Panoramas

In this article we will look at making panoramas. It's dead easy, and can get stunning results in situations where you couldn't otherwise capture the subject.

What is a Panorama?

A Panorama is a final photograph created by stitching together a series of source photographs. Generally these photographs are taken by swinging the camera horizontally or vertically to create a tall ***or*** wide image. That's what we'll talk about here. You can also be more ambitious by taking a mosaic of photographs and creating a panorama that is ***both*** tall ***and*** wide. But that's for the A-level course – we'll just stick to the O-level here.

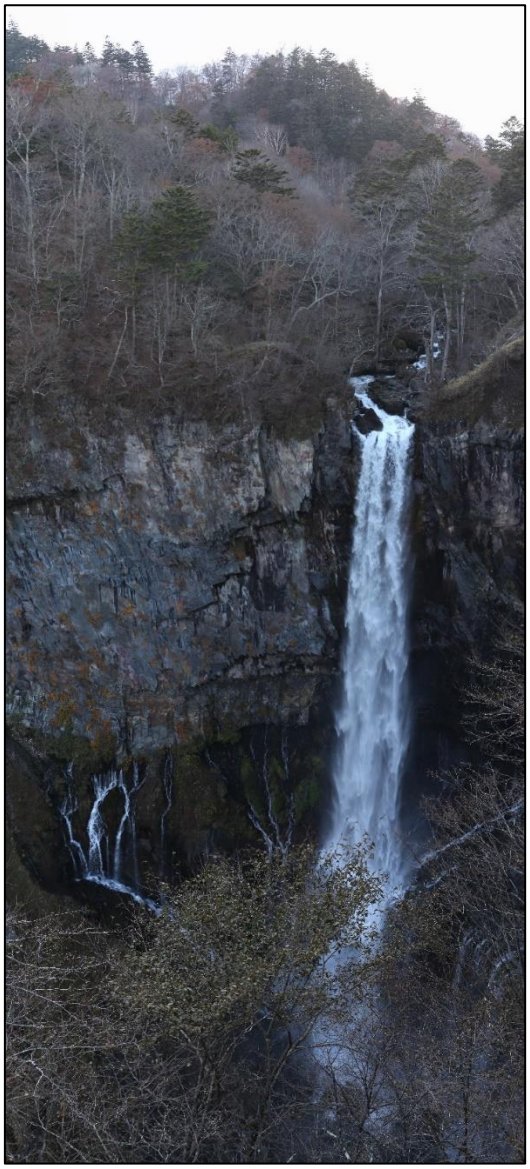
Subjects

A Panorama is typically thought of as a landscape tool:

But it can also be used for mid-distance views, ...

close-ups, ...

and vertical subjects.



By the way, the cityscape above illustrates one of the characteristics of panoramas, which is the apparent curving of the scene. This is a law of physics that can't be avoided, but as you can see from the other images it is often not noticeable.

How do you make Panoramas?

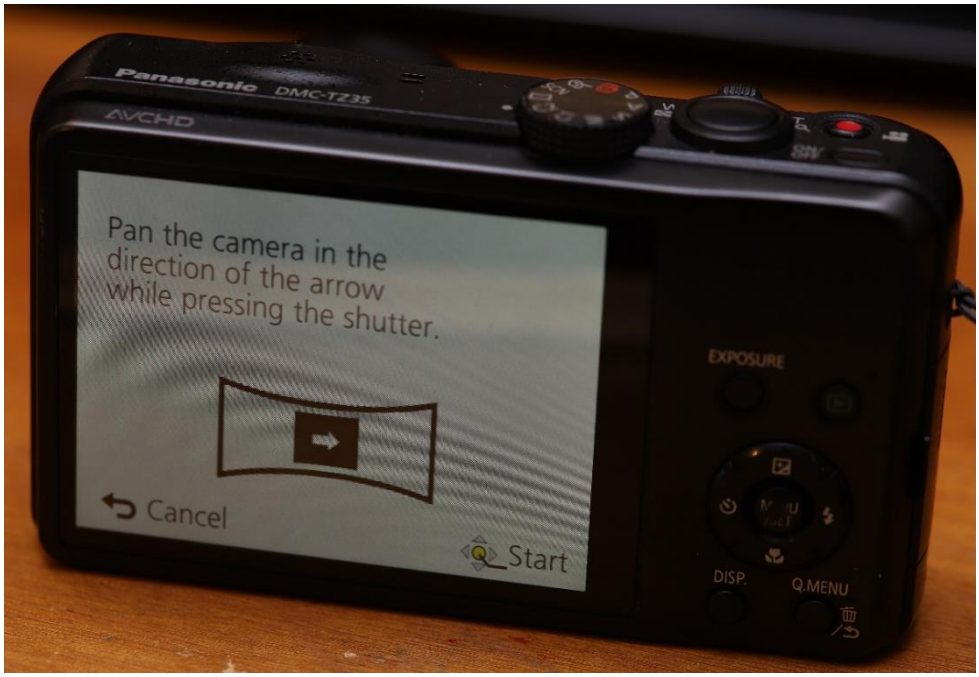
There are two approaches:

- Using a Panorama facility built into the camera. This is generally found on compact and bridge cameras, less frequently on interchangeable-lens cameras like DSLRs.
- Using any camera (mobile phone, DSLR, ...) and taking a series of shots which are then stitched together using software.

In-built Panorama facility

Some cameras have an in-built panorama facility. Look for this symbol on the camera's dials or in its software:

To use the facility, you normally have to press the shutter button, and keep it pressed while you swing the camera sideways or vertically. The camera then creates a single panoramic shot.



You can get good results:

But there can be difficulties. Depending on the camera:

- it can be tricky to sweep the camera at the right speed.
- you may be able to sweep the camera only in a direction parallel to the long edge of the image.

- you may not be able to choose your zoom setting.
- you may not be able to choose where to focus the image (important only if parts of the subject are at significantly varying distances).
- you may not be able to choose where the camera makes its auto-exposure measurement. This can result in banded images like this:

But it is easy – if your camera has the facility, give it a go!

Doing It Yourself

The DIY approach can be done using any camera, and is also easy. It overcomes the difficulties in using in-built facilities, and you may prefer to use it even if your camera has in-built capability.

Basically, you take a series of photographs, swinging the camera round between each shot:

The only rules are:

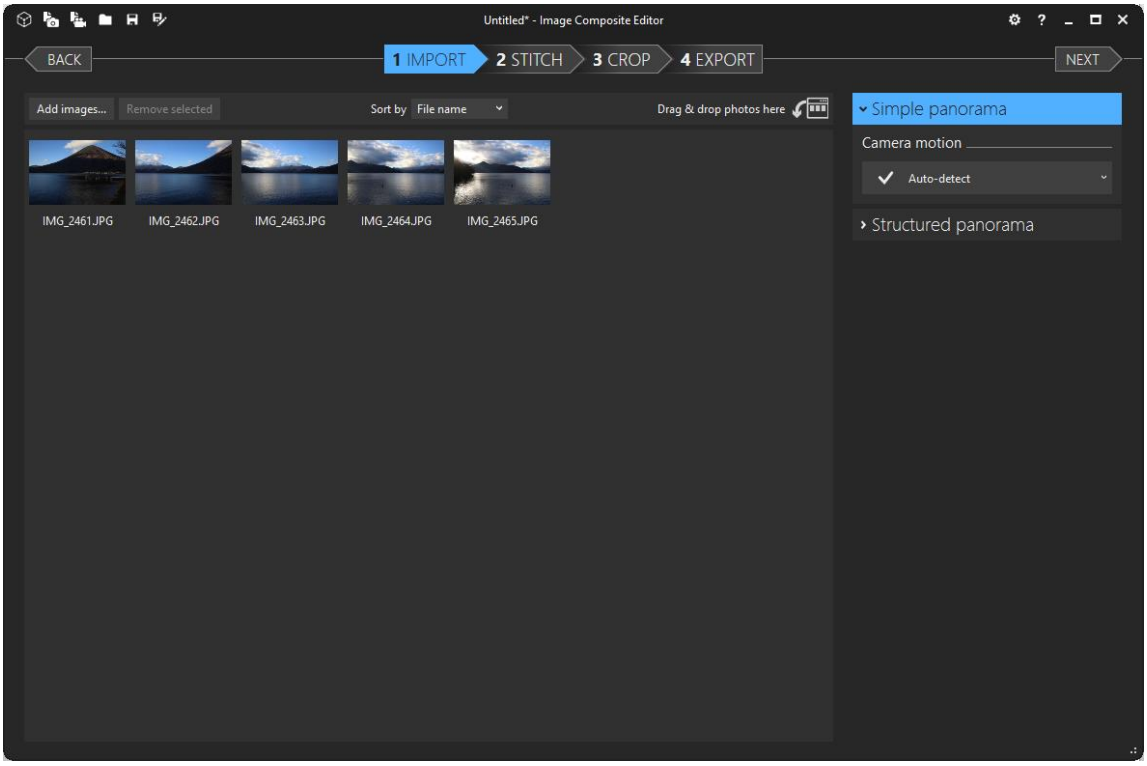
- allow an overlap of at least $^1/_3$ of the image on each shot.
- The direction of swing must be a straight line – whether that line is horizontal (as above), vertical, or at an angle in between (with the edge of the image parallel to the direction of swing). But it must not be a curve – for example when trying to follow varying terrain.

You can hold the camera in either direction, use any lens or zoom setting, and (if you know how) choose your focus and exposure settings.

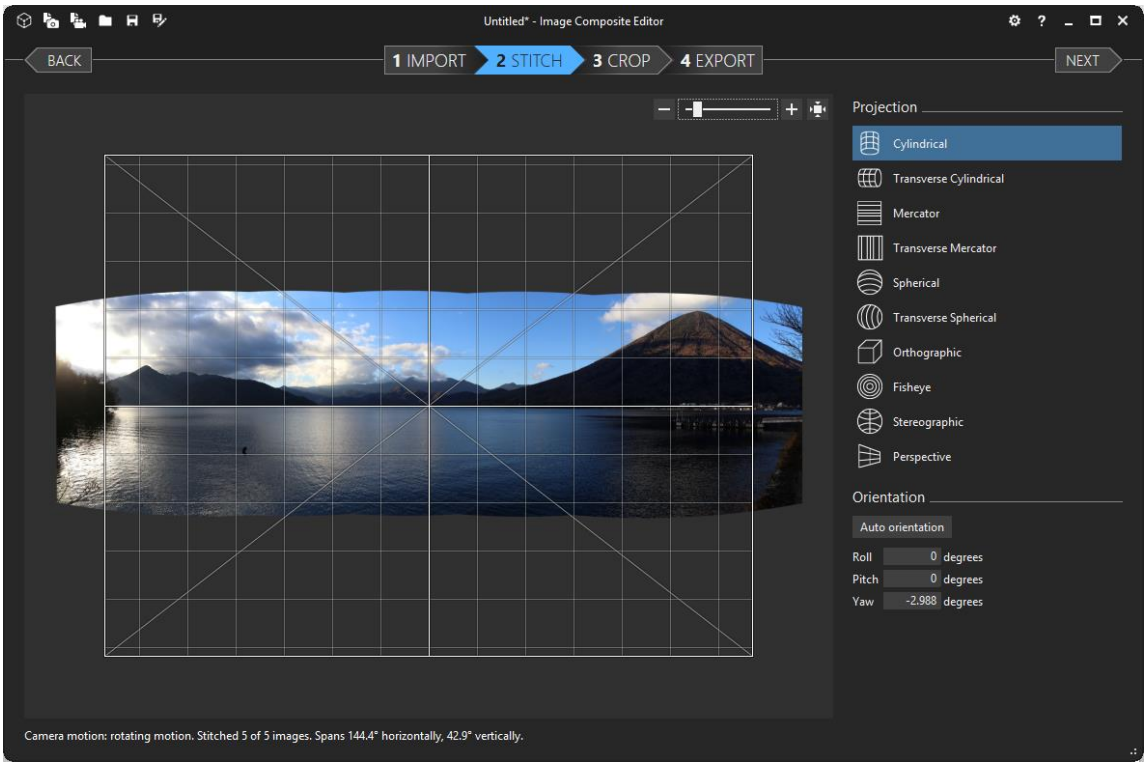
You then need to stitch these together to create the panorama. Don't try to do this manually – it's actually a complex process. But fortunately there's plenty of software around to do it for you – easily and perfectly, and for free. The software I use is a freebie from Microsoft, called Image Composite Editor (ICE). You can download this from:

https://www.microsoft.com/en-us/research/product/computational-photography-applications/image-composite-editor/

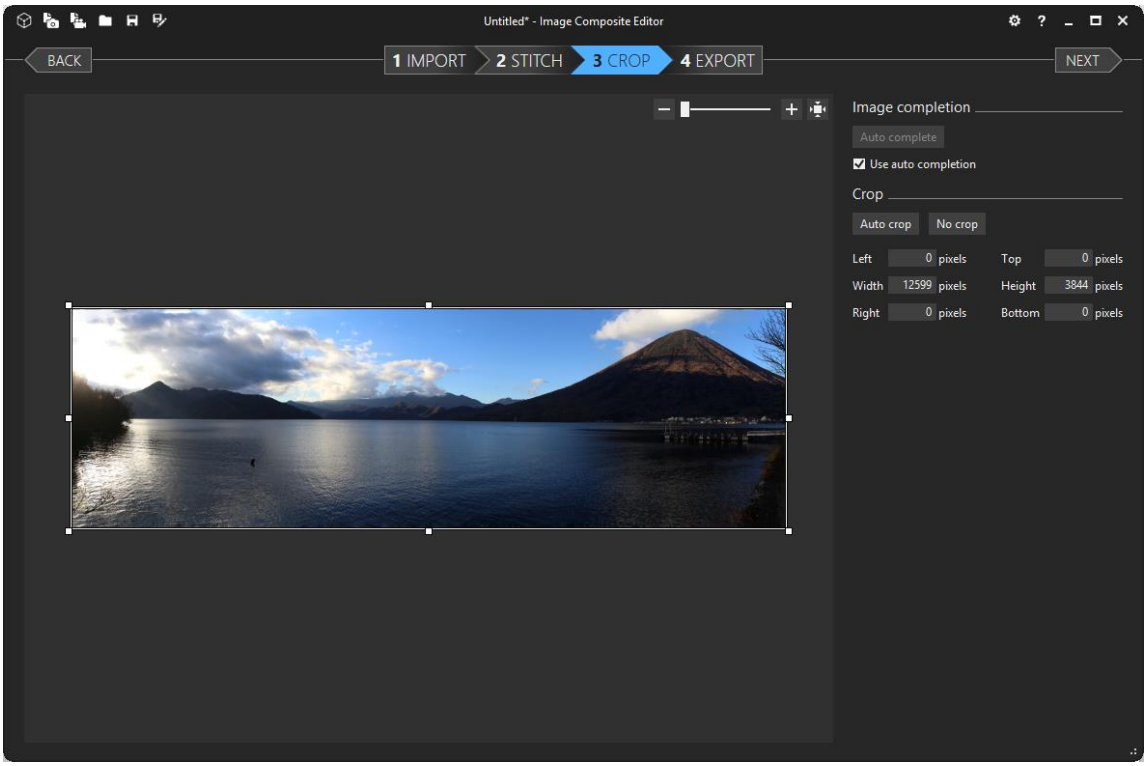
Just drag your images into ICE ...



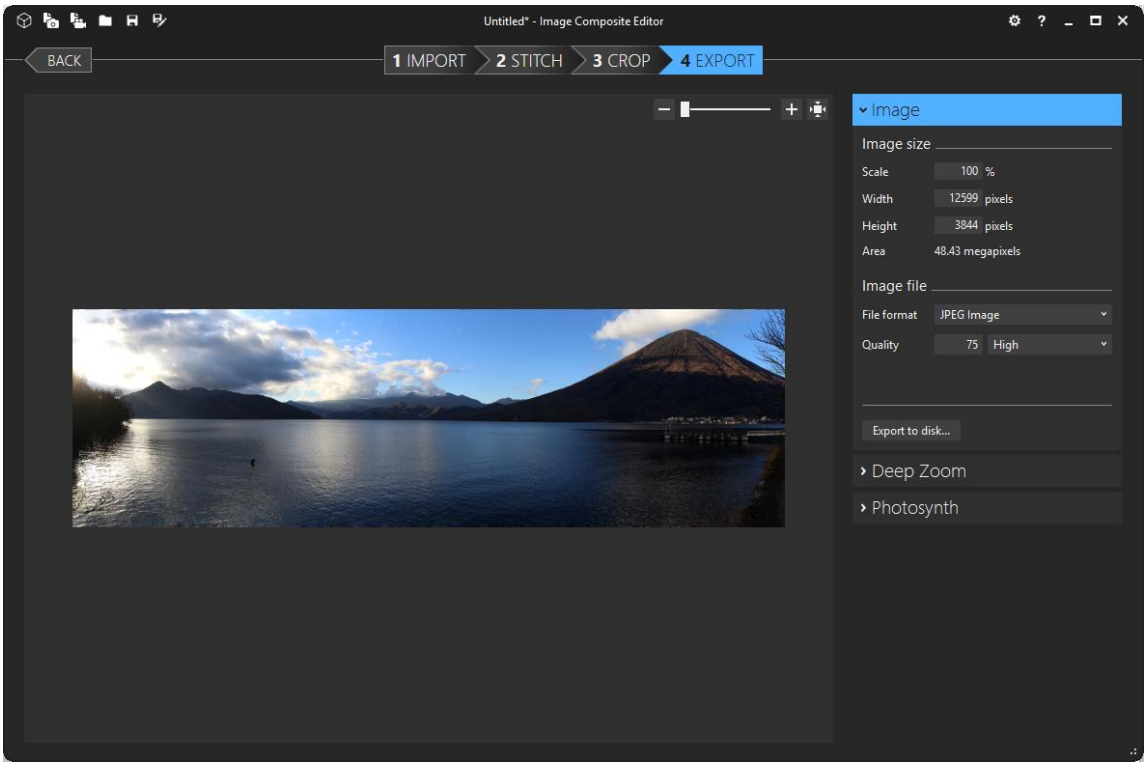
... and then click *Next* at top-right to select the defaults:



On this screen, tick *Use auto completion* and then *Next*:



Finally, use the *Export to disk ...* button to save your result.



And there it is:

Easy-peasy!

But don't overdo it

You can make a Panorama as wide as you want – covering a whole 360° sweep. But then what can you do with an image that looks like this:

To get best results

You ***must***:

- Sweep the camera in the direction of a straight line
- (If using DIY) Overlap the images by at least $^1/_3$

Preferably:

- use manual exposure, setting the exposure for the most important part of the subject.
- use manual focussing, focussing on the most important part of the subject.

Printing

What can you do if you want to print a Panorama? Your options are:

- Print on your normal printer, and trim the paper down. This will give a small and pretty uninspiring print if you are printing on A4, but is an acceptable option if you have an A3 printer.
- Check whether your printer supports long custom sizes. I have an old HP A4 printer that can print up to double-length A4. Most A4 printers will at least allow you to go to US Legal size (14 inches long as opposed to the 12 inches for A4). You can buy rolls

of photographic paper of A4 height from which you can cut the appropriate length for printing.

- The easiest way is to use an online print service – they generally have various Panorama options. One I have used successfully is DS Colour Labs, https://dscolourlabs.co.uk/ .

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