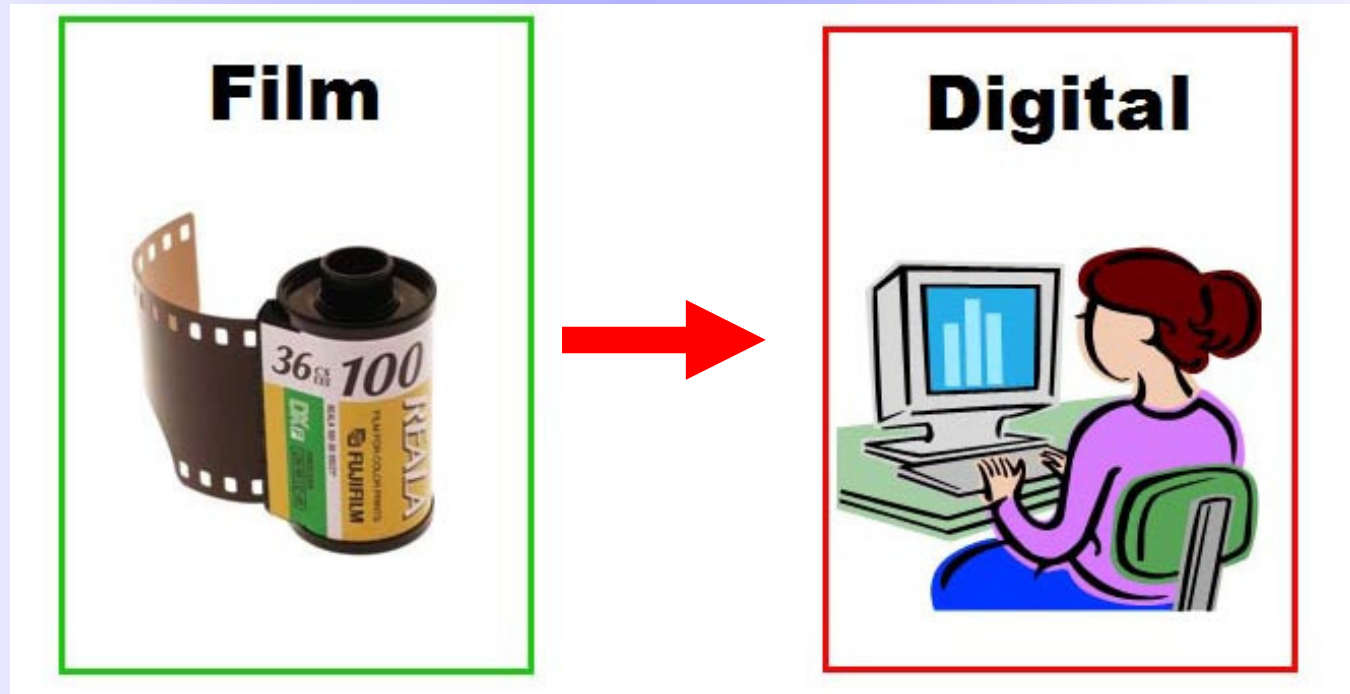


# From Film To Digital



**An introduction to Digital  
Stereo Photography for Film Users**

**A Presentation by George Themelis**

**NSA - July 2010**

**This workshop is for mainly stereo photographers who are currently shooting film and are thinking about switching to digital.**

Topics to be discussed:

- **Why Digital? (Digital vs. Film)**
- **What do you Need to get started**
- **Taking digital 3d pictures (2d camera, 3d camera, twin cameras)**
- **Processing digital stereo pictures**
- **Viewing digital stereo pictures**
- **Developing a routine**
- **Slides to digital & digital to slides**
- **Is digital 3d for you?**

# Digital vs. Film

## Film:

- Technologically Simple
- Possible Small investment in equipment
- Excellent & Low Cost 3d Viewing Experience

## Digital:

- Lower Operating Cost
- Instant gratification
- Easier to share
- Evolving
- Better 3d Alignment/Processing Options

# Getting Started

To start in digital stereo photography you need the following:

- 1. A digital camera (system)**
- 2. A computer**
- 3. Some way to view digital stereo pictures in the computer**
- 4. A program to manipulate stereo pictures and a program to manipulate digital pictures**

# Taking Digital Stereo

Three Basic Ways:

1. **Single (2D) digital camera & shift**
2. **Twin cameras**
3. **Stereo (3D) digital camera**

A **single 2D camera** is perhaps the easiest and least expensive way to start, especially if you already have a digital camera. All you need to do is take one picture, shift the camera, take another picture, and you are done!

Like with film cameras, you cannot take action 3d shots using a single camera, but digital **offers two important advantages over film**: 1) Alignment is less critical. Computer software can correct many misalignment problems. 2) It costs nearly nothing to experiment. So you can take lots of pictures and only keep the successful ones.

I know a few stereo photographers who are shooting 3d with a 2d camera exclusively.

# Twin Camera Stereo

**Film cameras** cannot be brought close enough to reduce the spacing of the lenses because of the size of the cameras, dictated by the need to run film through them.

**Digital cameras have no such problem**, plus the lens is usually closer to one side, which means that the cameras can be brought even closer by turning one camera upside down. With most digital cameras it is possible to bring them at 65mm (average spacing of the eyes), or even closer. **So “digital twins” have an advantage over “film twins”**.

**Synchronization** of the two cameras is an issue with digital cameras, as it is with film cameras. Two Current Solutions:

- 1. StereoData Maker**
- 2. Hard-Wired**

# Stereo Data Maker (SDM)

StereoData Maker (SDM) is an ingenious synchronization method that has been developed for certain Canon digital cameras.

This involves using a cable and switch to connect the two cameras, and software to control them. The software is free.



For more details, see:

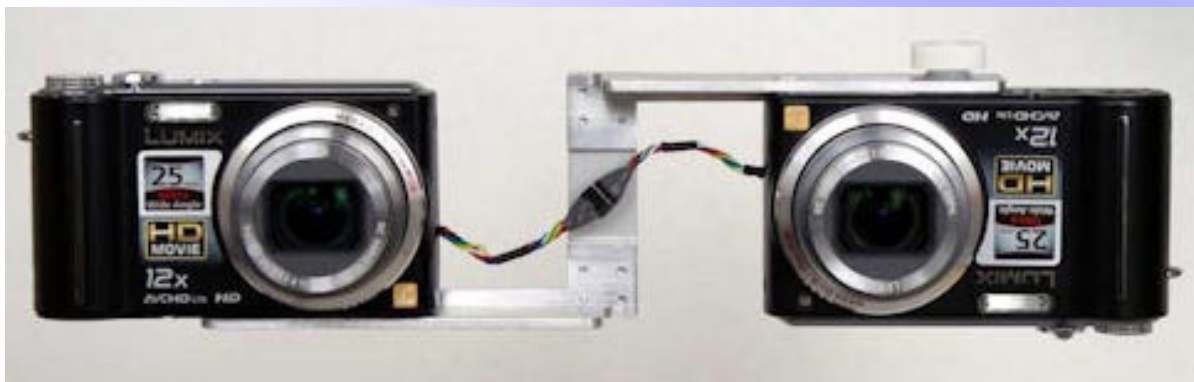
<http://stereo.jpn.org/eng/sdm/index.htm>

(Photos courtesy of Werner Bloos, [http://www.digi-dat.de/produkte/index\\_eng.html#SDM\\_flash](http://www.digi-dat.de/produkte/index_eng.html#SDM_flash))

I personally have no experience with SDM but a lot of stereo photographers use this system.

# Hard-wired Cameras

Co Ekeren (Netherlands): [www.ekeren3d.com](http://www.ekeren3d.com)



(Photos courtesy of Co Ekeren, [www.ekeren3d.com](http://www.ekeren3d.com))

# Digital 3D Cameras

A digital stereo camera is, in my opinion, **the easiest and most convenient way to take stereo pictures.**

Currently, there is only one commercial digital stereo camera, the Fuji W1, but more cameras should be available soon. (Aiptek, Samsung, Sony?)

*If it was not for the Fuji, I would not be shooting digital stereo pictures today.*



# Processing 3D Digital

With slide film stereo you need to worry about **processing your film**, **mounting the stereo slides**, and **storing/organizing your stereo slide collection**.

With digital stereo you need to **transfer the digital pictures** from the camera to the computer, organize them, and then **adjust each picture** (cropping, aligning, etc, which is equivalent to mounting).

## Need 3 Things:

- **Computer**
- **Program to manipulate 3d**
- **Program to manipulate digital images**

## Two Golden Rules of Digital Photography:

- **Always record pictures at the highest possible resolution/quality**
- **Always save the “raw” images** (as they come out from the camera)

# Computer Requirements & Organization

A computer is needed to store the digital pictures and computer programs to manipulate them. An average newer desktop or laptop computer should be sufficient, but you need to worry about **storage space** and regular **backing up** of your pictures.

For years I used a laptop with only 30GB hard drive capacity and never bothered to backup my hard drive. My newer laptop has a 285 GB hard drive and 280 GB are already filled. I also have an external hard drive to backup my stereo pictures. If you do not back up your pictures and your hard drive crashes, everything will be lost.

Another issue to think about is the **organization** of your stereo pictures. It is easy to pile everything in one directory but you will soon find yourself unable to find the pictures you want. Some ideas: Chronological, per subject, combination of the two.

Another issue regarding organization that is unique for digital pictures: The same picture often exists in more than one form: 1) Raw image (as it came out of the camera), 2) Manipulated image (after cropping/adjusting the raw image). Often a file is saved many times during manipulation so some method of file-naming is needed to keep track of different versions of the same original picture.

# Processing of Digital Pictures

To process stereo pictures you will need at least two pieces of software: 1) A program dedicated to stereo images, 2) A general photo Editor.

## **Stereo Photo Maker (SPM)**

Most stereo photographers today use **StereoPhoto Maker (SPM)**, a powerful and free software that makes manipulating stereo images (viewing, cropping, aligning, changing size/format, etc) very simple.

Even though it is possible to do most of these operations using a standard photo editor, SPM is much easier. Quite honestly, I don't think I would be shooting digital stereo pictures today if it wasn't for SPM.

**You can download SPM from here:** <http://stereo.jpn.org/eng/stphmkr/>

In addition to SPM you need a general **photo Editor** to change image size, crop 2d images, change brightness/contrast, adjust color balance, sharpen images, etc. I am using an older version of Adobe Photoshop Elements which came for free with a scanner that I bought many years ago. Perhaps the most famous (and expensive) photo editor is **Photo-shop**. A Google search for "photo editing software" will show more programs (including free ones), like GIMP, Picassa, Paint.net, xnview.

# Viewing 3D Digital

With stereo slides you just drop your slide in the viewer and you are ready to view it in stereo. With digital images it is not that easy YET.

We can classify the viewing categories into two groups:

- 1) **Pre-viewing** in the computer screen to decide which pictures to keep and make adjustments (cropping, alignment, adjust stereo window)
- 2) **Main viewing** to enjoy the images.

Previewing is equivalent to using tools like the SAM with film, where you can view your picture in stereo and be able to make adjustments, while main viewing is equivalent to using the Realist red button viewer, for example.

# Digital Viewing Methods

Digital pre-viewing options include:

- 1) **Freeviewing**,
- 2) Using a **simple viewer** to view on-screen images (Loreo, Pokescope),
- 3) Using **anaglyph** format and a pair of inexpensive anaglyph glasses.

Some people use these same methods for main viewing too.

Other main viewing methods include:

- 4) **Digital projection**
- 5) **Digital viewer** like Cycloptical
- 6) **Making prints**
- 7) Converting digital images to **slides** and then using a slide viewer, etc.
- 8) **3D Laptops/screens**

Personally, I use the **Acer 3D laptop** and a pair of circularly polarized glasses both to pre-view and view my digital 3d images.

The new interest in 3d and the introduction of **3d TVs** promises to change this area so expect more and better 3d viewing options in the future.

# SPM for Viewing

**StereoPhoto Maker is the program to use for stereo viewing too.**

- You can place the pictures side by side
- Adjust their size in the computer screen
- Switch orientation (for parallel or cross-eye orientation)
- Put them in anaglyph format
- Or “row interlaced mode” (to use with polarized displays)

All that by just pressing a button.

SPM can also be used to

- make prints
- project stereo images in digital projection

# Developing a Routine

**Just like with film, sooner or later each one of us develops a routine to deal with digital images. This helps do things faster and avoid mistakes.**

Different people have different routines, and this is fine as long as they work for them. Here is my routine: After a trip, or a photoshoot where I took a number of pictures with one theme (club meeting, running race, etc), I do the following:

1. Remove the SD memory card(s) from the camera(s) and put it in the computer.
2. Create a new directory to store the files.
3. Transfer the image files from the SD card to this new directory. If using twin cameras, create two subdirectories, Right and Left to hold the corresponding pictures.
4. Delete old files from the card (if needed, to make room), eject it and return it to the camera.
5. Use SPM to preview the files and delete the ones that I do not want to keep.
6. The images as they come out of the Fuji or twin cameras are not perfectly aligned so I use SPM to align them. I first create a subdirectory to store the aligned images. Instead of aligning each individual image, I use “File” and “Multiconversion” to align a batch of images at once. In the dialog screen that opens, I select “Autoalignment” and “Autocrop after adjustment”

# Developing a Routine II

7. I use SPM again to view the .JPG files and make adjustments (cropping, stereo window) as I see fit. The adjusted file replaces the original JPG file but sometimes, when I am not sure about these adjustments, I create a copy of the file.
8. So far, these pictures are for my own enjoyment only. If I decide that a picture is good enough to share with others, for example enter in the competition, put it in the newsletter, upload them in the internet, project it in the club, etc., an extra step of processing is involved. That's when I use both SPM and a Photo Editor to adjust the size, contrast, sharpness, etc. Some times I just crop one side of the stereo pair if only the 2d picture is sufficient (facebook, blogs, newsletter). While up to this point the pictures had a generic file name (as it comes out of the camera, like DSCF6992.MPO or DSCF6992.jpg), any picture that gets this final treatment will get a more meaningful name.
9. Every month I backup the pictures that I took this month, i.e. I copy them in a separate (external) hard drive. Some people backup their pictures more often and in several hard drives. You can never be too careful with this.

# Slides to Digital



While on the transition phase from film to digital, you might want to convert slides to digital, or make slides out of digital files. To go from slides to digital you need a scanner or a digital copier of some kind.

**A scanner is a device that optically scans an object and converts it to a digital image.** The most common type of scanner is the **flatbed scanner**, used to scan flat documents like paper and prints. To scan film/slides with a flatbed scanner you need a film attachment accessory.

A better solution is a **film scanner**. This device is designed specifically to scan film (negatives or slides). The scanner usually comes with different slide holders, including one to hold standard 35mm mounts (2x2 inches). To scan mounted stereo slides in a film scanner you need to either remount them in a standard 35mm mount, or modify the scanner holder to accept stereo slides. These modifications are usually simple and can be done in many film scanners.

# Optical Copier

Another solution is to use a **digital camera** to photograph the slide.

For years I have used a system where I put the stereo slide inside a good viewer, and then put my camera's lens in the viewer's eyepiece to take a picture.

This is a very simple and quick way to digitize stereo images, not only slides but also View-Master reels, Tru-Vue, etc., as long as you have a good viewer for the format.

A more sophisticated version of this is described by David Starkman in an article found here: <http://www.stereoscopy.com/faq/slidecopying-beginners-guide.html> This method is based on using a digital SLR camera with macro mode to photograph film images over a light box. Once you have the set up worked out, this is a very quick and flexible method (can copy any film/size/format).



# Digital to Slides

Occasionally, the need arises to make slides from digital images, in order to use them in stereo slide competitions, for example, or just enjoy in a good slide viewer or share with other stereo slide users.

You can use a film camera to **copy a picture directly from the computer screen**. I have done this for years for title slides which I create in the computer. The method works OK for title slides but for actual pictures the quality is not very good (high contrast low resolution, etc).

A better way to do this is to use **a film recorder**. These devices have a built-in camera (which needs to be loaded with standard slide film) and a monochrome CRT screen where the image is scanned and photographed. Using 3 color filters and multiple exposures, the result is a color image that has better resolution and color than using a color CRT screen.

Film recorders can be found in the used camera market for reasonable prices, but if you do not have one, or access to one, you can use on-line services that specialize in this kind of work. You email them your digital images and receive the mounted slides in the mail in a few days. Use the Google search “slides from digital files” to find companies that offer this service.

I recommend: **LukerDoops** by “our” **Ken Luker** (<http://stereoscopic-slides.com/>)

# Is Digital for you?

## A Personal Perspective

- Digital fits my personal style of shooting, which is rather impatient, impulse, spontaneous, and voluminous.
- Since October I have taken nearly 10,000 digital stereo pictures, of just about anything I can think of.
- I am able to combine two of my favorite activities, 3d and running, by taking the Fuji 3d with my in trail runs and races. (Half of my pictures are from running).
- Techniques with low success ratio in film, like single-camera (hyper)stereos, are now possible at nearly zero cost. Just take a lot of pictures and keep the ones that work out.
- I am been able to try unusual techniques (like pole photography, stroboscopic flash, etc), which I have been procrastinating for many years now. If a crazy idea comes to my mind, I just try. Having to plan for it, and then wait for the results to see if it worked out or not, turns me off. Now, I see the results instantly and make adjustments on the go.
- I like how an average, ill-composed, misaligned picture can be improved by aligning, enlarging and cropping (very easy with SPM). Looking for a “picture within a picture”.
- But I still miss the viewing experience of slides in a viewer and in projection.

# Final Word

Like it or not (and I was one of those who did not like to hear this) **digital stereo photography will soon be the norm** in stereo clubs, etc, so film users should be getting ready for this change now.

If you already have a 2d digital camera and take and manipulate pictures in the computer, you are one stop ahead of the rest.

If not, there is still time to learn the basics of taking, viewing and manipulating digital stereo pictures.

I hope this short presentation has inspired you to give it a try.