the professionals prefer Adobe Photoshop; however, the amateurs may be well satisfied by Paint Shop Pro, Photopaint, or the GIMP. The last but not the least point is that when making a choice for a particular digital art and design program one should remember the rapid progress of this kind of software and the abilities that used to be pertinent to expensive commercial products now are the characteristics of more simple free software products.

References

- [1] <http://amiga.emugaming.com/dpaint.html> official site of Electronic Arts Company
- [2] <http://www.eecs.wsu.edu/paint.net/> official site of Paint.NET
- [3] <http://www.gimp.org/> official site of the GIMP
- [4] <http://www.adobe.com> official site of the Adobe Company

In the research the material from the following sites was used:

- http://www.guerillapixel.com/pages/digital_ill_pages/software_mainr.htm
- <http://screamdesign.daz3d.com/>
- <http://www.photoshopcafe.com/PhotoshopCS2.htm>

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