

Photographing for HDR Images

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Introduction

This document details the process of taking a set of conventional digital images for the creation of a 360° HDR panorama. It uses the figure referring format of square brackets containing two identifiers. The first identifier refers to the figure number, and the second refers to the ringed number within the figure. The hardware used in this document is a Samsung GX-20 camera [1.2] with compatible remote control [1.6] and a Samyang 8mm lens, although the workflow will be similar for any compatible hardware as discussed in the Hardware & Software document. In addition a camera bag [1.1], download cable [1.5] and tripod are required.



Figure 1: Camera and equipment.

Camera Settings

Figure 2a below shows the camera in detail. The shooting of exposure bracketed shots for HDR image creation requires that the camera is in Aperture Priority mode (the shutter speed changes between shots and not the aperture), so first check that the camera mode is set to 'AV' [2a.1]. Turn on the camera by turning the dial switch [2a.2] to on. Check the number of bracketed shots the camera is set to take by pressing the bracket button [2a.3] and keeping it pressed. On the LCD screen [2a.4] it will show you the number of bracketed shots at the top [2b.1] and the EV range below [2b.2]. Rotating the front jog wheel [2a.5] will cycle between 'off', '3', and '5' bracketed shots. The back jog wheel [2a.6] will cycle between '0.5', '1', '1.5' and '2' EV steps between shots. If the surrounding scene does not have a large brightness range (like an overcast scene) then '3' bracketed shots is fine. If there is sunshine or very bright artificial lights in the scene then choose '5' bracketed shots. If in doubt choose '5'. EV step size should always be '2'. The camera should be set up to only capture JPG images.



Figure 2: Camera details.

Tripod Set-up

Set up the tripod so that it sits as level, and stable, as possible. The tripod plate mount should already be positioned relative to the tripod for the correct shooting angle (Figure 3a) i.e. holding the camera in portrait mode tilted towards the sky by 20°. If it is not set to this position, set it now. Once the tripod plate on the bottom of the camera has been fixed into the plate mount on the tripod the camera should be positioned correctly (Figure 3b). The camera is positioned this way so that the point directly above the camera can be captured. If a positioning bar is being used to reduce parallax errors make sure the end of the camera lens sits above the pivot point of the tripod head (Figure 3c)

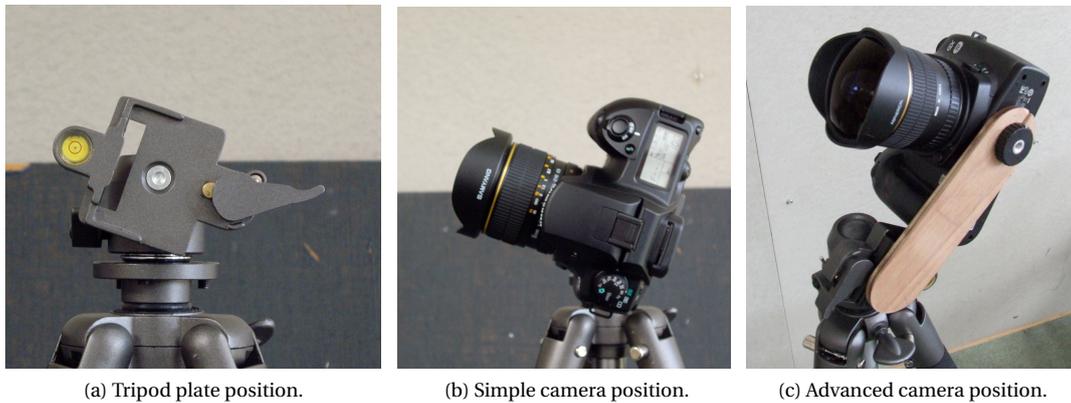


Figure 3: Camera set-up.

Shot Taking

The camera is now ready to take the bracketed shots. Make sure the LCD screen is on by pressing the button in the middle of the dial switch [2a.2] half way down. A red light should be flashing on the camera to denote that it is set to receive remote control signals. Take the remote control [1.6] out of the camera bag and press the top left 'S' button [4.1] while pointing the remote control at the back of the camera. Using the remote control avoids camera shake caused by pressing the shutter button in the middle of the dial switch [2a.2]. If a remote control

is not available use the camera shot button and any errors from camera movement can be corrected later. The photographer should be positioned directly behind the camera when shooting to avoid appearing at the edges of of the wide-angle fish-eye shot. It may also be desirable to have any possessions placed underneath the tripod as they will not then appear in the panorama.

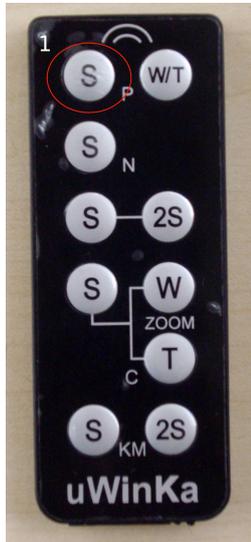


Figure 4: Remote control.

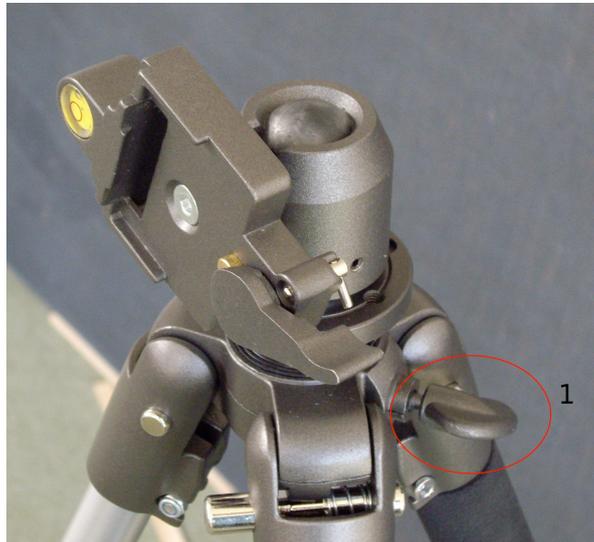


Figure 5: Tightening bolt.

The camera will now take a set of bracketed shots which may take some time if the scene is dark and long exposures are required. When finished the red light designating remote control reception will start flashing again, and the back colour LCD screen will momentarily come on.

Turn the camera and tripod head by 90° , it may be necessary to loosen the bolt that tightens the top of the tripod to the legs [5.1] to do this, and repeat the procedure another three times to horizontally capture the whole 360° of the scene (Figure 6). If images for lens calibration are being taken greater overlap between image edges is required and 5 or 6 sets of bracketed shots may be taken at 70° or 60° degrees from each other. The speed with which the bracketed shots are taken is only of real significance if the dominant lighting source in the scene is relatively rapidly changing. If, for example, the sun is passing between clouds, or is near the horizon, then the bracketed sets should be taken in quick succession. The bracketed shots should be as close to 90° from each other as possible. Either use features of the scene to work out which angle to take the shots at, or place an A4 sheet of paper on the floor under the tripod and shoot in line with each of the four sides. The images can be checked with the LCD screen on the back of the camera to make sure there is some overlap between each set of bracketed shots.

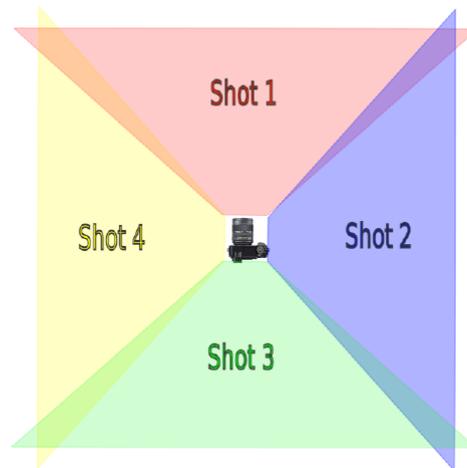


Figure 6: Capturing the scene.

Once finished the images can be downloaded from the camera using the data cable [1.5]. There should now be 12 (if using a three shot bracket) or 20 (five shot bracket) JPG images per location. These can now be loaded into Hugin to create the panorama, the process of which is described in the document 'Generating HDR panoramas'.