The Two Leading Freeware Image Editing Applications – An Overview, Comparative Evaluation and Guide for the IS Community

Julian M. Scher

Scher@adm.njit.edu

Department of Information Systems
New Jersey Institute of Technology
Newark, NJ 07102 USA

Abstract

Information Systems professionals/instructors/students often have a need to include digital images in their formal class presentations and writings, including photographic images, and there is often a need to perform some editing of these digital images, ranging from simple image cropping, or placement of text on the image, to more sophisticated lighting modifications. While commercial image editing software, such as Adobe Photoshop, represent the titles of choice for professional graphic designers, they are often "overkill" for the IS professional/instructor/student, who likely will simply prefer ease of use over sophistication, in order to expeditiously edit their images, and at nil cost. We explore the two leading freeware programs for image editing, Irfanview and Photoscape, both of which are from international sources, and describe and compare some of their functionalities, with a recommendation that both freeware titles belong in the library of every IS professional, though each has its strengths and weaknesses.

Keywords: freeware, image editing, photographic images, Irfanview, Photoscape

1. IMAGES AND IMAGE EDITORS FOR INFORMATION SYSTEMS TEACHING AND PRESENTATIONS

The Information Systems community, including instructors and students, will often have a need to include digital images in their presentations and writings. The IS instructor might wish to embed figures from the course textbook into a Powerpoint presentation, or there might be a need to include digital photographic images into a report. Concurrently, there will be a need to edit these digital images, be it something as simple as an instructor adding some explanatory text to the image, or cropping out an unwanted area, to advanced image editing activities which represent a higher level of sophistication, such as cloning an area of the image or adjusting its tone and saturation.

As an illustration of this, the author was recently updating his Powerpoint slides and lecture notes for a database systems design course which utilizes the eighth edition of the database textbook by Rob and Coronel (Rob, Coronel, 2009). The publisher traditionally provides to the instructor a file for each of the textbook images, in jpeg format. An example of such is the ERD image given in Figure 1 of the Appendix. All of the supplied images of figures in the textbook con-

tain, as part of the image, the "Figure number" as published in the textbook. In future editions of the textbook, if additional or replacement content is included in a chapter, this will often mean that while some images of figures will be re-used, the figure numbers of these associated images may change, and thus the instructor will be required to replace the entire image in his/her presentation, since the figure number from the prior edition may no longer be valid. To save the IS instructor from the unnecessary labor of updating the image, we would recommend that he/she be sure to NOT include in the presentation a figure number with the associated image. This would be accomplished by "cropping out" the Figure number with an image editing program, as we have done in Figure 2, where we cropped out the "Figure 4.35" number from the image.

For a professional graphic designer, the product of choice for image editing is generally something on the order of Adobe Photoshop CS4, but for the IS community, this product of choice for professional graphic designers represents a costly "overkill." The IS community would generally be seeking ease of use as a primary attribute of any image editing software, where a steep learning curve is to be avoided, and the desire is to expeditiously edit one's digital images at nil cost, where cost includes both monetary expenditures as well as the time commodity.

There are numerous other instances where the IS instructor would need to do image editing of images in his/her presentation. And while he/she likely would not require the power and sophistication of Photoshop CS4, and possibly might not even be able to afford this expensive piece of software, yet they would still seek an image editing application which has a moderate degree of power. We will be describing in this paper two freeware image editing applications which should satisfy the requirements of the IS instructor.

2. FREEWARE

Freeware, as described by (Scher, 2009) "is defined as computer software which has been made available by the authors of the freeware titles to the general public, without any charge, registration fees or license fees." There are numerous motivations for freeware authors, and, as discussed in (Scher, 2009), many freeware authors have purely altruistic goals, seeking to return something to the community from which they have derived much excitement, knowledge and careers. Freeware titles often have comparable functionality to commercially available software, and, in numerous cases, represent the creative passion of the freeware author, who may have created functionality which, in fact, may not be readily available in their commercial counterparts.

The two leading freeware image editing programs, as given by CNET (http://tinyurl.com/d4oely), are IrfanView (http://www.irfanview.com/) and Photoscape (http://tinyurl.com/yu5ns3). As of this date, the freeware IrfanView has had a total of about 44.6 million downloads, and is the second most downloaded image editor on the Internet, Irfanview is the work of one extremely dedicated individual who began this effort while still a college student, and its development has continue intensely for over 14 years. Irfanview is currently number 21 on the CNET list of the most popular downloads (those in the top 15 are typically antivirus and anti-spyware utilities). The number two downloaded image editor is Photoscape, which has had a total of over 6.5 million downloads and is currently number 18 on the CNET list of downloaded software titles. Irfanview is currently averaging over 163,000 downloads per week, while Photoscape is currently averaging about 167,000 downloads per week. (While there are other downloadable image editors, their popularity is nowhere as great at Irfanview and Photoscape – the third most popular freeware image editor (Paint.net) only has about 34,000 downloads per week, and so we focus in this paper on the top two.

Though Irfanview is the established leader in freeware image editing, having been available for approximately 14 years and having had over 44 million downloads, Photoscape, the "new kid on the block," being available for only about 3 years, has this year surpassed Irfanview as being the most downloaded image editor.

3. OVERVIEW OF IRFANVIEW AND PHOTOSCAPE

IrfanView is an extremely fast and intuitive image viewer and image editor, designed for the Microsoft Windows operating environment, and is named after its designer, Irfan Skiljan from Bosnia, and is a graduate of the Vienna Institute of Technology. IrfanView is freeware for those using it for private and non-commercial use, but commercial users need to pay a modest registration fee. Initially released in 1996, Irfan Skiljan has been diligently working on enhancements to his software, and currently the product is in version 4.25.

Irfanview is characterized by exceptional speed and ease-of-use, and its renowned capability for handling nearly every graphics format. In the age of bloated image editors, IrfanView has remained remarkably compact, and the current base version of Irfanview is about 1200 KB in size. IrfanView, as a premiere host application, allows for plug-ins, and third-party developers have responded by developing specialized software which interfaces with the host application, and allows for enhanced formats, media players, and special effects and filters.

Although we shall focus on the image-editing capabilities of IrfanView, the program is actually very robust, and contains the functionality to support many other multimedia files. It will play audio files (in file formats such as WAV, Midi, MP3, and WMA), videos (in file formats such as AVI, MPG, SWF and Apple Quick Time), and has built-in TWAIN support to import images from scanners.

The default screen for IrfanView, displaying both the menu bar and the tool bar, is given in Figure 3 of the Appendix, where we have opened a photographic image. As per Figure 3, the user can navigate through IrfanView by either using the top menu, or the tool bar or the numerous keyboard shortcuts for the menu selections which are available through IrfanView, and indicated on each submenu (such as given in Fig. 4 in the Appendix for the Image menu).

Photoscape is a freeware image editor designed by Mooiitech, Ltd. a software development company founded in 2001 in Seoul, South Korea. Moiitech specializes in technol-

ogies for image processing, and also mobile services. Mooiitech has been developing the Photoscape image editing product since 2005, and it became freely available in 2007, and is currently in version 3.3, and is the fastest growing image editor.

Photoscape provides a user interface completely different from other image editing tools. Users are welcomed on the initial main screen by a default circular navigator (Figure 5 in the Appendix) complemented by some equivalent tabs on the top of the main screen. (The Options icon on the upper right menu bar provides an option to replace the circular menu with a rectangular menu.) Most Photoscape features are accessible from either navigator mode. The icons in the circular arrangement provide easily accessible functionality for the many powerful features present in Photoscape, with the Editor module being the primary module of interest for the IS professional seeking to perform image editing.

The Editor contains the bulk of the functionality of Photoscape. Photoscape contains a wealth of adjustments and effects which may be applied to one's digital images. There are numerous color and tone adjustments, frames and filter effects to spruce up a digital image, as well as resizing, brightness adjustments, decoloring, backlight correction, balloons, mosaic mode, adding text, drawing pictures, cropping, filters, red eye removal and blooming. Figure 6 displays the Editor screen which consists of four adjustable panels, where the file navigation panel is on the upper left hand side with a thumbnail preview of the photographic images in the panel below, and clicking on a particular image enlarges the image into the main workspace panel on the right hand side, while the bottom right adjustment panel contains the editing tabs (Menu, Object, Crop and Region) of supported tools to edit the photographic image.

4. COMPARATIVE FUNCTIONALITY OF IRFANVIEW AND PHOTOSCAPE

In this section we shall compare some of the functionality of Irfanview and Photoscape in terms of their capabilities for performing tasks normally desired by an IS instructor seeking an image editor. A chart summarizing this comparative functionality is pre-

sented as Figure 7 in the Appendix.

Resize, Crop, Rotate, Flip Functionality

Irfanview provides, through its "Image" menu, the capability to perform a left (counterclockwise) and right (clockwise) rotation of 90 degrees, a customized fine rotation allowing the user to specify any number of degrees between -360 and +360 degrees, with the option to specify the background color of the space remaining from the rotation. Flips may be done both horizontally and vertically, creating "mirror images" of the image. Cropping is done directly on the image by dragging the mouse, and the user may save either the selected cropped area, or the area outside of the cropped area.

Photoscape similarly provides a one-click access in its Editing screen to perform left (counterclockwise) and right (clockwise) rotations of 90 degrees, and its customized fine rotation is accomplished by using a slider bar (or specifying the degrees), but its rotation is limited from -15 degrees to +15 degrees, though this may be repeated to achieve higher degree rotations. There is also a one-click access to Flips on the Editing screen, and flips may be done both horizontally and vertically, creating "mirror images" of the image. Cropping is done through a separate tab in the Editor, and is done directly on the image by dragging the mouse, but the user is provided an option to crop either normally through a rectangular crop, or roundly, and, if roundly, the user may specify the color of the remaining blank area. This rounding cropping is an added bonus, not found in Irfanview. In both rectangular and round cropping, the user may save the cropped area, but there is no option to save the area external to the cropped segment.

Brightness, Contrast, Gamma Correction, Sharpness, Hue, Saturation,Grayscale

From its Image menu choice of "Color Correction," the Irfanview user is provided with slider bars and a preview window, and the user may readily adjust the brightness, RGB color balance, contrast, gamma correction and saturation of an image. There is also an "Auto Adjust Colors" which, for the neophyte, will 'automatically' adjust the bright-

ness and gamma corrections, using some predefined intelligent algorithms. Available also in the Image menu is a one-click conversion to gray-scale, as well as the capability to decrease the color depth to any number of colors from above 2 colors (black/white) to below 250 colors.

From its "Home" tab in the Photoscape Image Editor, the user may choose from a "Bright,Color" drop down box to customize the brightness and colors. The user may choose from 3 levels of contrast enhancement, and 3 levels each to deepen, brighten or darken the colors, or choose from 10 levels to decolor (incrementally remove colors) from the image. There are also "Photoshop-like" Color Curves, Saturation Curves and Luminance Curves for the more sophisticated IS instructor who might wish to adjust the image colors, saturation and luminance. Also available is a separate Sharpen button with 10 levels to sharpen the image, as well as one-click access to grayscale conversion and sepia conversion. Sophisticated features include a Backlight Correction button as well as the ability to deal with white balance issues.

Undo

Irfanview provides an Undo operation from the Edit menu, which will undo the last image editing operation (but will not "undo" any edits before the last). The user may, effectively, undo all of the editing operations and regain the original image by choosing to "reopen" the original image from the File menu (or associated shortcut keys). There is no "redo" option. Photoscape, in all tabs from the Editor, provides a one-click access to undo the last operation, and the "Undo" may be repeated, so that the user may sequentially undo each of his/her previous editing tasks. If the user wishes to "undo" ALL of his/her image edits (and thereby regain the original image), there is a one-click access to the "Undo All" button. Lastly, the user may choose to sequentially "redo" the previous "undone" operations, and may do so in a one-by-one manner.

Filters

Referred to as "Effects" in Irfanview, from the "Effects" choice in the Irfanview Image

menu, the user may invoke the Effects Browser to preview any of the standard 36 filters, and use a slider bar to fine-tune the effect. The effects range from cylindrical, metallic, fish-eye, to sepia, rain drops and radial blur, and are supplemented by freely downloadable plug-ins for additional filters, including Adobe Photoshop filters and others, to greatly expand the filtering capabilities.

The Photoscape editor includes a Filter button which, when opened, provides access to 25 powerful filters, including filters to do vignetting (having the edges of an image fade off gradually), and creating film effects and distortions. There is no ability to add plug-ins for additional filters.

Adding Text and Drawing Tools

IS instructors will often need to insert text into a presentation or workbook image in order to clarify concepts for a class. Irfanview allows the user to add text to an image, though the user is first required to select the area of the image where the text will be located. Addition of text in Irfanview is accomplished through the "Insert Text Into Selection…" choice in the Image menu, which, as the command name implies, requires that the user first "select" as area of the image where the text will be located. Users have the typical choices of font selection, size, color, alignment, and background color, though once the text is placed in the image, it may not be freely moved. The "Show Paint" dialogue in the Edit menu enables the user to add arrows and geometric shapes to the image. Right-clicking on the arrow allows the user to set the properties of the object.

Photoscape enables the text addition functionality through the Object tab in the Editor, where the user would choose the "T" icon, and a dialogue box enables entry of the text to be inserted into the image, along with the desired font, size, color, alignment, and background color. Once chosen, the desired text appears in a movable and rotatable box on the image, which may be freely moved at the discretion of the user, and the text may be dynamically changed by the user. Also in the Object tab are one-click access buttons to add geometric objects, as well the capability to add 11 different varie-

ties of arrows and lines to the image. One may also specify the opacity, thickness and outline color for these.

Cloning and Layers

Cloning allows the user to replicate a specified area of an image to another area, and represents a useful and advanced image editing tool. Layers are also an advanced feature for image editing, and one can view a layer as a sheet of transparent film, and when you "paint" on one portion of a layer, you can still see the "unpainted" part of the layer – one can edit separately each layer, and combine/stack layers to create new images. Alas, neither Irfanview nor Photoscape support this sophisticated editing tool, though likely it will not be needed by the IS instructor.

Irfanview (but not Photoscape) supports cloning. The cloning in Irfanview is accomplished through the Paint dialogue box (accessed through the Edit menu choice "Show Paint Dialogue"). After selecting the clone tool in the Paint Dialogue box, the user merely right clicks to select the source to be replicated, and left clicks and drags in order to brush paint from the source area to the place where it is to be replicated (the width of the painting "brush" is to be first set in the Paint dialogue box).

Frames

Both Irfanview and Photoscape support drawing of frames around the image, allowing the user to select the border color as well as the dimensions (in pixels) of each side of the border/frame. In Irfanview, this feature is somewhat disguised, as it appears as an edit choice of "Change canvas size" in the Image menu. The Photoscape product provides over 150 choices to frame an image, and allows the user to quickly preview each frame applied to the image. Frames in Photoscape are chosen through a drop-down box in the Home tab, and the user can choose the color, thickness, roundness, margin, opacity and type for each frame added to the image.

Embedding Images Into An Existing Image

In addition to embedding text into an existing image, the IS professional might have occasion to embed additional images and objects into an image. While Irfanview relies on the traditional "copy/paste" functionality, and the "pasted" image is not capable of being manipulated, Photoscape fully supports the embedding of images through the Object tab in the Editor, where the user would choose the "Insert object" icon to insert into the working image any other image present on either the hard drive or the clipboard, and may also choose from several hundred predefined categorized images. Once the inserted image appears on the working image, the user may move it, rotate it, and adjust its properties.

Image Types and Conversions

Images may appear in different formats, and after editing an image, one might wish to save it in a specific image file format. Photoscape supports only the basic file formats, and thus a Photoscape-edited image may only be saved in JPG, PNG, GIF and BMP formats. Irfanview is far more robust in terms of the images it can import, and saves to well over 20 image file formats, including not only the traditional formats of JPG, PNG, GIF and BMP, but also more specialized ones. The freeware Irfanview is well known for its ability to deal with image and video files of many different file formats.

Miscellaneous

Both Irfanview and Photoscape are extremely rich freeware titles, and have many more additional features – indeed, we have only literally touched the 'tip of the iceberg' in this paper, seeking to extract and compare the basic image editing functionality which likely would be used by the IS professional in his/her writings and presentations. Moreover, both of these titles are actively being developed and new and enhanced features will appear in forthcoming versions.

5.CONCLUSIONS

We have succinctly presented to IS instructors the need to have in their application library an image editor for the editing of digital images, and being able to embed these edited images into their class presentations and professional writings. Some of the basic functionalities of the two leading *freeware* applications for image editing are discussed, and we have compared the two freeware image editing applications with regard to nine different functionalities.

For traditional image editing tasks of cropping, resizing, rotating and flipping, both applications provide equivalent power. For adjusting colors, brightness, contrast, gamma correction, sharpness, hue and saturation, and the application of filters, we do express a slight preference for one of the applications over the other.

For dealing with issues like file formats and cloning specific areas of an image, Irfanview shines in comparison to Photoscape, while when dealing with embedding text and images and adding border frames, and utilizing color adjustment tools such as the Photoshop-like Curves, Photoscape provides more power and ease of use. Irfanview provides reasonably good documentation of all its functionality within the program's "Help" files, while Photoscape is somewhat limited to several videos describing some of the functionality. (It should be noted that the author of this paper seeks to remedy the Photoscape documentation issue in a manuscript which is nearing completion, and deals with the leading freeware titles for image editing and photographic video design.)

We feel that there is no need to choose one of these freeware titles over the other' Indeed, the prudent IS instructor is encouraged to utilize BOTH Irfanview and Photoscape, and to maintain each as necessary tools in their image editing library, since both are freeware for academic use. Combined, these tools approximate much of the functionality of Photoshop, with the exception of support for layers, and will likely satisfy all the image editing needs of the IS professional.

6. REFERENCES

Scher, Julian M., (2009), "Open Source and Freeware – Strategic Resources for IS Pedagogical Endeavors." Information Systems

Education Journal, 7 (69).
http://isedj.org/7/69/.ISSN:1545-679X

Rob, Peter and Carlos Coronel (2009), Database Systems: Design, Implementation and Management, Eighth Edition, Course Technology – Boston, MA
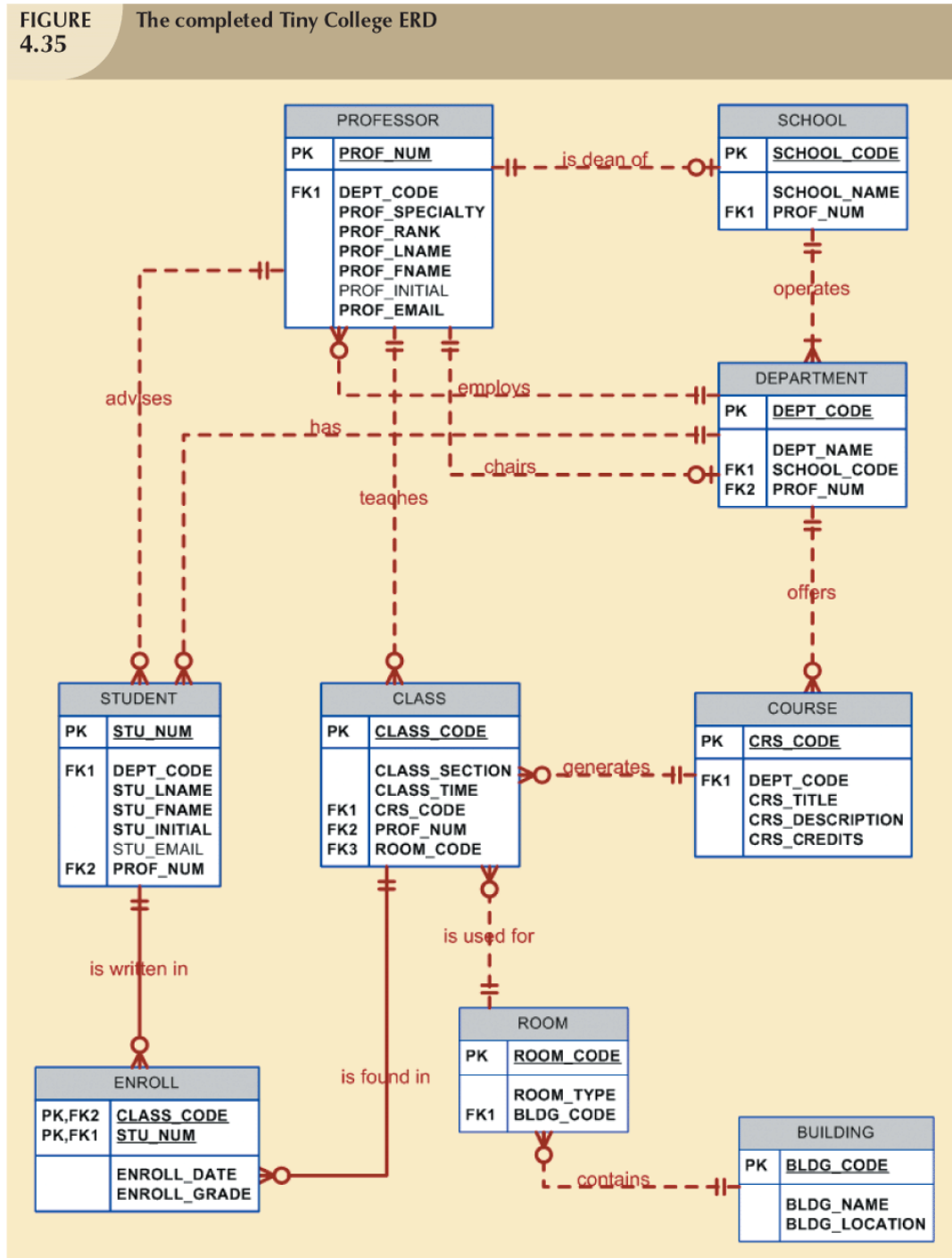
APPENDIX

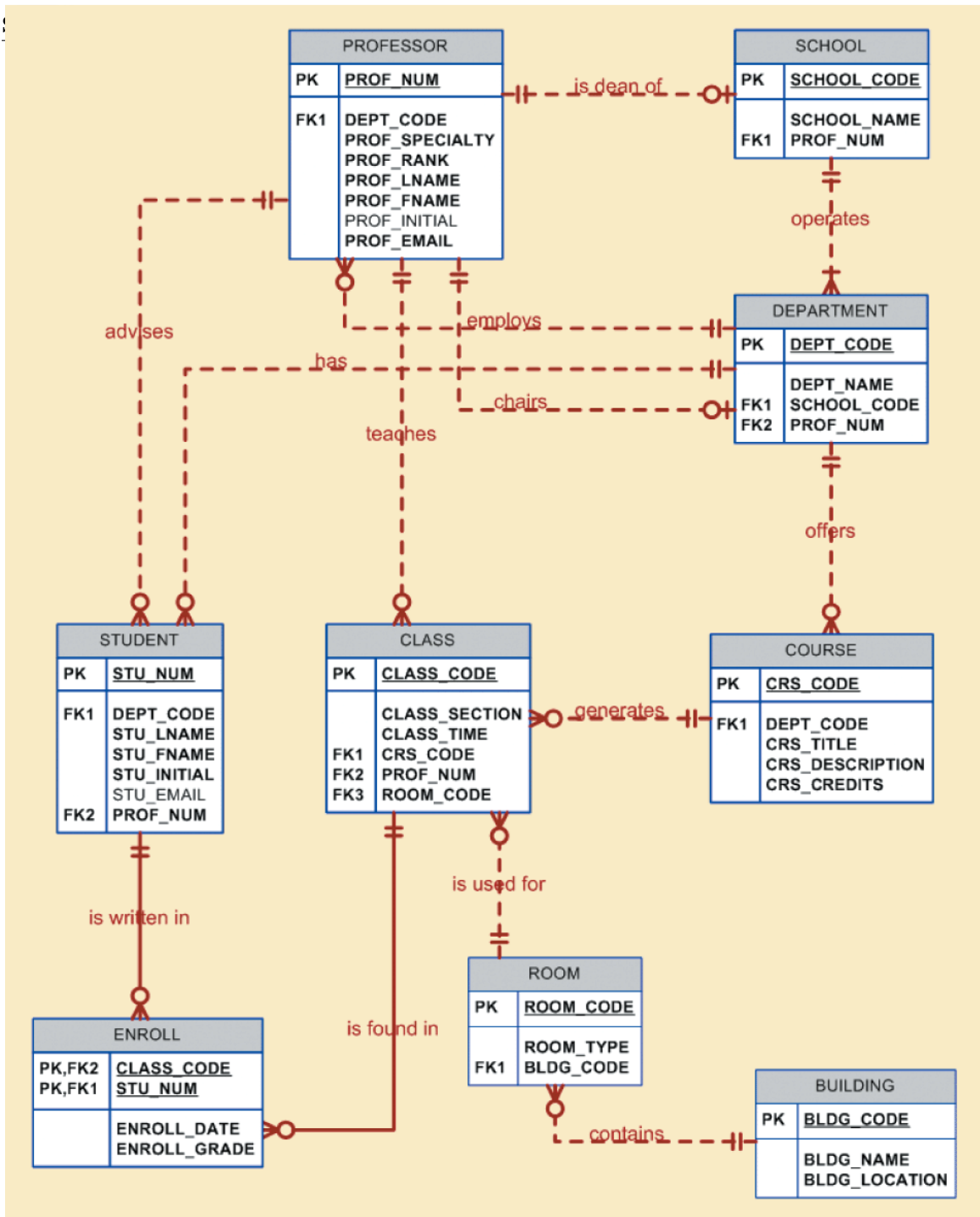Figure 1: An ERD, with the Figure number on top

Figure 2: The same ERD, but with the Figure number cropped out

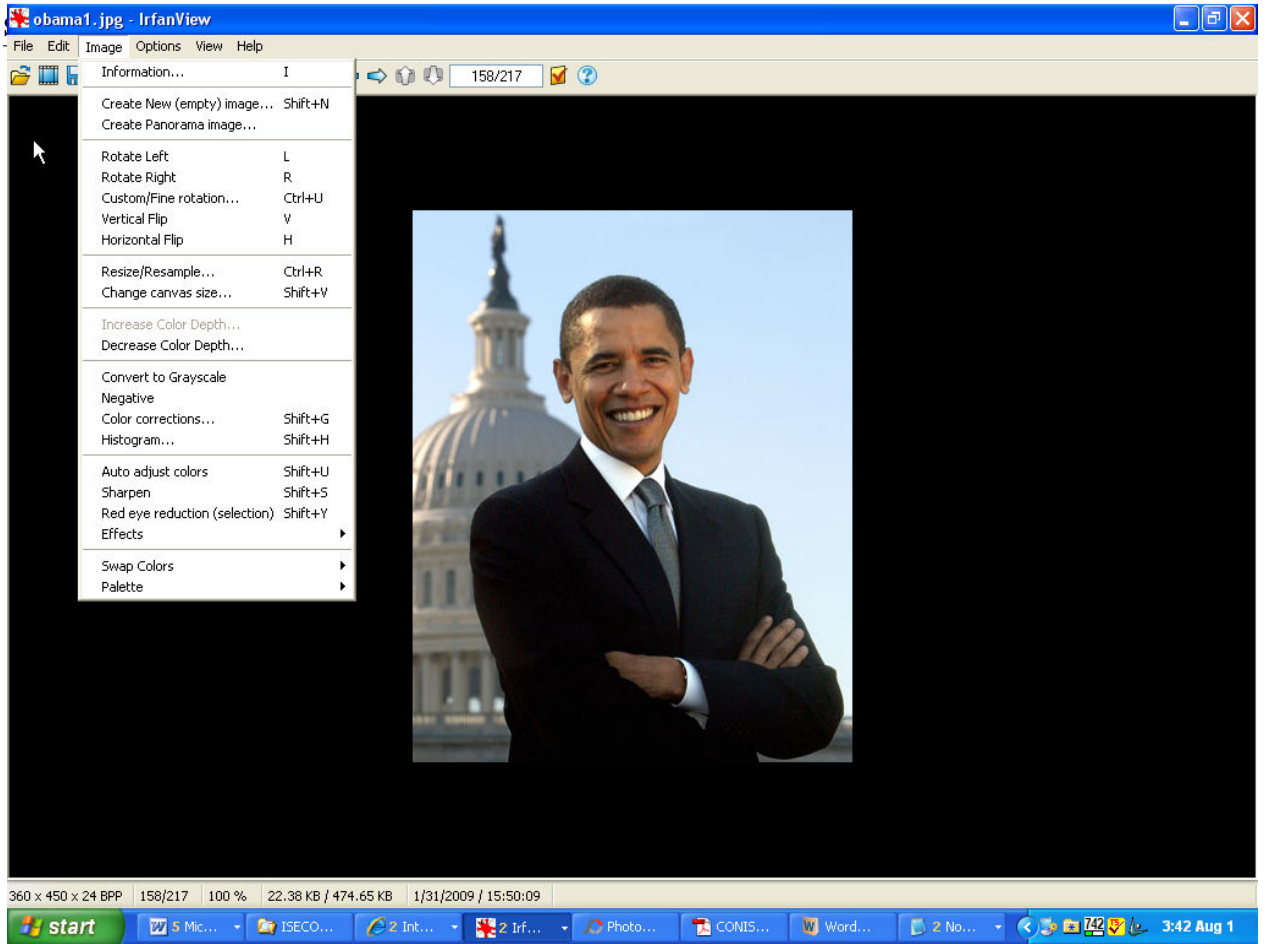Figure 3: Irfanview Default Screen With The Menubar and Toolbar

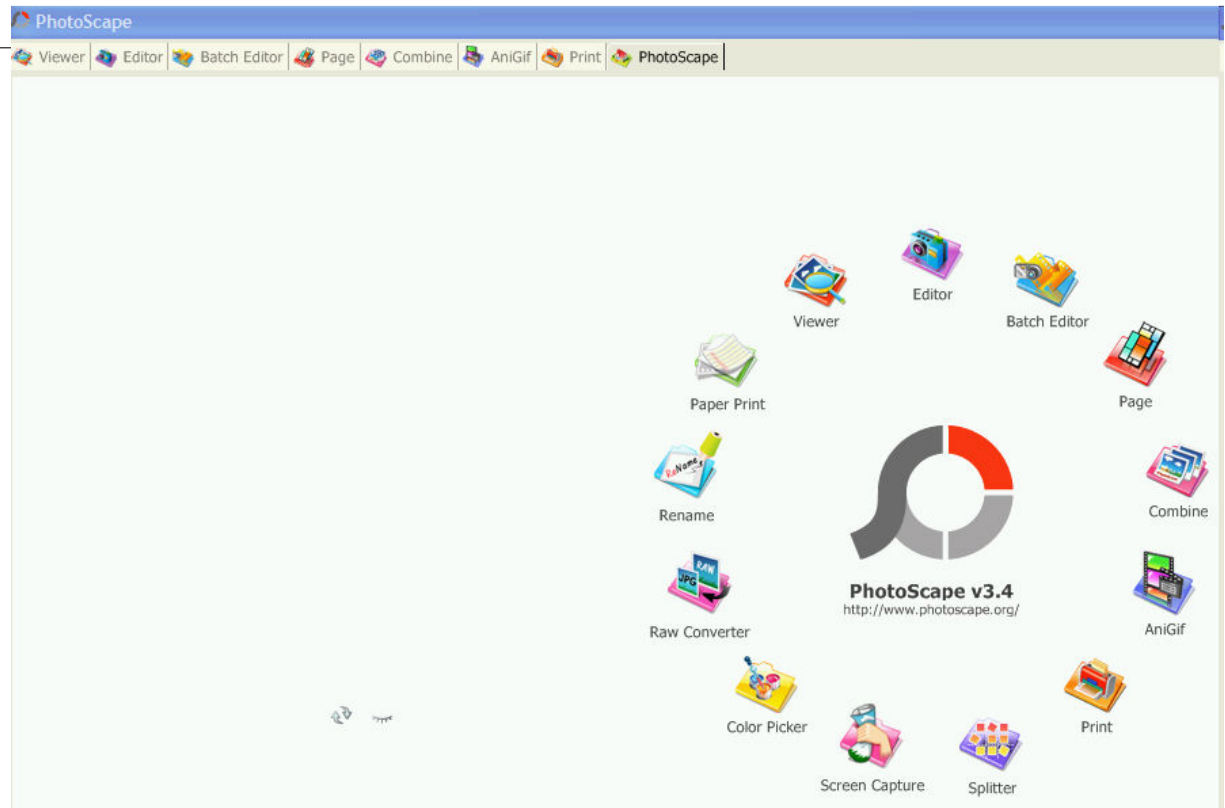Figure 4: The Image Menu in IrfanView With Keyboard Shortcuts
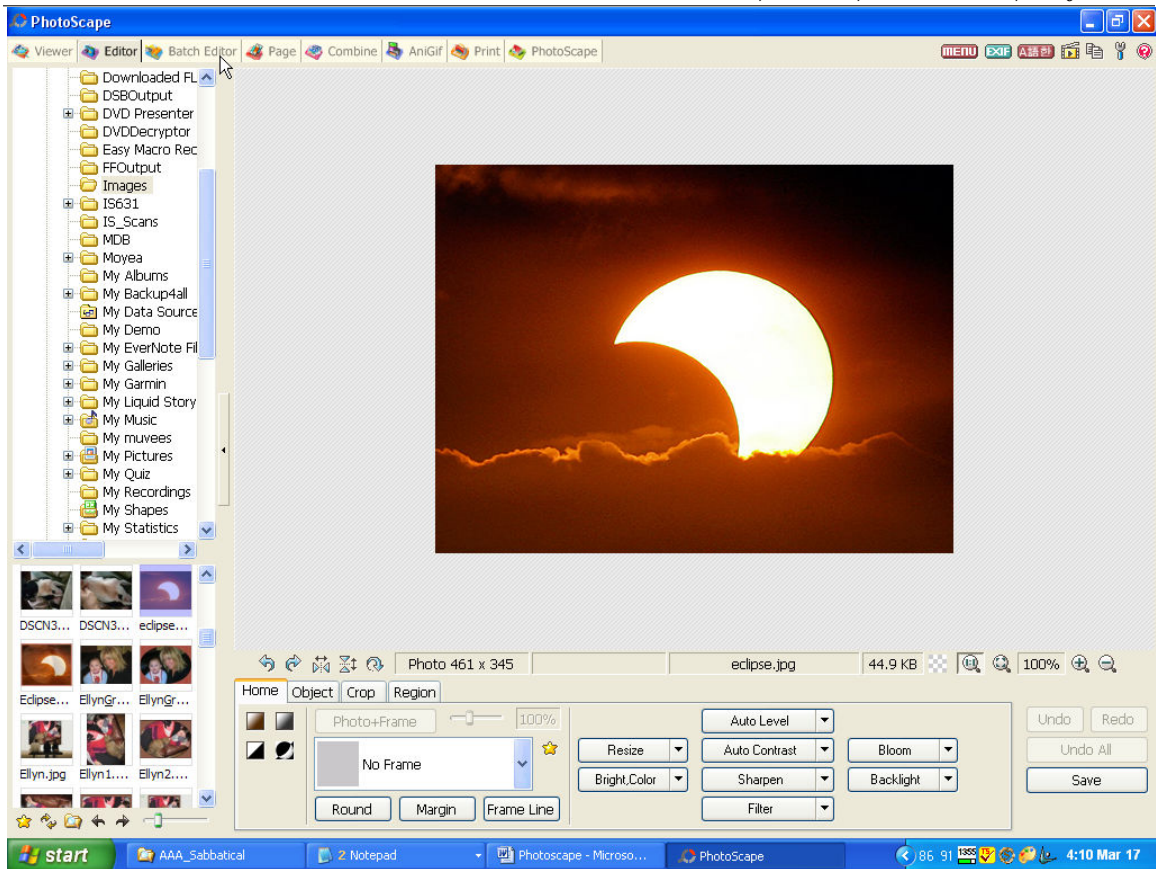
Figure 5: The Photoscape Main Screen

Figure 6: The Photoscape Editor Screen

Functionality	Irfanview	Photoscape
Resize, Crop, Rotate, Flip	**Provides excellent functionality for these features, including customized fine rotations**	**Provides excellent functionality for these features, including cropping roundly**
Brightness, Contrast, Gamma Correction, Sharpness, Hue, Saturation, Grayscale	Provides good functionality to support these features	**Provides very good functionality to support these features, including "Photoshop-like" Color Curves, Saturation Curves and Luminance Curves**
Undo	Will 'undo' the last image editing operation, but will not 'undo' any edits before the last	**May sequentially 'undo' each previous 'undo' task, provides a one-click access to 'Undo All" and one may sequentially 'redo' the previous 'undone' operations**
Filters	**Referred to as "Effects" provides a wealth of filters, via downloadable "plug-ins" including Photoshop filters**	Provides some powerful filters, including vignetting (having the edges of an image fade off gradually), but no support for added plug-ins for additional filters
Adding Text – Drawing Tools	User may insert text into an image, define text attributes, but text movement is not supported. Drawing tools available through the "Paint" dialogue.	**User may insert text into an image, define text attributes, and text movement is fully supported, and text may be dynamically changed. The Object tab provides one click access to adding geometric objects and shapes**
Cloning	**Supports 'cloning' through the Paint dialogue box**	No support
Frames	Supports frames (disguised as "Change Canvas Size") with capability to specify the attributes of the frame.	**Supports frames and frame attributes, and provides a wealth of easily accessible predefined frames**
Embedding Images Into An Existing Image	Relies on "copy/paste" Windows functionality, and the pasted image is not capable of being directly edited	**Using the "Insert Object" icon in the Editor's Object tab, the user may easily insert objects and move, rotate and adjust the properties of the inserted image**
Image Types and Conversions	**Supports well over 20 image formats for viewing and saving, going well beyond the traditional favored image types**	Supports only the basic image formats

Figure 7: Comparative Functionality of Irfanview and Photoscape, With Preferred Product Bolded for Each Specified Functionality