

## Panorama

Panoramic photography, also known as wide format photography, is a special technique that stitches multiple images from the same camera together to form a single, wide photograph (vertical or horizontal). The term "panorama" literally means "all sight" in Greek and it first originated from painters that wanted to capture a wide view of a landscape, not just a certain part of it. The first panoramic photographs were made by simply aligning printed versions of film, which did not turn out very well, because it was close to impossible to perfectly align photographs. With the invention of personal computing, advancements in computer software and digital photography, it is now much easier to stitch digital images together using specialized software. In fact, using a proper photography technique and panoramic equipment, it is now possible to create near-perfect panoramas at extremely high resolutions. Some photographers even stitch hundreds of high resolution images to create gargantuan "gigapixel" panoramas. Today, digital panoramic photography is quite popular and common not only among landscape photographers, but also among architectural and cityscape photographers.

Panoramic Photography can get quite complex and expensive, depending on what you are trying to do. For example, creating panoramic images in architectural photography requires camera and lens to be properly calibrated on special panoramic equipment to prevent curved lines, distortions and improper stitches of close objects. At the same time, you can successfully take great landscape panoramic images without investing on any camera equipment, as long as you know how to do it right. In this article, I will primarily focus on taking panoramic images either hand-held or with a tripod, without spending on any other equipment.

### **MIDI vs. Digital Audio with Youtube Link**

<https://www.youtube.com/watch?v=ZbxHppbyKn0>  
<https://www.youtube.com/watch?v=tJ6X1N8X2JA>

In contrast to MIDI data, digital audio data is the actual representation of a sound, stored in the form of thousands of individual numbers (*samples*).

The digital data represents the instantaneous amplitude (or loudness) of a sound at discrete slices of time.

MIDI data is to digital audio data what vector or drawn graphics are to bitmapped graphics.

MIDI data is device dependent; digital data is not. Just as the appearance of vector graphics differs depending on the printer device or display screen, the sounds produced by MIDI music files depend on the particular MIDI device used for playback.

Example : A roll of perforated player-piano score played on a concert grand would sound different than if played on a honkytonk piano. Digital data, on the other hand, produces sounds that are more or less identical regardless of the playback system.

The MIDI standard lets instruments communicate in a well-understood language.

MIDI has several advantages over digital audio and two huge disadvantages.

### First, the advantages:

- MIDI files are much more compact than digital audio files, and the size of a MIDI file is completely independent of playback quality. In general, MIDI files will be 200 to 1,000 times smaller than CD-quality digital audio files. Because MIDI files are small, they don't take up as much memory, disk space, or bandwidth.
- Because they are small, MIDI files embedded in web pages load and play more quickly than their digital equivalents.
- In some cases, if the MIDI sound source you are using is of high quality, MIDI files may sound better than digital audio files. You can change the length of a MIDI file (by varying its tempo) without changing the pitch of the music or degrading the audio quality.
- MIDI data is completely editable—right down to the level of an individual note. You can manipulate the smallest detail of a MIDI

composition (often with submillisecond accuracy) in ways that are impossible with digital audio.

- Because they represent the pitch and length of notes, MIDI files can generally be converted to musical notation, and vice versa. This is useful when you need a printed score; in reverse, you can scan a printed score and convert it to MIDI for tweaking and editing.

### MIDI's disadvantages:

- Because MIDI data does not represent sound but musical instruments, you can be certain that playback will be accurate only if the MIDI playback device is identical to the device used for production. Imagine the emotional humming chorus from *Madame Butterfly* sung by a chorus of Budweiser frogs—the sound of a MIDI instrument varies according to the electronics of the playback device and the sound generation method it uses.
- Also, MIDI cannot easily be used to play back spoken dialog, although expensive and technically tricky digital samplers are available. In general, use MIDI in the following circumstances:
- Digital audio won't work because you don't have enough memory or bandwidth.
- You have a high-quality MIDI sound source.
- You have complete control over the machines on which your program will be delivered, so you know that your users will have high-quality MIDI playback hardware.
- You don't need spoken dialog.

The most important advantage of digital audio is its consistent playback quality, but this is where MIDI is the least reliable! With digital audio you can be more confident that the audio track for your multimedia project will sound as good in the end as it did in the beginning when you created it. For this reason, it's no surprise that digital audio is used far more frequently than MIDI data for multimedia sound delivery. There are two additional and often more compelling reasons to work with digital audio:

- A wider selection of application software and system support for digital audio is available for both the Macintosh and Windows platforms.
- The preparation and programming required for creating digital audio do not demand knowledge of music theory, while working with MIDI data usually does require a modicum of familiarity with musical scores, keyboards, and notation, as well as audio production.

In general, use digital audio in the following circumstances:

- You don't have control over the playback hardware.
- You have the computing resources and bandwidth to handle digital files.
- You need spoken dialog.