sajola, photocase.com

Image manipulation with Fotoxx

LIGHT AND SHADOW

The Fotoxx image manipulation program offers highlights such as HDR and panorama functions, but where there is light, there is also shadow. **BY THOMAS PELKMANN**

The free image manipulation program Fotoxx provides the usual collection of functions for enhancing and editing digital photos, but also special tools for handling high-dynamic range (HDR) photos and panoramic images. Pre-built packages are available for a few distros, and the developer directs you to these; on the Fotoxx website, the programmer merely states, "I gave up," when confronted with the myriad packaging systems [1]. However, with just a couple of manual steps, you can install Fotoxx from the source code (see the "Installing Fotoxx" box).

When launched for the first time, Fotoxx comes up with a surprisingly plain interface – a large, empty space, framed by a horizontal icon bar for major file functions and a vertical bar for the pro-

gram tools – which is very different from most popular GUIs.

Fotoxx is a good choice for an image viewer and as a way to keep track of your digital images. To see an overview of your photo collection in any folder, click *Folder*. With larger collections, Fotoxx freezes or responds slowly. Fotoxx also lacks some useful features, such as a slideshow or the ability to sort images by category. Users are left with the task of navigating individual images and then double-clicking an image to open it for editing (Figure 1).

Unfortunately, Fotoxx does not have a scrollbar, which is a nuisance if the images do not fit into the window. Your only options are to scale down the view or navigate the images row by row or page by page. Because Fotoxx seemingly

reloads the images each time they move, your mileage may vary. This said, the image viewer is important to an intuitive workflow. It is also unfortunate that the *Open* button does not give users a preview – either you know the image's name, or you just guess.

Retouching and Enhancing

The icon bar on the left provides image editing tools. Most of them are self-explanatory – such as *Crop*, *Redeye*, *Rotate* – and open additional dialogs that show the most important parameters with a click of the mouse. The approach of opening sliders and previews in separate windows independent of the main program often forces users to toggle back and forth between windows to move whatever they need into the foreground.

In contrast, the program offers a good selection of calibration options. For example, you can set the brightness in *adjust*, using no fewer than nine sliders for the individual areas. The buttons next to the sliders support automation; for example, + - moves the sliders for dark regions up while lowering the sliders for the light regions. In contrast, - + - simply ups the mid-range values. Because there is no description of this function, you must rely on your own judgement.

For the most part, Fotoxx's quirky approach is annoying. For example, the *Crop* function drops the dialog right on top of the image, before you hold down the left mouse button and drag the mouse to select an area. The crop box is displayed automatically and can be resized – but not moved or redrawn – by dragging the mouse, an approach that is neither innovative nor intuitive. Examples of poor usability are found in almost any function. For example, to *Rotate*, you need to enter an angle. On top of this, the program lacks keyboard shortcuts of any kind.

HDR/DRI DIY

If this were all that Fotoxx had to offer, it would not be worth writing about. But thereare two special functions: HDR and panoramic images.

HDR images are characterized by the extremely dark dynamic range between the darkest and the lightest points. The human eye can detect up to 100,000 different gradients, whereas a digital camera can only handle about 1,000 contrast values. Normal displays do an even worse job, offering just 256 different scales. Genuine HDR is not currently available at consumer prices, and images that appear to be HDR photos are actually only images that approach this ideal with dynamic range increase (DRI).

DRI [2] is an approach that uses multiple exposures of the same image to create a single photo. Almost any modern digital camera can handle this – look for "Exposure Bracketing" in your user manual.

Creating DRI images manually is tricky because you need to copy the best contrast from each image and apply it to
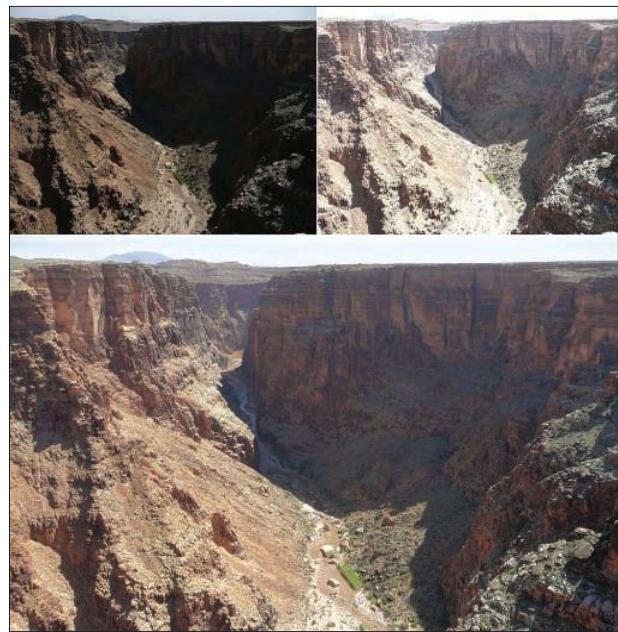
Figure 2: Fotoxx calculates how the contrasts in the images complement each other.

the new image. Fortunately, special applications provide an automated approach to this task.

In Fotoxx, press *Open* or select the first image in an exposure bracket in the Folder view and then press *HDR* to add a second image. Fotoxx then calculates how the contrasts in the images complement each other; depending on the reso-

Figure 1: Navigating individual images can be tedious.

Installing Fotoxx

First, download the Fotoxx tarball to a directory of your choice (->*DVD*), then launch a console and enter the following commands:

```
$ tar -xzf fotox.35.tar.gz
$ cd fotox
$ ./ubuild
```

If you need to fulfill some dependencies, the build script will complain about the missing components. Install whatever is missing and then repeat the *./ubuild* command. After the build completes, the program is installed in */home/user/fotox* by default.

The install sets up a desktop icon labeled *fotox*, which you can use to launch the program; however, it does not create a menu entry. When you launch Fotoxx for the first time, it creates a file with critical configuration data; you can modify the file later via the *Param.* menu. The configuration file itself, *.fotox/parameters*, is located in your home directory; to modify the configuration, use any editor.

lution, this can take up to two minutes. Next, Fotoxx opens a window called HDR image weights, in which you can use the sliders or buttons to set the ratio between the original and added image. To apply the settings, press *Apply*, and then repeat the steps with the remaining images in the exposure bracket. When you are done, you will see an image that is more intense than the real thing (Figures 2 and 3).

Judging from the results, Fotoxx does a decent job of creating DRI images, but what Fotoxx actually does with the images is the developers' secret. Superimposing images is just half of the story. The other half is called tone mapping [3] – the compression of oversized dynamic ranges in the output images to allow a monitor to display them or a printer to create a hard copy. Programs such as the GIMP exposure-blend plugin [4] have separate tools for this that let the user view these settings. Fotoxx does without this completely.

Panorama

Of course, other programs are custom designed for creating broadband panoramic images, including Hugin [5]. Despite this, Fotoxx offers a function that works in a way similar to the HDR tool. First, select an image as the basis for the panoramic photo, then click *Pano.* to add more photos to the original

Figure 4: Create panoramic views by stitching photos.

(see Figure 4). To allow for seamless final results, you can also set stitching parameters.

To start, hold down the left mouse button and roughly move the image you added toward the original image. If you need to rotate the second image relative to the original, just grab its right border. Or you can use the arrow keys to move the image you are adding to the correct position millimeter by millimeter. Now set the value for *Lens mm* and *Lens bow* to stitch the two images in the best possible way. *Lens mm* is for the focal length, and *Lens bow* is for barrel or pincushion distortion.

Pressing *Find* tells the program to automatically find the best distortion values. Then you can press *Next* to stitch the images. The image flashes momentarily at the join, and you can mix and match hues and brightness values. When you are done, press *Apply* and *Finish* to complete the stitching, then repeat this process with the other parts of the panorama. Stitching individual images is a function that works well, and the results are more than usable; how-

ever, it makes sense to select *Crop* to tidy up the edges.

Straightening Lines

Fotoxx includes the ability to straighten up sloping lines that occur, for example, when the edges of the subject you are taking a picture of are not parallel to the camera's geometry, such as a tall building. To fix undesirable effects like this, click *unbend* and then experiment with the values for *vertical unbend* and *horizontal unbend*. Fotoxx does not offer a real-time preview. Instead, you must *Apply* the settings to the image first, and you can then make changes before pressing *Finish* to permanently apply the changes to the image.

Conclusions

If I had just used the program's special features, it would have faired well – the HDR and panorama features work perfectly, but users would probably appreciate more transparency in the approach. Unfortunately, Fotoxx's basic functions are spartan and the unusual controls are just plain pesky. On top of this, the program could be far faster. If you want to retouch images, stick with GIMP, but if you want to experiment with HDR and panoramic images, check out Fotoxx. ■

INFO
[1] Fotoxx: *http://www.kornelix.com/fotoxx*
[2] Wikipedia on DRI: *http://en.wikipedia.org/wiki/ High_dynamic_range_imaging*
[3] Wikipedia on tone mapping: *http://en.wikipedia.org/wiki/Tone_ Mapping*
[4] GIMP exposure-blend plugin: *http://turtle.as.arizona.edu/jdsmith/ exposure_blend.php*
[5] Photo stitching projects: *http://www.linux-magazine.com/ issues/2008/93/projects_on_the_ move*
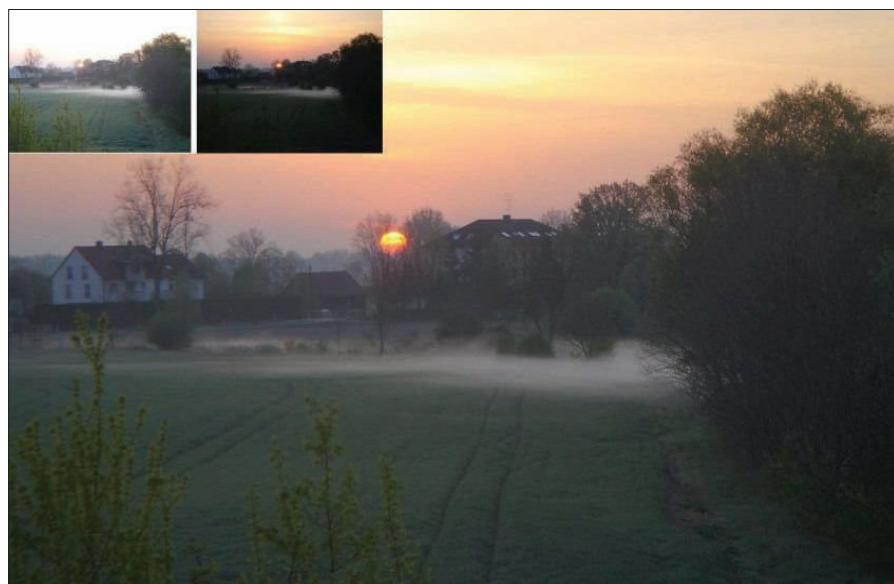
Figure 3: Fotoxx does a good job of creating DRI images.